

July 2002

**ASSESSMENT REPORT**  
**MODIFICATION PROPOSAL P74 –**  
**Single Cost-reflective Cash-out**  
**Price**

Prepared by the Pricing Issues Modification Group  
on behalf of the Balancing and Settlement Code  
Panel

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<b>Author</b>	ELEXON

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

### c Related Documents

Reference	Document
Reference 1	Modification Proposal P74 'Single Cost-reflective Cash-out Price' (4 April 2002)
Reference 2	Initial Written Assessment of Modification Proposal P74 'Single Cost-reflective Cash-out Price' (IWA074, 18 April 2002)
Reference 3	Modification Proposal P78 'Revised Definitions of System Buy Price and System Sell Price' (5 April 2002)
Reference 4	Initial Written Assessment of Modification Proposal P78 'Revised Definitions of System Buy Price and System Sell Price' (IWA078, 18 April 2002)
Reference 5	Consultation Document for Modification Proposals P74 and P78 (24 May 2002)
Reference 6	Modification Proposal P74 'Single Cost-reflective Cash-out Price' Requirements Specification (P074AS11, 26 June 2002)
Reference 7	Modification Proposal P78 'Revised Definition of System Buy Price and System Sell Price' Requirements Specification (P078AS11, 26 June 2002)
Reference 8	Modification Report Modification Proposal P72 'Correction of a Minor Inconsistency in the BSC Arbitrage and Trade Tagging Methodology' (020MMU V1.0, 16 May 2002)

Reference 9	Modification Proposal P78 'Revised Definition of System Buy Price and System Sell Price' Assessment Report (MAR078, 8 July 2002)
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## 1 SUMMARY AND RECOMMENDATIONS

### 1.1 Recommendations

On the basis of the analysis, consultation and assessment undertaken in respect of this Modification Proposal during the Assessment Phase, and the resultant findings of this report, the Modification Group recommends that the BSC Panel should:

- **Recommend to the Authority that the Alternative Modification P74 should be made;**
- **Recommend an Implementation Date for the Alternative Modification of 25 February 2003 where an Authority decision is received by 15 October 2002. Where an Authority decision is received after this date, but before 19 February 2003, the Implementation Date should be 24 June 2003; and**
- **Note the development and implementation costs from the Alternative Modification of £357,000 from the BSC Central Service Agent, requiring 20 weeks for development and implementation. This cost excludes ELEXON effort (190 man days).**
  
- **Recommend to the Authority that the Proposed Modification P74 should not be made;**
- **However, if the Authority determine that the Proposed Modification should be made, the Implementation Date should be 25 February 2003, where an Authority decision is received by 12 November 2002. Where an Authority decision is received after this date, but before 12 March 2003, the Implementation Date should be 24 June 2003; and**
- **Note the development and implementation costs from the Proposed Modification of £80,600 from the BSC Central Service Agent, requiring 10 weeks for development and implementation. This cost excludes ELEXON effort (130 man days).**

### 1.2 Background

Modification P74 'Single Cost-reflective Cash-out Price' (Reference 1) was submitted on 4 April 2002 by Electricity Direct. Modification Proposal P74 seeks to amend the application of Energy Imbalance Prices, such that where the Total System Energy Imbalance Volume for a Settlement Period is:

- Negative, then the Imbalance volumes on all Energy Accounts are to be cashed out at the System Buy Price (SBP);
- Positive, then the imbalance volumes on all Energy Accounts are to be cashed out at the System Sell Price (SSP);
- Zero, then the imbalance volumes on all Energy Accounts are to be cashed out at a default Energy Imbalance Price, which will be the arithmetic mean of the System Buy Price and System Sell Price.

The Initial Written Assessment for Modification P74 (Reference 2) was considered by the Panel at its meeting of 18 April 2001. The Panel agreed to submit Modification Proposal P74 to the Assessment Procedure at that meeting, with the Assessment to be undertaken by the Pricing Issues Modification

Group (PIMG). The Panel also tasked the PIMG with defining the Terms of Reference for Modification Proposal P74.

The Panel also agreed, at its meeting of 18 April 2002, that Modification Proposal P74 should be considered in parallel with Modification Proposal P78 'Revised Definition of System Buy Price and System Sell Price' (Reference 3), as the Initial Written Assessment for Modification Proposal P78 (Reference 4) was also considered by the Panel.

During the Assessment Procedure, the PIMG met ten times (on 25 April 2002, 1, 8, 15, 22 and 29 May 2002, 12 and 19 June 2002, and 3 and 10 July 2002). Two consultations were issued, the first on 27 May 2002 (responses due 11 June 2002) and the second on 4 July 2002 (responses due 11 July 2002). One impact assessment (detailed level) was requested from the BSC Central Service Agent, BSC Parties and ELEXON on 21 June 2002 (CPC0196, responses due 8 July 2002).

The PIMG agreed the Terms of Reference for the Assessment Procedure, and these were endorsed by the Panel at its meeting of 18 May 2002 (attached in Annex 8). The PIMG submitted an interim report for consideration by the Panel at its meeting of 13 June 2002, and in this report, the PIMG requested an extension to the Assessment Procedure in recognition of the complex issues raised by this Modification and the requirement for further analysis and assessment. The Panel agreed to an extension to the Assessment Procedure for Modification Proposal P74.

However, the Authority issued a notice pursuant to the BSC Section F 1.4.3, directing that the extension to the Assessment Procedure should not be made. The reasons for such direction were provided in the notice (dated 19 June 2002) as follows:

*"It has been acknowledged by NGC and the industry that the issues that the Modification Proposals [P74 and P78] seek to address are of great importance, which is demonstrated by the considerable amount of time the industry has already devoted to assessing the Modification Proposals to date.*

*Having had regard to the relevance and importance of the outcome of these Modification Proposals in relation to a number of aspects of the regulatory regime, Ofgem considers that Modification Proposals P74 and P78 should be dealt with within the timeframes as set out within F2.2.9 of the BSC. Therefore Ofgem considers that it is essential for the 3-month Assessment Procedure to be adhered to."*

The PIMG, at its meeting of 19 June 2002, in recognition of the time constraints, revised and agreed their work plan for the remainder of the Assessment Procedure, such that an Assessment Report for Modification proposal P74 could be presented for consideration by the Panel at its meeting of 18 July 2002, thus adhering to the three months Assessment Procedure.

The PIMG agreed the provisional recommendations with regards to Modification Proposal P74 at its meeting of 3 July 2002 and these were provided, in a draft of this Assessment Report, for industry consultation on 8 July 2002 (responses due 15 July 2002).

The consultation responses from the second Assessment consultation were considered by the PIMG (by e-mail), and consequently, with due consideration to the consultation responses, the provisional recommendations of the PIMG with regards to Modification Proposal P74 were finalised by the PIMG (by e-mail and telephone).

### **1.3 Rationale for Recommendations**

The following details the high level rationale for the decisions and determinations of the PIMG with regards to the Proposed and the Alternative Modification P74. The supporting deliberations and considerations are provided throughout this Assessment Report.

### 1.3.1 Proposed and Alternative Modification

Section 4 of this Assessment Report provides the supporting consideration and rationale in more detail.

The PIMG considered the Proposed Modification and considered that this was not a viable option on the grounds that it is not robust for prompt price reporting, as it requires that the overall system imbalance is derived from the Total System Imbalance Volume (TOEI) which is not available in real time, as it relies on metered volumes for its calculation. On this basis the PIMG determined that an Alternative should be developed.

The PIMG considered a variation on the Proposed Modification which used the total volume of Bid - Offer Acceptances incorporating BSAD volumes to derive the direction of system imbalance. Thus utilising the current mechanism for calculating the System Buy Price and System Sell Price, and then determining which is applied by determining whether the system was overall long or short by reference to the Bid - Offer Acceptances and BSAD.

The PIMG also considered the option of obtaining a single cash-out price from the mechanism proposed under Modification Proposal P78 (Reference 1), namely the derivation of the Net Imbalance Volume, and the calculation of the (single) Energy Imbalance Price based on the balancing actions taken to alleviate the Net Imbalance Volume.

The majority of the PIMG believe that the latter option for calculating the Energy Imbalance Price provides a more cost-reflective Energy Imbalance Price as a consequence of the better separation of system and energy balancing, as the price is set from only those actions taken to alleviate the overall system imbalance (the Net Imbalance Volume), and which is therefore is deemed to be comprised of energy balancing actions only. Whereas the former option relies on the current mechanism, which is acknowledged to provide an imperfect solution to the separation of system and energy balancing actions.

The PIMG recommended the Alternative over the variation on the Original (which used the total volume of Bid - Offer Acceptances incorporating BSAD volumes to derive the direction of system imbalance, thus utilising the current mechanism for calculating the System Buy Price and System Sell Price, and then determining which is applied by determining whether the system was overall long or short by reference to the Bid - Offer Acceptances and BSAD), but believed that the cost saving of this approach was outweighed by the potential improvement in cost-reflectivity of the alternative even though the substantive pricing changes could be derived from setting BRL to zero.

Therefore, the PIMG agreed that the option to go forward to become the Alternative Modification should be the single Energy Imbalance Price calculated from the balancing actions taken to alleviate the Net Imbalance Volume, on the grounds of better cost-reflectivity of the resulting price.

### 1.3.2 Impacts and Incentives from the Proposed and Alternative Modification

Section 6 and ANNEX 9 of this Assessment Report provide the deliberations and considerations in more detail. However, in summary, the PIMG believe that Modification P74 and its Alternative will introduce the following incentives, and have the following impacts on the trading arrangements:

- For the Proposed Modification, the cost-reflectivity of the resultant Energy Imbalance Price is not directly improved over the current baseline. However, disregarding the shorter stack, which is more likely to be polluted by system balancing actions, could be considered to improve cost-reflectivity;



- The calculation of the main price used by Alternative Modification P74 improves cost-reflectivity over the current baseline, by better reflecting the split between energy and system balancing actions, which results in an Energy Imbalance Price which is more reflective of the costs of energy balancing than the current Energy Imbalance Prices;
- Some members of the PIMG believe that introducing a single price would improperly reward spill positions relative to submitting Bid - Offers in to the balancing market and that this could have an adverse impact on the incentive to submit Bid - Offers and hence impact on the output from the Balancing Mechanism . However other members of the PIMG believe that this is not a significant problem. It should be noted that the Proposer of P74 has provided a discussion document relating to this point (provided in ANNEX 6c of this Assessment Report). However, it should be noted that the PIMG have had insufficient time to consider this analysis and therefore the points raised by this document have not been discussed or agreed by the PIMG;
- Asymmetric risk would be reduced, but not removed, under both the Proposed Modification and the Alternative, as a consequence of the potential reduction in volatility of the Energy Imbalance Prices;
- Both the Proposed and the Alternative Modification could better incentivise overall market balance;
- Price hunting behaviour could emerge under either the Proposed or the Alternative Modification, due to the potential over reward for imbalances in the opposite direction to the overall system imbalance, although the cost-reflective Energy Imbalance Pricing may not make such behaviour particularly worthwhile, in terms of imbalance reward. Consequently there is no undue concern over system stability (resulting from such price hunting) from implementation of the Proposed or the Alternative Modification;
- Both the Proposed and the Alternative Modification eliminate the buy – sell spread in the cash-out prices Energy Imbalance Prices, which may have the effect of reducing notification risk, therefore encouraging more trading, closer to real time;
- More risk management tools may also develop as a consequence of the removal of the buy – sell spread of the Energy Imbalance Prices, again this may have the effect of increasing efficiency in the forwards and spot market;
- There may also be the potential for liquidity and efficiency to reduce in the forwards and spot markets as a result of the development of Contracts for Difference (CfDs) which may have the effect of moving some trading away from forwards and spot markets, thus reducing their liquidity and efficiency, to some degree.
- The implementation of either the Proposed or the Alternative Modification could have the effect of reducing risk profiles of all parties, however, there is no clear effect from either the Proposed or the Alternative on the relative risk profiles of parties; and
- It is not believed that there is a direct effect on prompt price reporting or market transparency from the implementation of the Alternative Modification. However, this is dependent upon the supporting changes to BSAD which are beyond the vires of this Assessment Report.

### 1.3.3 Applicable BSC Objectives

Section 8 of this Assessment Report provides the deliberations and considerations of the PIMG in more detail. The Proposed and the Alternative Modification better facilitate achievement of the Applicable BSC Objectives for the following reasons:

- Reduction in the risk of exposure to imbalance, as a consequence of the removal of the buy – sell spread, and the associated costs from implementation of a single Energy Imbalance Price will help to promote competition in generation and supply;
- A proposed outcome of both the Proposed and the Alternative Modification is that the market will come closer to balance, and consequently parties will not hold so much self reserve. On this basis, the system operator should be able to balance the market more efficiently and effectively;
- The increased incentive for parties to balance their individual positions ahead of Gate Closure should result in increased accuracy of information provided to the system operator ahead of Gate Closure, thus enabling it to make informed decisions about balancing the system, improving efficiency and economic operation; and
- Improving the cost-reflectivity of the Energy Imbalance Prices should promote this Objective by providing more accurate signals to the system operator of the costs of balancing the system.
- The implementation of a more cost-reflective cash-out price regime could incentivise participants to balance their individual positions ahead of Gate Closure, therefore minimising the actions that the system operator has to take to correct the system energy imbalance. Thus, this assists in minimising the role of centrally administered mechanisms and facilitates the bilateral trading of energy; and
- Reduction in the risk of exposure to imbalance, whilst maintaining the incentives to balance, and therefore trade bilaterally, ahead of Gate Closure, may have the effect of encouraging participants to trade closer to real-time, with the associated effect of improving liquidity in the forwards and spot markets, thus increasing competition.

The Proposed and the Alternative Modification may or may not better facilitate achievement of the Applicable BSC Objectives for the following reason (depending upon perspective):

- The Proposed and the Alternative Modification value 'uninstructed assistance' to the system (i.e. imbalances in the opposite direction to the overall system imbalance) at the same price as imbalances in the same direction to the overall system imbalance, this may not be reflective of the costs they may be imposing on the system. However, there is no value of uninstructed assistance that can be definitively more cost-reflective and no evidence that the price for such assistance is not cost – reflective;

However, the Proposed and the Alternative Modification may not better facilitate achievement of the Applicable BSC Objectives for the following reasons:

- If the cost-reflectivity of the Energy Imbalance Price for imbalances in the opposite direction to the overall system imbalance is dubious, it means that the cost of energy balancing is less correctly targeted at those causing the imbalance, and therefore this reduces competition by promoting cross-subsidies; and
- A single cash-out regime may have the effect of encouraging the development of Contracts for Difference, thus removing trading from the forwards and spot markets (although it could be argued that liquidity is merely moving to a different market), and reducing the incentive to trade

bilaterally, ahead of Gate Closure, which may in turn have the effect of discouraging participants to trade closer to real-time, with the associated effect of decreasing liquidity in the forwards and spot markets, thus reducing competition, in this particular market.

However, the majority of the PIMG believe that the benefits from the achievement of the Applicable BSC Objectives (set out above) outweigh the detrimental impacts, thus on balance, the Proposed Modification, and to a greater degree, the Alternative Modification, better facilitate achievement of the Applicable BSC Objectives.

#### **1.4 Issue with BSAD Reporting**

An issue has been identified with the mechanism proposed by the Transmission Company for the calculation and reporting of BSAD under Alternative Modification P74. The Alternative Modification requires that the volumes associated with system balancing trades be included in the BSAD reported into the BSC Central Service Agent in order to derive a true Net Imbalance Volume.

The issue arises when the system operator undertakes system to system trades across the Interconnector with France. An example of these trades is when, overnight, the system operator has bid back gensets as far as their Stable Export Limits (SELS), but still needs to create downward regulation ("footroom"). The economic decision maybe for the Transmission Company and RTE to agree to deviate the Interconnector flow 'downwards' (reduced import) from the day ahead schedule.

The volume of deviation is then calculated and agreed (manually) over the next one to two working days (in accordance with BSCP04) (it should be noted that the volumes, by definition, are classed as system). Therefore these volumes currently, are not finalised until some time after real time. This means that the real time reported BSAD under Alternative Modification P74 does not include these volumes.

Analysis was undertaken to determine what materiality this has on the Net Imbalance Volume, and therefore the Energy Imbalance Price, and 20,000+ Settlement Periods were looked at. It was determined that these system to system trades have been undertaken for 15% of Settlement Periods, and are consistently for volumes in the order of 300 MWh. It was determined that for 2% of Settlement Periods (~400), not including these system to system trades in the Net Imbalance Volume calculation would have resulted in an overall system imbalance in the opposite direction to that calculated with the system to system trades.

Therefore it can be seen that prompt price reporting (which would not include these volumes) would be inaccurate for 15% of Settlement Periods as a consequence of these trades. This is clearly unacceptable, given the importance placed on prompt and accurate price reporting.

The Transmission Company is currently exploring solutions to this issue, but believe that it will be possible to report these system to system trades promptly, such that the prices reported on the BMRA are accurate for the vast majority of Settlement Periods.

The Transmission Company believe that a robust automated solution will be available by any implementation in the BSC Systems 24 June 2003 release. However, if the Modification (Proposed or Alternative) is implemented in the 25 February 2003 BSC Systems release, the Transmission Company believe that it may be possible to develop a (manual) workaround, as an interim solution, until the fully automated solution could be developed and implemented, and it should be recognised that any manual workaround may not be as robust as the automated solution.

However, the Transmission Company have indicated that there may not be an interim solution available by the February release. Therefore it should be recognised that, following the precedent set

by Modification Proposal P18A, prompt price reporting will be inaccurate, under the circumstances outlined above, until such an interim workaround / automated solution is implemented.

## 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 ('BSC'). The BSC 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](http://www.elexon.co.uk)

## 3 MODIFICATION GROUP DETAILS

This Assessment Report has been prepared by the Pricing Issues Modification Group. The Membership of the Modification Group was as follows:

Name	Organisation
Justin Andrews	ELEXON (Chair)
Peter Wibberley	ELEXON
Mandi Francis	ELEXON
Rob Barnett	Campbell Carr (Proposer)
Bob Brown	Cornwall Consulting
Paul Dawson	Barclays Capital
Libby Glazebrook	Edison Mission
Martyn Hunter	St. Clements Services
Sharif Islam	TotalFinaElf
Paul Jones	PowerGen
Danielle Lane	British Gas Trading
Richard Lavender	National Grid
Chris Leeds	Entergy - Koch Trading
Martin Mate	British Energy
Paul Mott	London Electricity Group
Ian Mullins	BP Gas, Power and Renewables
Andrew Murray	Entergy
Graham Oxley	RWE Trading Direct
Bill Reed	Innogy

Name	Organisation
Lisa Waters	Dynergy
Michael Wilks	Williams Energy
Ben Willis	Npower
Adam Higginson/Anthony Doherty	Ofgem

## 4 THE PROPOSED MODIFICATION

### 4.1 Proposed Modification Proposal

Modification Proposal P74 seeks to amend the application of Energy Imbalance Prices, such that where the Total System Energy Imbalance Volume (TQEI) for a Settlement Period is:

- Negative, then the Imbalance volumes on all Energy Accounts are to be cashed out at the System Buy Price (SBP);
- Positive, then the imbalance volumes on all Energy Accounts are to be cashed out at the System Sell Price (SSP);
- Zero, then the imbalance volumes on all Energy Accounts are to be cashed out at a default Energy Imbalance Price, which will be the arithmetic mean of the System Buy Price and System Sell Price.

The Total System Energy Imbalance Volume (TQEI) value is not calculated and reported until a Settlement Run is undertaken within the Settlement Administration Agent (SAA), as it is based upon contract positions, which are known at Gate Closure, but not reported until some time after real time, and metered position, which is not known at Gate Closure, and is reported some time after real time.

Consequently, the Proposed Modification Proposal for P74 is not robust in terms of prompt price reporting, as the TQEI variable, on which the determination of the Energy Imbalance Price depends, is not available in real time. The PIMG believed prompt price reporting to be a key requirement of any modification to the Energy Imbalance Price calculation, and therefore determined that, as the Proposed was insufficiently robust in this respect, it should not be considered.

Therefore the PIMG looked at alternative options.

### 4.2 Options for the Alternative Modification

The 'Modification P74: 'Single Cost-reflective Cash-out Price' Requirements Specification (Reference 6) contains a detailed specification of both of the following options.

#### 4.2.1 Option1

The Proposer of Modification P74 clarified that the intent of the Modification, in terms of usage of the TQEI variable, was that the system length should be determined from a comparison of the balancing actions taken by the Transmission Company (system operator) to address the imbalance in that Settlement Period.

Therefore the PIMG agreed that one of the options for an Alternative would be to base the amendments to the Settlement Calculations on the system length, derived from the total volumes of accepted Bids and Offers and the volumes traded by the Transmission Company and reported in BSAD.

Thus:

- Where the total volume of Accepted Offers and the total BSAD purchases exceeds the total volume of Accepted Bids plus BSAD sales, the system is short and the Imbalance Volumes on all Energy Accounts are cashed out at the System Buy Price (SBP);

- Where the total volume of Accepted Bids plus BSAD sales exceeds the total volume of Accepted Offers and the total BSAD purchases, the system is long and the Imbalance Volumes on all Energy Accounts are cashed out at the System Sell Price (SSP); and
- Where the total volume of Accepted Offers and the total BSAD purchases is equal to the total volume of Accepted Bids plus BSAD sales, the system is neither long nor short and the Imbalance Volumes on all Energy Accounts are cashed out at an average of the System Buy Price and the System Sell Price.

This option for an Alternative Modification P74 retains the majority of the Proposed Modification, but utilises a differing mechanism for the calculation of the system length, by a comparison of the balancing actions taken by the system operator for the Settlement Period. Therefore this option is robust to prompt price reporting, as all the information required is available to the Balancing Mechanism Reporting Agent (BMRA) by the end of the Settlement Period, and as such, the BMRA can undertake the necessary calculations, and report the resulting Energy Imbalance Price to the same timescales as currently defined for the Indicative Energy Imbalance Price calculations, with a similar degree of accuracy to the current calculation.

#### 4.2.2 Option 2

Both the Proposed Modification P74 and the alternative option based upon it (option 1) utilise the existing mechanism for the calculation of Energy Imbalance Prices, and then apply one of the resulting prices (either the System Buy Price or the System Sell Price) dependent upon the length of the system. The PIMG acknowledged that this approach does not directly address one of the perceived concerns regarding the current mechanism, namely the separation of system and energy balancing actions, to avoid pollution of the Energy Imbalance Prices with system balancing actions.

The PIMG noted that such a separation could be a second order effect of the implementation of Modification P74, in that a postulated outcome of Modification P74 is a more balanced market, which could, in turn, result in more balancing actions being taken on both the Bid and the Offer side, such that the effect of system balancing actions is lessened in the resulting prices. This, in conjunction with the consideration that system balancing actions are more likely to have an influence the shorter Bid - Offer stack, which is disregarded by Modification P74 for price setting, means that Modification P74 potentially addresses the system – energy split indirectly.

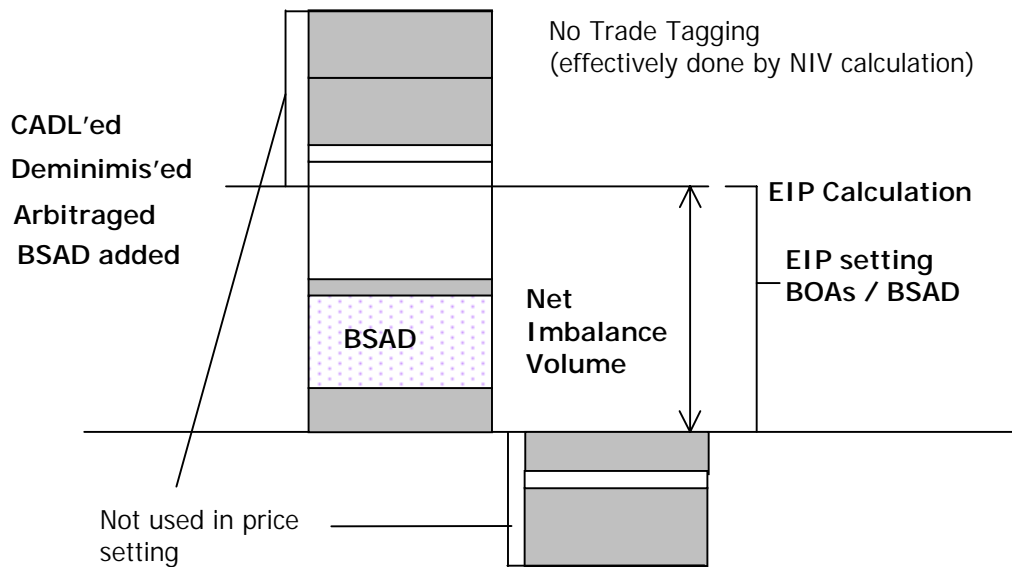
However, the PIMG agreed that an option for an alternative should be considered which derives a single cash-out price from a methodology which directly addresses the system – energy balancing split. The PIMG considered that the methodology proposed under Modification Proposal P78 (Reference 3) for deriving a Net Imbalance Volume, and calculating the price from those balancing actions taken to alleviate it, would provide an appropriate solution.

The rationale underlying the methodology proposed for Modification Proposal P78 is that all balancing actions taken in the opposite direction to the system (i.e. sales and Bids where the system is short, and purchases and Offers where the system is long), must be for system balancing purposes, as must an equal and opposite volume in the same direction as the system. This is represented at a simplistic level in Figure 4.2 (1) below.

Therefore all volumes associated with balancing actions (system and energy) are stacked and 'tagged out' to remove all of the shorter stack, and an equal volume of the larger stack, such that the remaining volume is the Net Imbalance Volume, i.e. the energy imbalance of the system. The Energy Imbalance Price is then calculated from those balancing actions taken to alleviate the Net Imbalance

Volume (NIV), and therefore deemed to be for energy balancing purposes. Thus providing an Energy Imbalance Price based upon actions deemed to have been taken only for energy balancing.

Therefore, on the grounds that this option provides a single Energy Imbalance Price, which it considered to provide an more cost-reflective index, the PIMG recommended that this option go forward as the Alternative to Modification Proposal P74. Therefore this option is described in detail in the following section (section 5).



**Figure 4.2 (1): Net Imbalance Volume (NIV) Calculation**



## 5 ALTERNATIVE MODIFICATION

### 5.1 Alternative Modification Overview

The Alternative Modification P74 requires that the single Energy Imbalance Price be calculated from those balancing actions (including BSAD) taken to alleviate the Net Imbalance Volume (NIV) of the overall system, as set out in section 4.2.2 of this Assessment Report.

At a high level, the process required to support Modification P74 is as follows. It should be noted that both the BMRA and the SAA will utilise this process, BMRA for the calculation and publication of the Indicative Energy Imbalance Prices and SAA for calculation of the Energy Imbalance Prices used in Settlement Runs.

Firstly the Net Imbalance Volume is derived:

- Bid - Offer Acceptances have the Continuous Acceptance Duration Limit (CADL) applied in order to remove those Bid – Offer Acceptances deemed to have been taken for system balancing purposes;
- The remaining Priced Bid – Offer Acceptances have De-minimis volumes removed and are arbitrated;
- Then the remaining Priced Bid - Offer Acceptances are stacked in price order, with the Bid stack placing most expensive Bids first, and the Offer stack placing the cheapest Offers first;
- In order to derive a true Net Imbalance Volume, i.e. derive the energy imbalance volume for the Settlement Period, the stack should include BSAD, (including any volume deemed to have been for the purposes of system balancing<sup>1</sup>) and Bid – Offer Acceptance volumes attributable to system balancing (i.e. CADL'ed Acceptances):
  - The BSAD volume (which will include any volume attributable to system balancing) is added into the stack as if it were a Priced Bid – Offer Acceptance, i.e. slotted in, in price order, it should be noted that the BSAD will be provided such that there is no price associated with the volume attributable to system balancing, only a price for the energy balancing portion. Volume associated with sales into the Bid stack and the volume associated with purchases into the Offer stack; and
  - The Total System Un-priced Accepted Bid Volume (i.e. CADL'ed Bids) is added into the Bid stack as if it were the cheapest priced Bid and the Total System Un-priced Accepted Offer Volume (i.e. CADL'ed Offers) is added into the Offer stack as if it were the most expensive Offer. This places the CADL'ed Bid – Offer Acceptances in a position in the (relevant) stack such that they are the first volumes to be tagged out.

This approach ensures that system balancing actions are represented in the Net Imbalance Volume derivation, but that the associated cost does not get carried forward into the Energy Imbalance Price calculation; and

- Once the Bid and Offer stack has been compiled, then the volume of the smaller stack is calculated (by tagging, referred to as Net Imbalance Volume, or NIV, Tagging), and the same

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<sup>1</sup> The Alternative Modification P74 requires an amendment to the Balancing Services Adjustment Data Methodology, such that the BSAD volumes notified to the BSC Central Service Provider include volume attributable to system balancing, in order to derive a true Net Imbalance Volume. The proposed amendments to BSAD are explored in more detail in section xx of this Assessment report.

volume is removed from the larger stack (again, by tagging referred to as Net Imbalance Volume, or NIV, Tagging) such that the Net Imbalance Volume is the remaining volume.

Once the Net Imbalance Volume has been derived, the balancing actions that comprise it go forward to the Energy Imbalance Price calculation. The Energy Imbalance Price calculation is similar to that currently in use, but instead of the addition of BSAD after all the tagging of the Bid – Offer Acceptances (as is currently the case), the BSAD is included in the stack for NIV Tagging and therefore a proportion, or all of the BSAD may have been tagged out by the NIV Tagging Process, therefore only the untagged BSAD is included in the Energy Imbalance Price calculation.

If the Net Imbalance Volume derived is zero, then the default Energy Imbalance Price rules are invoked, and this requires setting the Energy Imbalance Price from the maximum of the cheapest non Arbitrage Offer Acceptance, or the most expensive non Arbitrage Bid Acceptance, or zero.

This process requires a number of new variables, and therefore there is a requirement for them to be reported, such that the Settlement calculations can be verified. This requires amendment to the BMRA to report the requisite information utilised in the calculation of the Indicative Energy Imbalance Prices, and amendment to the Settlement Report (SAA-I014, S0141, S0142 and S0143) to report out the values utilised in the Energy Imbalance calculation.

For the avoidance of doubt, the single price calculated as the Energy Imbalance Price will continue to be reported and applied as System Buy Price and System Sell Price, in order that participant systems have minimal impact in terms of verification and calculation of Trading Charges. Therefore it should be noted that the System Buy price will always be equal to the System Sell Price under this Modification.

The following sections describe and define the detailed functionality required to support the implementation of the Alternative Modification P74.

## **5.2 Balancing Services Adjustment Data Amendments**

There are two options for reporting BSAD, net only, and net and gross, as follows:

### **5.2.1 Option 1 Net Reporting only**

As proposed by the Transmission Company, BSAD could be reported as follows:

- Net Sell Price Cost Adjustment (SCA<sub>j</sub>);
- Net Sell Price Volume Adjustment (SVA<sub>j</sub>);
- Net Buy Price Cost Adjustment (BCA<sub>j</sub>);
- Net Buy Price Volume Adjustment (BVA<sub>j</sub>);
- Buy Price Price Adjustment (BPA<sub>j</sub>); and
- Sell Price Price Adjustment (SPA<sub>j</sub>).

This mechanism for reporting means that the definition of the SCA, SVA, BCA and BVA variables changes from the current definition.

It would be expected that this would require a level of validation on receipt to ensure that where a net buy is reported (i.e. values for either or both BVA and BCA), that the net sell variables, i.e. SCA and SVA, are zero, and vice versa.

### 5.2.2 Option 2 Gross and Net Reporting

In addition to the net reporting proposed by the Transmission Company, gross BSAD values (i.e. pre-netting by the Transmission Company) could also be reported. Therefore BSAD could be reported as follows:

- Gross Sell Price Cost Adjustment ( $SCA_j$ );
- Gross Sell Price Volume Adjustment ( $SVA_j$ );
- Gross Buy Price Cost Adjustment ( $BCA_j$ );
- Gross Buy Price Volume Adjustment ( $BVA_j$ );
- Net Sell Price Cost Adjustment ( $NSCA_j$ );
- Net Sell Price Volume Adjustment ( $NSVA_j$ );
- Net Buy Price Cost Adjustment ( $NBCA_j$ );
- Net Buy Price Volume Adjustment ( $NBVA_j$ );
- Buy Price Price Adjustment ( $BPA_j$ ); and
- Sell Price Price Adjustment ( $SPA_j$ ).

This mechanism for reporting means that the current definition of the SCA, SVA, BCA and BVA variables remains the same as the current definition, and four new variables are created which report the net position.

It would be expected that this would also require a level of validation on receipt to ensure, for the net reported variables, that where a net buy is reported (i.e. values for either or both BVA and BCA), that the net sell variables, i.e. SCA and SVA, are zero, and vice versa. It is not envisaged that any further validation (for example, validation that the net reported figures are correct for the provided gross figures) will be required.

### 5.2.3 Amendments to the BSC: Section Q 6.3

The amendments detailed in 5.2.1 and 5.2.3 will require changes to Section Q 6.3 of the BSC, the exact nature of which cannot be determined until the BSAD changes and associated consultation is released by the Transmission Company. However, the amendments resulting from the implementation of either option 1 (net reporting only) or option 2 (net and gross reporting) would require a change to Section Q 6.3.2 to amend the list of BSAD variables as defined for each of the options.

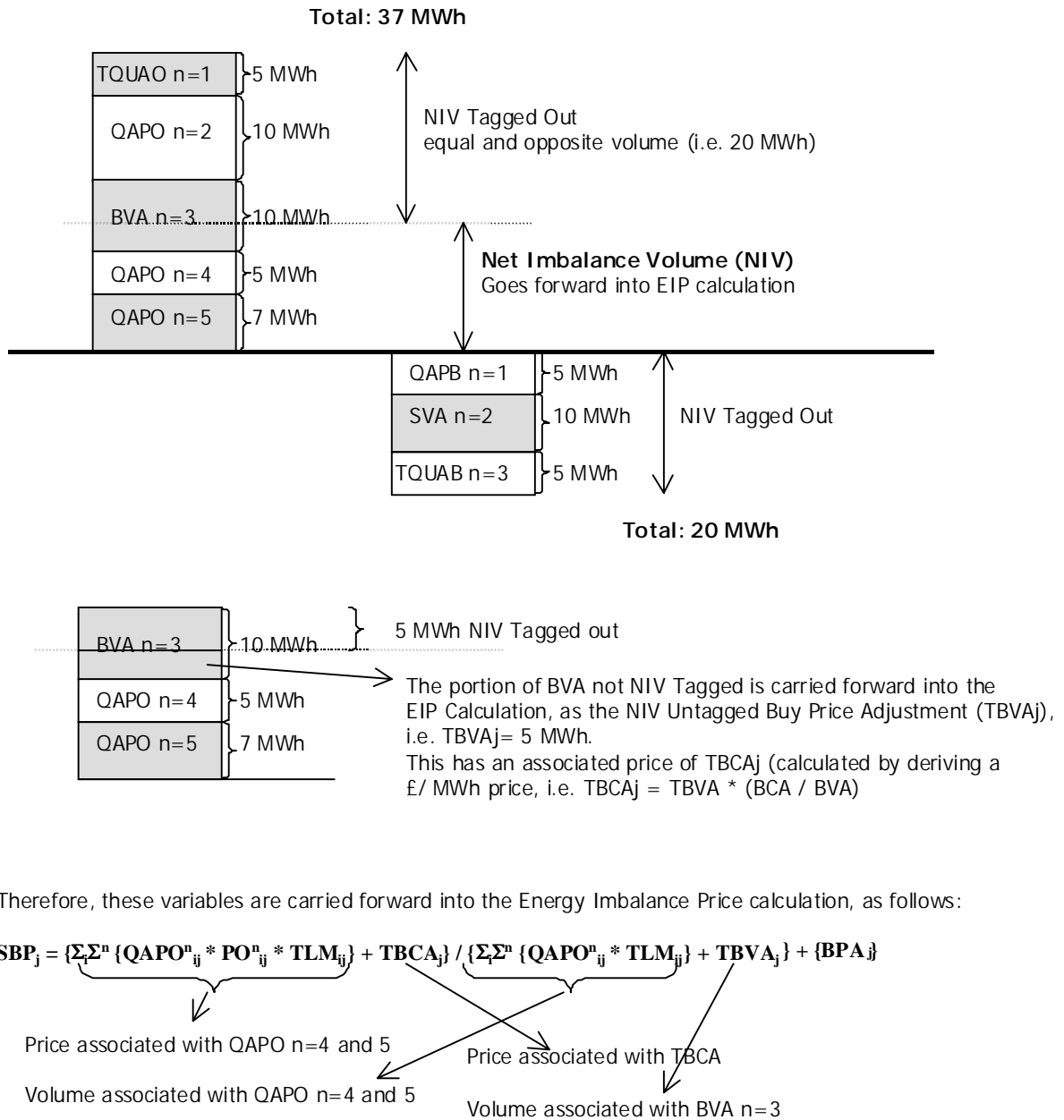
## 5.3 Amendments to the Calculation of Energy Imbalance Prices

It should be noted that this section applies to the calculation of the Indicative Energy Imbalance Price by the BMRA and to the calculation of the Energy Imbalance Price by the SAA. The mechanisms and calculations undertaken by both BSC Systems is the same, and therefore the following section applies to both BSC Systems, unless specifically stated otherwise.

### 5.3.1 Calculation of the Net Imbalance Volume

Alternative Modification P74 requires that the definition of the Energy Imbalance Prices be revised such that the Net Imbalance Volume of the overall system is determined and the single Energy

Imbalance Price calculated from those balancing actions taken to alleviate the Net Imbalance Volume, Figure 5.3.1 (1).



**Figure 5.3 (1):** Simplified Schematic of the Net Imbalance Volume Tagging and Energy Imbalance Price Calculation

The Net Imbalance Volume, for a Settlement Period, is determined as follows:

- Acceptances are stacked, Offers on one stack and Bids on another, ordered according to price (as is done currently);
- CADL tagging will be undertaken, as currently defined;
- De-minimis tagging will be undertaken on both stacks, as currently defined;
- Arbitrage will be undertaken on both stacks, as currently defined;
- The System Total Un-priced Accepted Offer Volume (TQUAO<sub>j</sub>) will be determined (as defined in the BSC Section 4.4.2B) and this will be added into the Offer stack as if it were the highest priced Offer;
- The System Total Un-priced Accepted Bid Volume (TQUAB<sub>j</sub>) will be determined (as defined in the BSC Section 4.4.2C) and this will be added into the Bid stack as if it were the lowest priced Bid;

These two steps are a change to the existing mechanism and is required in order to retain the volumes associated with Bid – Offer Acceptances deemed to have been taken for system purposes, and therefore CADL'ed out of the Bid – Offer stacks, (to enable the calculation of a 'true' Net Imbalance Volume, and to retain consistency with the approach utilised for BSAD, but remove any 'system pollution' from the CADL'ed Bid – Offer Acceptance price).

- Then the net BSAD is added into the relevant stack – sales into the Bid stack and purchases into the Offer stack, placed within the stack in order of price (by an associated £/MWh price calculated by  $(BCA_j / BVA_j)$ , or  $(SCA_j / SVA_j)$ ), i.e. as if it were a Bid – Offer Acceptance;

Once this is completed, the volume of each of the stacks should be calculated. Once the total volume of each stack is known, then comparison of the absolute volume of each of the stacks should be undertaken to determine whether the Net Imbalance Volume is zero, i.e. where the absolute volume of the total Bid stack is equal to the absolute volume of the total Offer stack. If the Net Imbalance Volume is zero, then the default rules for calculating the Energy Imbalance Price will be invoked.

If the Net Imbalance is not zero, then tagging of the stacks is undertaken to remove all of the balancing actions from the smaller stack, and remove an equal amount from the larger stack to give the Net Imbalance Volume. This is referred to as 'NIV Tagging'. Figure 5.3 (1) (above) provides a simplified indication of the tagging undertaken to determine the Net Imbalance Volume.

It should be noted that the NIV Tagging is equivalent to the Trade Tagging that would be undertaken if the Balancing Reserve Limit (BRL) were set to zero. However, it should be noted that the concept of BRL and the associated 'Trade Tagging' are not relevant under this alternative option for Modification P74, as it is replaced with the Net Imbalance Volume determination – the NIV Tagging.

Once the NIV Tagging is completed, only those balancing actions taken to alleviate the Net Imbalance Volume are retained in the larger stack, and these set the main Energy Imbalance Price. The intent is that the remaining balancing actions (including BSAD) can be deemed to be attributable to energy balancing, as system balancing actions are deemed to have been removed by the NIV Tagging. The Net Imbalance Volume should be calculated and reported.

It should also be noted that the NIV Tagging is applied to the BSAD volume (and to the Total System Un-priced Bid – Offer Volume), therefore, the BSAD volumes and the associated price, or parts of these volumes should be carried forward into the Energy Imbalance Price calculation and / or reported.

Therefore, in order to carry these forward / report them, the volume, or part of, and associated price needs to be calculated, as follows:

**For BSAD:**

New variables are required to be created to carry forward the volume and associated price of the BSAD into the Energy Imbalance Price calculation, in order to support the tagging out of all or part of the volumes during the NIV Tagging process. These will be referred to as follows (for both options of BSAD reporting):

- NIV Untagged Sell Price Cost Adjustment (TSCA<sub>j</sub>);
- NIV Untagged Sell Price Volume Adjustment (TSVA<sub>j</sub>);
- NIV Untagged Buy Price Cost Adjustment (TBCA<sub>j</sub>);
- NIV Untagged Buy Price Volume Adjustment (TBVA<sub>j</sub>);

**Calculating TSCA and TSVA:**

- Where all the volume is tagged out by the NIV Tagging, then both TSCA<sub>j</sub> and TSVA<sub>j</sub> will be set to zero;
- Where none of the volume is tagged out by the NIV Tagging, then TSCA<sub>j</sub> = SCA<sub>j</sub>, and TSVA<sub>j</sub> = SVA<sub>j</sub>;
- Where a part of the volume is tagged out by the NIV Tagging, then the volume and the cost associated with the portion of volume going forward, i.e. the untagged volume, is required:

TSVA<sub>j</sub> = the volume to be carried forward into the Energy Imbalance Price calculation, as calculated by the NIV Tagging process; and

$$TSCA_j = TSVA_j * (SCA_j / SVA_j).$$

**Calculating TBCA and TBVA:**

- Where all the volume is tagged out by the NIV Tagging, then both TBCA<sub>j</sub> and TBVA<sub>j</sub> will be set to zero;
- Where none of the volume is tagged out by the NIV Tagging, then TBCA<sub>j</sub> = BCA<sub>j</sub>, and TBVA<sub>j</sub> = BVA<sub>j</sub>;
- Where a part of the volume is tagged out by the NIV Tagging, then the volume and cost associated with the portion of volume going forward, i.e. the untagged volume, is required:

TBVA<sub>j</sub> = the volume to be carried forward into the Energy Imbalance Price calculation, as calculated by the NIV Tagging process; and

$$TBCA_j = TBVA_j * (BCA_j / BVA_j).$$

**For Total System Un-priced Bid – Offer Volume:**

New variables are required to be created to report the volume of the CADL'ed Acceptances, i.e. the Total System Un-priced Bid Volume or Total System Un-priced Offer Volume which have remained untagged after the NIV Tagging process. It should be noted that these volumes will not be carried forward into the Energy Imbalance Price calculation.

Therefore these Un-priced Acceptances are used in the calculation of the Net Imbalance Volume in order to get a 'true' Net Imbalance Volume, but are not carried into the Energy Imbalance Price

calculation, if any such volume remains untagged, to avoid 'pollution' of the Energy Imbalance Price with balancing actions deemed to have been attributable to system balancing.

Even if the untagged volume were to be associated with a zero price, any volume going forward would have an (untoward) effect on the resulting Energy Imbalance Price, as there is no appropriate associated price (as a consequence of the Bid – Offer Acceptance being deemed to be for system balancing purposes, the associated Bid- Offer price would be a system balancing price, and it could be argued that it is therefore not appropriate to include any such price in the Energy Imbalance calculation).

Therefore these values will be calculated and reported, in order that their contribution to the Net Imbalance Volume can be seen. These will be referred to as follows:

- NIV Untagged Total System Un-priced Bid Volume (NTQUAB<sub>j</sub>);
- NIV Untagged Total System Un-priced Offer Volume (NTQUAO<sub>j</sub>).

**Calculating NTQUAB:**

- Where all the volume is tagged out by the NIV Tagging, then NTQUAB<sub>j</sub> will be set to zero;
- Where none of the volume is tagged out by the NIV Tagging, then NTQUAB<sub>j</sub> = TQUAB<sub>j</sub>;
- Where a part of the volume is tagged out by the NIV Tagging, then the portion of volume going forward, i.e. the untagged volume, is as calculated by the NIV Tagging process.

**Calculating NTQUAO:**

- Where all the volume is tagged out by the NIV Tagging, then NTQUAO<sub>j</sub> will be set to zero;
- Where none of the volume is tagged out by the NIV Tagging, then NTQUAO<sub>j</sub> = TQUAO<sub>j</sub>;
- Where a part of the volume is tagged out by the NIV Tagging, then the portion of volume going forward, i.e. the untagged volume, is as calculated by the NIV Tagging process.

**5.3.2 Calculation of the Energy Imbalance Price**

Once the Net Imbalance Volume has been determined, as defined in section 5.3.1, the Energy Imbalance Price can be calculated for the Settlement Period.

If the Net Imbalance Volume comprises the Bid stack the Net Imbalance Volume is negative, then:

The System Sell Price will be determined as follows:

$$SSP_j = \{\sum_i \sum^n \{QAPB_{ij}^n * PB_{ij}^n * TLM_{ij}\} + TSCA_j\} / \{\sum_i \sum^n \{QAPB_{ij}^n * TLM_{ij}\} + TSVA_j\} + \{SPA_j\}$$

The System Buy Price will be determined as follows:

$$SBP_j = SSP_j$$

If the Net Imbalance Volume comprises the Offer stack, the Net Imbalance Volume is positive, then:

The System Buy Price will be determined as follows:

$$SBP_j = \{\sum_i \sum^n \{QAPO_{ij}^n * PO_{ij}^n * TLM_{ij}\} + TBCA_j\} / \{\sum_i \sum^n \{QAPO_{ij}^n * TLM_{ij}\} + TBVA_j\} + \{BPA_j\}$$

The System Sell Price will be determined as follows:

$$SSP_j = SBP_j$$

### 5.3.3 Default Rules for Calculation of Energy Imbalance Prices

If the Net Imbalance Volume is zero, then the System Buy Price and the System Sell Price will be equal to the maximum of:

- The Offer Price of the cheapest non Arbitrage Accepted Offer in the Settlement Period with a positive Bid – Offer Pair number; or
- The Bid Price of the most expensive non Arbitrage Accepted Bid in the Settlement Period with a negative Bid – Offer Pair number; or
- zero.

## 5.4 Amendments to the Settlement Report (SAA-I014)

The following details the potential amendments required to the relevant sub-flows of the Settlement Report (SAA-I014 / S0141, S0142 and S0143) as a consequence of the amendments to the Energy Imbalance Price calculation.

The following reporting requirements / amendments have been identified against the Interface Design Definition (IDD) document, in order to provide clarity for the BSC Central Service Provider.

### 5.4.1 Amendments to the Transmission Company subflow (S0142)

The Transmission Company sub-flow of the Settlement Report (S0142) requires amendment as follows:

#### Group SPI 'Settlement Period Information':

- Remove N0316 'Notional Reserve Limit' data item, and replace with a new data item 'Net Imbalance Volume' (MWh, can be positive or negative);
- If the net only option for BSAD reporting (option 1 in section 5.2.1) is implemented, then there is no change to the BSAD data items listed;
- If the net and gross options for BSAD reporting (option 2 in section 5.2.2) is implemented, then there is a requirement to add in the new BSAD variables, as listed;
- New variables, and therefore new data items, should be included and reported in this group, as follows:
  - NIV Untagged Buy Price Cost Adjustment (TSCA<sub>j</sub>) (£);
  - NIV Untagged Buy Price Volume Adjustment (TSVA<sub>j</sub>) (MWh);
  - NIV Untagged Sell Price Cost Adjustment (TBCA<sub>j</sub>) (£);
  - NIV Untagged Sell Price Volume Adjustment (TBVA<sub>j</sub>) (MWh);
  - NIV Untagged Total System Un-priced Bid Volume (NTQUAB<sub>j</sub>) (MWh);
  - NIV Untagged Total System Un-priced Offer Volume (NTQUAO<sub>j</sub>) (MWh);

#### Group SSD 'System Period Data':

The same amendments as those listed for the group 'Settlement Period Information' (SPI) would need to be included in the 'System Period Data' group.



#### **5.4.2 Amendments to the BSC Party subflow (S0141)**

##### **Group SSD 'System Period Data':**

The same amendments as those listed for the group 'Settlement Period Information' (SPI) under the Transmission Company sub-flow (S0142) would need to be included in the 'System Period Data' group in this subflow.

#### **5.4.3 Amendments to the ELEXON subflow (S0143)**

##### **Group SSD 'System Period Data':**

The same amendments as those listed for the group 'Settlement Period Information' (SPI) under the Transmission Company sub-flow (S0142) would need to be included in the 'System Period Data' group in this sub-flow.

### **5.5 Changes to the BSC: Section T**

The amendments detailed will require changes to Section T of the BSC. The following provides a relatively high level summary of the amendments required to Section T of the BSC. The legal drafting encompassing the amendments to the BSC is provided in ANNEX 1 of this Assessment Report.

#### **5.5.1 Section T General**

Replace 'Trade Tagging' with 'NIV Tagging' throughout Section T.

#### **5.5.2 Section T 1.5**

Clause 1.5 should be deleted / removed from the BSC in entirety, as it refers to the Balancing Reserve Level. Under this Alternative Modification P74, the determination of the Net Imbalance Volume supersedes the use of BRL and therefore makes it redundant, requiring its removal from the Code.

#### **5.5.3 Section T 4.4**

##### **5.5.3.1 T 4.4.4**

Clause 4.4.4 should be reworded to reflect that the NIV Tagging process also includes the Buy Price Volume Adjuster (BVA), Sell Price Volume Adjuster (SVA), Total System Un-priced Bid Volume (TQUAB) and Total System Un-priced Offer Volume (TQUAO), and that there may therefore be NIV Tagged portions of these volumes which, as a consequence of being NIV Tagged, are disregarded for the purposes of the Energy Imbalance Price calculation.

##### **5.5.3.2 T 4.4.4A**

A new clause is required to reflect the calculation of the Net Imbalance Volume (required to determine the Energy Imbalance Price formulation to be applied).

##### **5.5.3.3 Section T 4.4.5**

Clause 4.4.5 should be reworded as defined in section 5.3.2 of this Assessment Report to reflect the requisite amendments to the Energy Imbalance Price calculation.

#### **5.5.3.4 Section T 4.4.6**

Clause 4.4.6 should be reworded as defined in section 5.3.2 of this Assessment Report to reflect the requisite amendments to the Energy Imbalance Price calculation.

#### **5.5.3.5 Section T 4.4.10**

Clause 4.4.10 should be amended to reflect the amendment to the calculation, such that it is the NIV Tagged Volume being calculated.

#### **5.5.4 Section T ANNEX T-1**

Section T Annex T-1, Clause 3 requires amendment to reflect the NIV Tagging of the ranked accepted Bids and Offers, BSAD Volumes and Total System Un-priced Bid – Offer Volume.

It should be noted that the basis for the proposed amendments is Section T Annex T-1, V4.0, overlaid by the amendments proposed by Modification Proposal P72 'Correction of a Minor Inconsistency in the BSC Arbitrage and Trade Tagging Methodology' (Reference 7), which was submitted to the Authority on 16 May 2002, and approved by the Authority for implementation on 12 July 2002.

### **5.6 Definitions Required to Support the Alternative Option to Modification P74**

Alternative Modification P74 requires new definitions to support the implementation of the amendments to the settlement calculations.

Therefore Section X ANNEX X-2 Table X-2 'Technical Glossary' requires amendment to include the requisite new and amended definitions, as follows:

*It should be noted that the following assumes the adoption of Option 2 with regards to BSAD reporting (i.e. net and gross reporting).*

- Balancing Reserve Level (BRL<sub>j</sub>) should be removed from the definitions, as it is no longer required;
- Buy Price Cost Adjustment (BCA<sub>j</sub>), the definition should be amended to reflect that this is the gross variable;
- Buy Price Volume Adjustment (BVA<sub>j</sub>), the definition should be amended to reflect that this is the gross variable;
- Net Buy Price Cost Adjustment (NBCA<sub>j</sub>), a new variable and definition required for the net reporting of BSAD;
- Net Buy Price Volume Adjustment (NBVA<sub>j</sub>) a new variable and definition required for the net reporting of BSAD;
- Net Sell Price Cost Adjustment (NSCA<sub>j</sub>) a new variable and definition required for the net reporting of BSAD;
- Net Sell Price Volume Adjustment (NSVA<sub>j</sub>) a new variable and definition required for the net reporting of BSAD;
- NIV Tagged Bids, revised definition of Trade Tagged Bids, to reflect the NIV Tagging process;
- NIV Tagged Buy Price Volume Adjustment, new definition to reflect the NIV Tagging process;

- NIV Tagged Offers, revised definition of Trade Tagged Bids, to reflect the NIV Tagging process;
- NIV Tagged Sell Price Volume Adjustment, new definition to reflect the NIV Tagging process;
- NIV Tagged Total System Un-priced Bid Volume, new definition to reflect the NIV Tagging process;
- NIV Tagged Total System Un-priced Offer Volume, new definition to reflect the NIV Tagging process;
- NIV Untagged Buy Price Cost Adjustment (TBCA<sub>j</sub>), new definition to reflect the NIV Tagging process;
- NIV Untagged Buy Price Volume Adjustment (TBVA<sub>j</sub>), new definition to reflect the NIV Tagging process;
- NIV Untagged Sell Price Cost Adjustment (TSCA<sub>j</sub>), new definition to reflect the NIV Tagging process;
- NIV Untagged Sell Price Volume Adjustment (TSVA<sub>j</sub>), new definition to reflect the NIV Tagging process;
- NIV Untagged Total System Un-priced Bid Volume (NTQUAB<sub>j</sub>), new definition to reflect the NIV Tagging process;
- NIV Untagged Total System Un-priced Offer Volume (NTQUAO<sub>j</sub>), new definition to reflect the NIV Tagging process;
- Sell Price Cost Adjustment (SCA<sub>j</sub>), the definition should be amended to reflect that this is the gross variable;
- Sell Price Volume Adjustment (SVA<sub>j</sub>), the definition should be amended to reflect that this is the gross variable; and
- Total NIV Tagged Volume (TCQ<sub>j</sub>), revised definition of Total Trade Tagged Volume, to reflect the NIV Tagging process.

Section X ANNEX X-2 Table X-3 'Glossary of Acronyms Applying Except in Relation to Section S' requires amendment to include the requisite new and amended definitions, as listed above.

## 5.7 Potential Changes to External Systems

The impacts on BSC Parties, ELEXON and the Transmission Company are explored in more detail in sections 13, 12 and 16, respectively.

### 5.7.1 Receipt of the Amended Settlement Report

All Parties, the Transmission Company and ELEXON (as they also receive the Transmission Company variant of the Settlement Report) are impacted by the amendments to the Settlement Report, as set out in section 5.4.

However, it should be noted that Parties can determine whether they wish to continue receiving the old version of the report (i.e. without the amendments and therefore reducing the ability to accurately verify their trading charges), or the new report, with the amendments. This enables them to determine the timeframes for implementation of an amended interface independently of its development within the Central Services (unlike a 'big bang' approach). However, the impact from the implementation of amendments to the Settlement Report is still likely to be significant.

### 5.7.2 Verification of the Settlement Calculations

It is believed that the majority of BSC Parties recreate, to some degree, the Settlement Calculations in order to verify their Trading Charges. Therefore any amendment to the mechanism for calculating and applying the Energy Imbalance Prices will have an impact. The changes proposed by Alternative Modification P74 are significant and potentially have a large impact on system used in such verification.

## 5.8 Potential Changes to Industry Documentation

The following lists the documentation (other than the documentation specific to the BSC Central Service Agent and therefore 'owned' by the Central Services, such as the URs) that requires amendment as a result of the implementation of the Modification with a brief summary of the potential change. The documentation listed is believed to represent the full set of impacted documents at this time.

### 5.8.1 Code Subsidiary Documents - The Reporting Catalogue

The Reporting Catalogue (v2.0) requires amendment to reflect the amendments to the Settlement Report, as detailed in section 5.4.

#### Section 3.1 Interim Information Settlement Report

##### 3.1.1 Report sent to the Transmission Company (TC)

- (b) Settlement Period Information ...
- (h) Settlement Period Information
  - System Period Data

The amendments listed in section 5.4 should be applied to these sections of the Reporting Catalogue.

### **3.1.2 Report sent to BSCCo**

- (c) Settlement Period Information
  - System Period Data

The amendments listed in section 5.4 should be applied to this section of the Reporting Catalogue.

### **3.1.3 Reports sent to Parties**

- (b) Settlement Period Information
  - System Period Data

The amendments listed in section 5.4 should be applied to this section of the Reporting Catalogue.

## **5.8.2 Service Description for the Balancing Mechanism Reporting Agent**

The following amendments are required to support the implementation of Alternative Modification P74:

- Clause 8.1 (d), remove, as this refers to Notional Reserve Limit (equivalent to BRL), which is no longer required under Alternative Modification P74. The other bullets in this clause will require consequential renumbering.

It should be noted that the Service Description for the BMRA, Section 9.21 Calculation of Energy Imbalance Prices, refers to the calculation undertaken by the SAA. Therefore no amendments to this section of the Service Description for the BMRA are required for the implementation of Alternative Modification P74.

## **5.8.3 Service Description for the Settlement Administration Agent**

The following amendments are required to support the implementation of Alternative Modification P74:

- The list of BSAD variables at 3.1.1 may require amendment depending upon the nature of the changes to BSAD (see section 5.2.1 / 5.1.2);
- Clause 3.26.1 requires amendment to:
  - Remove the third bullet point (which refers to Notional Reserve Limit);
  - Add in a new bullet point after the fourth bullet, but before the fifth (which refers to the application of TLM), which states 'modifying the calculation to include BSAD and the volumes associated with Un-priced Bid and Offer Acceptances, prior to Net Imbalance Volume (NIV) determination;';
  - Add in a new bullet point after the above new bullet, but before the fifth (which refers to the application of TLM), which states 'modifying the calculation to determine the Net Imbalance Volume;';
  - Amend the sixth bullet point to read 'For each Settlement Period, the Net Imbalance Volume will be derived as the volume by which the total volume of Bids accepted and volume of BSAD

sales exceed the total volume of Offers accepted and volume of BSAD purchases (or vice versa);

- Amend the seventh bullet point to read 'For each Settlement Period, any accepted Bid or Offer Volumes that have been identified and tagged as being of short duration according to section 3.10 will be used in the calculation of the Net Imbalance Volume, but will not be carried forward into the calculation of the Energy Imbalance Price. This bullet point should be removed from seventh in the list and placed after the ninth bullet point (which refers to arbitrage). But before the tenth (which refers to trade tagging);
  - Amend the tenth bullet point to split it into two bullets and to read:
    - 'The remaining price ordered stacks of BSAD sales or purchases, Un-priced Bid or Offer Acceptance volumes and Offers and Bids (which may include part of any of these volumes) are then tagged – un-priced Offer Acceptance volumes first then most expensive Offers / BSAD volume, un-priced Bid Acceptance volumes first, then least expensive Bids / BSAD volume, until all of the volume associated with the smaller stack (and an equivalent volume on the larger stack) has been tagged.'
    - This resulting list of tagged BSAD sales or purchases, Un-priced Bid or Offer Acceptance volumes and Offers and Bids then represents the most expensive un-priced Offer Acceptance volumes, Offers and BSAD volume, and the least expensive un-priced Bid Acceptance volumes, Bids and BSAD volumes, and hence represents the constraint related volumes to be removed from the calculation of the Energy Imbalance Price.'
- Section 3.31 of the service description should be amended to reflect the new Energy Imbalance Price calculations, as defined in section 5.3.2 and 5.3.3 of this Assessment Report.

#### **5.8.4 NETA Data File Catalogue**

The NETA Data File Catalogue requires amendment to include the new and amended reports, as defined in Section 5.4 of this Assessment Report.

No other amendments to the NETA Data File Catalogue are identified at this time.

## 6 ASSESSMENT CRITERIA

The PIMG identified a set of issues and / or criteria that it considered to be the key issues / criteria to be considered in the Assessment of both Modification Proposal P74 and Modification Proposal P78. The PIMG considered each issue and a summary of the discussion and considerations of the PIMG on each of the issues is provided in ANNEX 9 of this Assessment Report.

The following reflect the conclusions of the PIMG with regards to the Proposed Modification P74 and its Alternative.

### 6.1.1 Cost-reflectivity

Modification Proposal P78 states that cost reflectivity in terms of P78 is that "Imbalance prices are calculated from the actions National Grid has taken to balance the system and are designed to reflect the cost that the Parties have imposed on the system by being out of balance". This is a reasonable definition of cost-reflectivity in terms of the Energy Imbalance Prices.

It could be considered that energy prices in the Balancing Mechanism should fairly reflect the cost of the Transmission Company's (System Operator) balancing actions (BSAD, PGBTs and BOAs) required to correct energy imbalance. Energy prices in the Balancing Mechanism incur a 'premium' for flexibility and therefore it is expected that the Energy Imbalance Prices SBP and SSP will be higher and lower, respectively, than the forwards / spot market prices (PXP), i.e.  $SBP > PXP$  and  $SSP < PXP$ .

While the Energy Imbalance Price calculation has the potential to include system balancing actions, the resulting Energy Imbalance Prices could be considered not to be cost-reflective of energy balancing. However, the differentiation between what constitutes energy as opposed to system balancing cannot be undertaken in all circumstances and the inclusion of system balancing actions in setting the Energy Imbalance Prices could be considered to be inevitable.

It could be considered that it is the extent to which system balancing actions move the Energy Imbalance Price which is the relevant criterion, not the extent to which system balancing actions pollute the cost.

The Proposer of Modification Proposal P78 believes the methodology proposed under P78 (and therefore Alternative Modification P74) to be relatively robust against the inclusion of system balancing actions, on the basis that the Energy Imbalance Price is calculated from those balancing actions taken to alleviate the Net Imbalance Volume (i.e. main stack less the shorter stack), and therefore this method would deem all other balancing actions to be attributable to system balancing.

Conversely, it could be argued that this mechanism for setting the Energy Imbalance Price removes too many energy balancing actions by tagging out all of the balancing actions in the reverse stack and an equal and opposite volume from the main stack.

The majority of the PIMG concluded that the calculation of the single price used by Alternative Modification P74 improves cost-reflectivity over the current baseline, by better reflecting the split between energy and system balancing actions, which results in an Energy Imbalance Price which is more reflective of the costs of energy balancing than the current Energy Imbalance Price.

However, some members of the PIMG raised concerns that the application of a single - price, although reflective of energy balancing actions taken to alleviate only the energy imbalance of the system, will accurately 'value' imbalances in the same direction of the system, has the potential to unduly over

reward imbalances in the opposite direction to the overall system imbalance, i.e. 'helpful' imbalances, as there is the potential for these to be cashed out at favourable prices.

In summary, the majority of the PIMG believe that the Alternative Modification is more cost-reflective than the current baseline for imbalances in the same direction as the system, but not cost-reflective for imbalances in the opposite direction to the system.

It should be noted that for the Proposed Modification, the cost-reflectivity is not directly improved by the Modification over the current baseline, as the same methodology is utilised as currently. However, it is believed that a second order effect, namely disregarding the shorter stack, is more cost-reflective, as the shorter stack is more likely to be polluted by system balancing actions, and therefore disregarding this stack for the purposes of setting the Energy Imbalance Price could be considered to improve cost-reflectivity.

### **6.1.2 Implications on Balancing Services Use of System (BSUoS) Charges**

The PIMG noted that any assessment of BSUoS would be outside of the vires of the Group. However, the PIMG agreed that the effects on BSUoS from the implementation of Modification Proposal P74 should be noted in order to provide a complete view of the impacts from the Modifications.

The PIMG noted that any reduction in the length of the market, a potential outcome from the implementation of both the Proposed Modification and its Alternative, could increase BSUoS charges. However, the PIMG believe, for the reasons given in the discussion document, that changes to BSUoS levels are not a relevant consideration.

### **6.1.3 Implications on Residual Cashflow Reallocation**

The PIMG noted that the reduction in the spread (to zero) of the Energy Imbalance Prices would reduce the magnitude of the Residual Cashflow Reallocation and stabilise it between Settlement Runs, and that this could be considered to be beneficial. However, the PIMG believe, for the reasons given in the discussion document, that changes to RCRC level is not a relevant consideration.

### **6.1.4 Value of Actions in the Balancing Mechanism and Targeting of the Costs of System Operator Actions**

A number of members of the PIMG believe that the application of a single -price, although reflective of energy balancing actions taken to alleviate only the energy imbalance of the system, will accurately 'value' imbalances in the same direction of the system, but has the potential to unduly over reward imbalances in the opposite direction to the overall system imbalance, i.e. 'helpful' imbalances, as there is the potential for these to be cashed out at favourable prices, as follows:

Both the Proposed and the Alternative Modification:

- Values imbalances in the same direction as the overall system imbalance (i.e. those causing it) at the main price, comprised of energy balancing actions taken to alleviate the imbalance; and
- Values imbalances in the opposite direction to the overall system imbalance (i.e. those 'helping' it) at the same price, which has the potential to offer material benefit over having traded ahead of Gate Closure or participated in the Balancing Mechanism.

However, some members of the PIMG believe that introducing a single price would improperly reward spill positions relative to submitting Bid - Offers in to the balancing market and that this could have an



adverse impact on the incentive to submit Bid - Offers and hence impact on the output from the Balancing Mechanism . However other members of the PIMG believe that this is not a significant problem.

#### **6.1.5 Implications on Participation in the Balancing Mechanism**

The PIMG believe that the level and nature of participation in the Balancing Mechanism will change, but cannot determine in which manner, as it is difficult to quantify potential changes without some experience of the implementation of the reduced Gate Closure and the Balancing Reserve Limit of 5 MWh, both of which have the potential to change participant behaviour.

#### **6.1.6 Implications on the Level of Part Loading**

The PIMG agreed that part loading plant is a commercial decision and therefore agreed that it is not a relevant consideration.

#### **6.1.7 Incentives to Deviate from Final Physical Notification (FPN)**

The PIMG agreed that the Grid Code obligations are sufficient to prevent (deliberate) deviation from FPN for the purposes of self-balancing or in response to favourable cash-out prices.

#### **6.1.8 Effect on Asymmetric Risk**

The PIMG agreed that asymmetric risk would be reduced under both the Proposed Modification and the Alternative, as a consequence of the reduction in spread and associated volatility of the Energy Imbalance Prices. However, the PIMG noted that asymmetry is an inherent consequence of risk averse strategies and therefore will not be eliminated.

#### **6.1.9 Incentives to Balance and the Implications for the Balance of the System and System Stability**

The PIMG agreed that both the Proposed and the Alternative Modification would better incentivise parties to balance their individual positions, over the current baseline. The perceived volatility in the current Energy Imbalance Prices has had the effect of driving the market considerably long, as a consequence of parties seeking to avoid exposure to the System Buy Price. Therefore by reducing the perceived volatility, parties would seek to come closer to balance, thus bringing the market closer to balance.

Since the perceived volatility in the Energy Imbalance Prices would be mitigated by both the Proposed and the Alternative Modification, it is expected that some types of parties would be more willing to take the risk of imbalance, and therefore this may cause the market to be more closely balanced, as there may be more imbalances on both sides of the market (whereas currently, the majority of imbalances are on the spill side of the market in order to go long and protect from exposure to the System Buy price).

The PIMG indicated that it was a consideration that price hunting behaviour (as explored in the discussion document) could emerge under either the Proposed or the Alternative Modification, although such behaviour would be reliant upon 'perfect' knowledge of the market, determining which way the market would end up, in terms of system length, in order to take a position. The PIMG thought it likely that the cost-reflective Energy Imbalance Pricing (explored at 6.1.1 and 6.1.4) would not make such behaviour particularly worthwhile, in terms of imbalance reward. Therefore the PIMG

had no undue concern over system stability under the implementation of the Proposed or the Alternative Modification.

#### **6.1.10 Effect on the Energy Imbalance Prices and Traded Market Prices**

The PIMG believe that the level and nature of prices in the traded market (forward and spot markets) will change, but cannot determine in which manner, as it is difficult to quantify potential changes without some experience of the implementation of the reduced Gate Closure which has the potential to change participant behaviour.

#### **6.1.11 Implications for Efficiency of the Forwards and Spot Markets**

A number of members of the PIMG believe that both the Proposed and the Alternative Modification have the potential to reduce the perceived volatility of the Energy Imbalance Prices, which consequently may have the effect of reducing notification risk, therefore encouraging more trading, closer to real time. More risk management tools may also develop as a consequence of the potential decrease in spread and volatility of the Energy Imbalance Prices, again having the effect of increasing efficiency.

However, conversely, the PIMG believe that there is the potential for liquidity and efficiency to reduce in the forwards and spot markets (for notified contracts) via development of Contracts for Difference (CfDs) which are not notified via the BSC Central Services, and which may have the effect of moving trading away from forwards and spot markets, thus reducing liquidity and efficiency in these particular markets (but potentially increasing liquidity in the other markets).

#### **6.1.12 Implications on Incentives to Forward Contract and the Impact on the Forward and Spot Markets**

As for 6.1.11.

#### **6.1.13 Impact on Credit Cover from the Implementation of Modification P74**

Consultation Response P74\_ASS\_014, in answering question 14 (regarding the development of risk managements products under Modification P74) highlighted a potential issue with Credit Cover, were use of Contracts for Differences, or decreases in forward contracting (in preference to cashing out in imbalance) to occur. The response states:

“CfDs will remove notification risk but will increase the BSC credit burden for pure suppliers and remove it entirely for generators and vertically integrated companies whose Generation Capacity (GC) is greater than Demand Capacity (DC) as there will be no need to notify Energy Contract Volumes. BSC credit cover will therefore fall entirely on pure suppliers and verticos with DC greater than GC. Pure suppliers would be disadvantaged as the costs of CfDs would be prohibitive. This will be exacerbated when live prices are used to calculate credit cover. BSC credit arrangements will therefore need to be addressed if P74 is implemented.”

The PIMG considered the issue assuming the implementation of Modification P2, which amends the Energy Indebtedness calculation in ECVAA (on which the Credit Cover requirements are based and assessed against), such that the Trading Charges for the Party are used to determine their actual indebtedness.

If Parties were to contract for difference, this would necessarily fall outside of the BSC Central Services as it would not be a contract notified to ECVAA. Consequently a larger amount would be

cash-out in imbalance for that Party and the indebtedness requirements would reflect this. Thus pure Suppliers, predominantly buying energy from the Balancing Mechanism, would be required to lodge increased levels of Credit Cover, as their Indebtedness would not be offset by their contract position.

Conversely, pure generators, predominantly selling into the Balancing Mechanism may find that their indebtedness is decreased, (depending upon the levels of Energy Imbalance Price (as currently indebtedness is based upon a Credit Assessment Price, which approximates the Energy Imbalance Price, and therefore there will be a difference if the Energy Imbalance Price is predominantly above or below the Credit Assessment Prices) and the amount of spill).

For Parties with both generation and supply, it will depend upon whether the generation outweighs supply or vice versa.

However, in terms of the affect this has on Parties, it could be argued that any decrease / increase in indebtedness is an accurate reflection of their trading charges, and therefore they are not placing other Parties at risk from any default, as their Credit Cover will reflect their position with regards to the BSC and Balancing Mechanism.

However, Suppliers will have to weigh up the benefits of contracting for difference (CfD) against the potential for having to put up increased credit cover, and this could be considered to be a commercial choice, unless the volumes available in the Forwards markets reduce consequentially and a Supplier has no other choice but to CfD, but it could be argued that this is unlikely to happen.

Generators may be in a position to withhold generation to force CFDs, as they stand to gain most. Again, it could be argued that this is unlikely to happen.

#### **6.1.14 Impact on the Risk Profiles of Different Classes of Party**

The PIMG considered the consultation responses made in respect of this issue, but noted that, as a consequence of the lack of modelling, the impact on risk profiles for different classes of party could not be gauged / assessed. The PIMG agreed that the implementation of either the Proposed or the Alternative Modification could have the effect of reducing risk profiles of parties, as a consequence of all of the points made previously in this section.

#### **6.1.15 Affect on Prompt Price Reporting and Market Transparency**

The PIMG have not seriously considered the Proposed Modification as a consequence of it not being robust against prompt price reporting requirements. The Proposed Modification uses Total System Energy Imbalance Volume (TQEI) as the definition of the overall system length, and this cannot be calculated close to real time, as it depends on inclusion of metered volumes in the calculation, and these are not available until some time after real time.

The PIMG do not believe that there is a direct effect on prompt price reporting or market transparency from the implementation of the Alternative Modification. However, the PIMG did note that this was dependent upon the supporting changes to BSAD (for the reasons noted in the discussion document), which are beyond the vires of the PIMG and this Assessment Report.

#### **6.1.16 Facilitation of Achievement of the Applicable BSC Objectives**

This is explored in full in Section 8 of this Assessment Report.

## **7 ANALYSIS REQUIRED TO SUPPORT THE ASSESSMENT OF MODIFICATION PROPOSAL P74**

As detailed in section 1.2 of this Assessment Report, an extension to the three month Assessment Procedure for Modification Proposal P74 was sought at the Panel meeting of 13 June 2002. The key driver behind the request for an extension was the requirement to undertake the analysis and modelling detailed in this section. As noted in section 1.2, the Authority issued a notice directing that the three month Assessment Procedure be adhered to.

Consequently it should be noted that very limited analysis was undertaken for Modification Proposal P74 and its Alternative. It should also be noted that no modelling was performed.

This section sets out the proposed analysis and the actual analysis undertaken.

### **7.1 Proposed Analysis and Modelling**

#### **7.1.1 Proposer's Analysis**

The Proposer of Modification Proposal P74 provided three Annexes to Modification Proposal P74 (attached in ANNEX 6).

The first annex was provided with the Modification Proposal and provides a discussion of the likely impacts and incentives and explores the issues that the Modification Proposal is attempting to address. This formed the basis for the Terms of Reference and Assessment Criteria for Modification Proposal P74, and, as such, has been subsumed / superseded by the discussions in Section 6 of this Assessment Report.

The second Annex sought to provide a level of economic modelling of the impact and incentives from the implementation of Modification Proposal P74 and P78 against the current baseline. The PIMG discussed and agreed that the modelling was representative of the current incentives and market conditions that it is attempting to model, and that it was representative of the likely incentives and implications under Modification Proposal P74 and P78.

This analysis has been used by the PIMG to inform the debate on the Assessment Criteria in section 6 of this Assessment Report, and therefore, there is no further discussion here.

The third annex explores the incentives to spill resulting from Modification P74. The PIMG have not had sufficient time to consider this Annex, and therefore it should be noted that this document reflects the opinion of the Proposer.

#### **7.1.2 Proposed Analysis**

The PIMG identified a set of analysis required to support its assessment of Modification Proposals P74 and P78. The following list represents the analysis originally required by the PIMG. This list was provided to Parties as part of the supporting documentation for the first assessment consultation (Reference 5), in order to provide Parties with an indication of the analysis being undertaken, and to seek a view from Parties as to whether there was additional analysis that could be considered for Modification Proposals P74 and P78.

1. The mechanisms proposed for Modification Proposal P74 and P78 can be applied to the current Settlement BSAD and Bid - Offer Acceptance stack in order to obtain an idea of the prices resulting from these Modifications and the consequential impact on the Settlement Calculations (for example RCRC).

For Modification Proposal P78 it may be appropriate to obtain from the Transmission Company (System Operator) an assessment of the additional volumes of BSAD required for system balancing to undertake the most appropriate analysis.

For Modification Proposal P78 it may be appropriate to define an appropriate market price to enable calculation and application in the Settlement Calculations.

It should be noted that both of these Modifications will change the behaviour of Parties, however, an idea of the consequential prices resulting from the Modification Proposals will enable an assessment of the relative cost-reflectivity of each Modification Proposal (both in terms of system vs energy balancing actions in the 'main' price and in terms of the cost-reflectivity of the reserve price) and will enable additional consideration of some of the other assessment criteria detailed.

It should be noted that some analysis was undertaken to support Modification Proposal P18A, with regards to the incorporation of system balancing actions in the Energy Imbalance Price calculation. This may be useful to consider.

2. An indication of the likely Energy Imbalance Prices, as undertaken above, will enable an indicative view of the likely buy - sell spread and the likely volatility of the buy - sell spread, which will assist in an assessment of the likely incentives to balance / take a (contractual) position before Gate Closure.
3. An indication of the likely Energy Imbalance Prices will enable an assessment of the likely incentives introduced by Modification Proposal P74 / P78. Analysis of the opportunity cost of deviation from FPN may also be undertaken, i.e. if there is a value of spill far in excess of the spot price then the likely incentive is to deviate from FPN, but if the spot price is high then the incentive to spill rather than contract ahead is reduced. Similar arguments can be applied to shortfall.
4. An indication of the likely Energy Imbalance Prices will enable further analysis to be undertaken to determine if amendments to variables used in the existing Energy Imbalance Price calculation gives materially the same effect as either Modification Proposal P74 or P78.
5. An analysis of the source of imbalances can be undertaken by analysis of the composition, shape and direction of Information Imbalances for demand and generation.
6. An historical analysis of 'player behaviour' vs Energy Imbalance Price, i.e. a comparison of net imbalance volumes against Energy Imbalance Prices could be used to give an indication of likely behaviour.
7. An historical comparison of contract volume vs FPN could be used to provide an indication of whether there is a link between contracted volume and FPNs. However, this may be difficult, as FPNs are at BM Unit level (and are not mandated for all types of BM Unit) and contract volumes are at Energy Account level.
8. A historical comparison of the Total System Energy Imbalance Volume (TQEI) to the Net Imbalance Volume (NIV) could be undertaken to determine whether they are different and why.
9. The extent of self balancing reserve held could be assessed by analysis of Maximum Export Limit (MEL) vs Final Physical Notification (FPN) pre Gate Closure, to determine what level of reserve is being taken into the Balancing Mechanism by Parties.

A comparison of MEL vs actual metered volume ( $QM_{ij}$ ) could be undertaken to determine what the level of reserve is after Transmission Company (System Operator) actions.

### **7.1.3 Proposed Modelling**

The PIMG considered the complexity of the interactions, incentives and implications from the implementation of Modification Proposal P74 on the trading arrangements and agreed that using current market operation as a basis for analysis would be flawed to some degree, as a consequence of the significant potential for the way in which parties operate to change under the implementation of Modification Proposal P74.

The PIMG considered that the analysis listed under section 7.1 would provide a reasonable indication as to the likely signals and incentives on BSC Parties, but a number of members of the PIMG considered that this would not be sufficient to gauge true incentives and implications, as the analysis would be based on current market behaviour.

Therefore, more significant modelling was considered by the PIMG as an appropriate mechanism for determining the potential behaviour resulting from the implementation of Modification Proposal P74. The PIMG considered entering into discussions with Professor Bunn (of the London School of Economics) as Professor Bunn has a simulation model of NETA which attempts to determine the potential behaviour from classes of Party under specific circumstances, and thus determines the likely behaviour, and the implications of such behaviour.

The PIMG recognised that this would potentially carry a not insignificant cost, and take a considerable amount of time and effort, in order to ensure that the assumptions and goals underlying the model were known and were considered to be representative of the underlying strategies and goals of Parties during market operation. Therefore the PIMG agreed to request a view from the Panel, at the meeting of 13 June 2002, as to whether the Panel believed there to be any benefit in seeking to commission such modelling and analysis.

*Panel view?*

## **7.2 Analysis Undertaken**

As detailed in section 1.2 of this Assessment Report, an extension to the three month Assessment Procedure for Modification Proposal P74 was sought at the Panel meeting of 13 June 2002. The key driver behind the request for an extension was the requirement to undertake the analysis and modelling detailed above. As noted in section 1.2, the Authority issued a notice directing that the three month Assessment Procedure be adhered to.

The PIMG acknowledged that the remaining time allowed for the Assessment Procedure would be (vastly) insufficient to undertake the analysis and modelling detailed at 7.1.2 and 7.1.3, therefore the PIMG looked at potential ways of limiting the analysis. The PIMG acknowledged that there was a trade off between added value of the analysis and the time constraint. Therefore, the PIMG agreed that the most beneficial analysis in the time available would be an analysis of the resultant Energy Imbalance Price from the implementation of Modification Proposal P74,

### **7.2.1 Modification Proposal P74 Analysis**

The analysis undertaken is provided in ANNEX 7.

As a consequence of the constrained timetable, a complete replication of the Settlement calculations required for implementation of the Modification and its Alternative could not be undertaken. Therefore the analysis was undertaken on the closest approximation to the calculations in order to get an indication of the resulting Energy Imbalance Prices. The key aspect was to be able to undertake

analysis based on the current mechanism for the calculation of the Energy Imbalance Prices, applied to historic data.

The following provides a description the analysis (provided in graph format) and provides the supporting rationale and assumptions:

Graphs 1 to 5 are based upon weekly averages of data since 30 September 2001 (thus only utilising historical data since Modification P18A (CADL) was implemented).

**Graph 1: Balancing Volume (without BSAD);**

**Graph 2: Balancing Volume (with BSAD);**

Both the variation on the Proposed Modification, proposed in section 4.2.1, (namely utilisation of the current mechanism for calculating the Energy Imbalance Prices, and then applying one price dependent upon the system length, derived from all the Accepted Bid – Offers and BSAD trades) and the Alternative Modification (the Energy Imbalance Price derived from the Net Imbalance Volume) require that BSAD be included in the calculation of the system length.

Graph 1 shows the system length, based on the total volume of Accepted Bid – Offers, but without BSAD volumes.

Graph 2 shows the same, but with BSAD volumes included.

It can be seen from these graphs that the system is predominantly long, and that BSAD does not materially affect the system length.

Therefore it appears to be valid to assume that representative results would be obtained without including the effects of BSAD in the modelling of:

1. The determination of the system length under Modification P74; and
2. The calculation of the Energy Imbalance Price under Alternative Modification P74.

**Graph 3: Market Length**

Graph 3 builds on the first two graphs by comparing the market length for each of:

1. Total volume of Bid – Offer Acceptances;
2. Total volume of Bid – Offer Acceptances plus BSAD; and
3. Total volume of Priced Bid – Offer Acceptances plus BSAD.

This graph is intended to verify whether there is any material difference between market length depending upon the formulation for it. This enables an assessment of:

1. Whether the formulation for the variation on the Proposed Modification is correct to use the total Bid – Offer Acceptance volume plus BSAD (or whether it should be based upon the Priced Bid – Offer Acceptances, i.e. not include the deemed system Bid – Offer Acceptances (CADL'ed) in the derivation); and
2. Whether any modelling of the Net Imbalance Volume will be inaccurate, as it enables an understanding of the affect that BSAD and CADL'ed Acceptances have on the market length.

Graph 3 indicates that really, there is not a material difference between the formulation used in determining the market length and that the calculations / analysis on the Energy Imbalance Prices will be equally as representative for each of the formulations.

#### **Graph 4: Switches in Market Length;**

This graph shows the number of times that the market has switched from long to short, or vice versa, based upon the Bid – Offer Acceptance volumes. This is intended to show, for Modification P74 and its Alternative, how often the predominant Energy Imbalance Price would change. For Modification P74, it would be the switch between applying System Sell Price or System Buy Price to imbalances in the Settlement Period, and for the Alternative Modification P74, it shows the switch between Bids setting the Energy Imbalance Price, and Offers. Therefore, it can be seen that there are approximately five switches a day (based on the rough average of thirty-five per week, divided by seven days).

#### **Graph 5: BSAD Mixture;**

This graph is intended to provide an indication of the effect of net BSAD reporting / use in the Settlement Calculations. It can be seen that there are very few Settlement Periods (historically) where there are both sales and purchases notified, although this is increasing in the period 28 April 2002 onwards (the dark area in the top right corner). This seems to indicate that, at least historically, net BSAD reporting would have little implication, as trades are being made in only one direction.

However, it is recognised that this may change, both with the reduced Gate Closure implementation, and with the implementation of this Modification, if approved, therefore making any assessment of the extent to which net BSAD reporting would make a difference to the Energy Imbalance Price calculation (and market transparency) difficult.

The next set of graphs represent the resulting Energy Imbalance Prices that would be applied under the variation on the Proposed Modification Proposal (i.e. current mechanism, with the price applied according to system length, derived from Bid – Offer Acceptances).

There are two sets, one for Balancing Reserve Limit of 180 MWh (the current value), and one for a Balancing Reserve Limit of 5MWh (in recognition of the pending reduction in BRL, scheduled for 19 July 2002). For both sets, the System Buy Price and System Sell Price was calculated using the historical data, (and plotted on the graph), and then the system length was determined from the Bid – Offer Acceptances, and the resulting Energy Imbalance Price (Single Price) derived (i.e. either the SBP or the SSP), and plotted.

#### **Graph 6: Weekly Average Prices (BRL 180);**

It can be seen that for the majority of Settlement Periods, the System Sell Price is the single price applied in the Settlement Period. However, due to the switches in market length (shown in graph 4) the System Buy Price does get applied for some Settlement Periods, having the effect of raising the average single price for the period analysed.

#### **Graph 7: Average Prices Per Period (BRL 180);**

The graph looks at all the Settlement Days in the period analysed (30 September 2001 to 26 May 2002) and provides an average price for each Settlement Period in this period. Again, the same effect, as noted for graph 6, can be seen for the within day trace.

#### **Graph 8: Example Day – 17 Dec 2001 (BRL 180);**

Here, an example day was chosen (17 December 2001 was chosen as an extreme day where there were a relatively high number of switches in the market length throughout the Settlement Day, and the System Buy Price was quite high for a number of Settlement Periods. The graph shows that the single price would have flip-flopped between the (relatively low) System Sell Price, and (relatively



high) System Buy Price, with seven Settlement Periods having a single Energy Imbalance Price of in excess of £50 (up to £250 for two Settlement Periods).

**Graph 9: Price Frequency (BRL 180);**

This graph shows the number of occurrences where the System Buy Price or the System Sell Price would have set the single price under Modification P74, against the single price that would have been set. From this graph it can be seen that the vast majority of Settlement Periods would have been cashed out at between £10/MWh and £20/MWh, set, in the main, by the System Sell Price. However, it can also be seen that the influence of the System Sell Price would also have set a small number of Settlement Periods to a negative cash-out price, and the influence of the System Buy Price would have set a number of Settlement Periods to cash-out prices in excess of £30/MWh, up to £340/MWh.

The following graphs are the same as graphs 6 to 9, but with a Balancing Reserve Level of 5 MWh. The single price from BRL 180 is included on the graphs in order to provide a comparison between the price resulting from BRL 180 and BRL 5. It can be seen that generally, as would be expected, the BRL 5 single Energy Imbalance Price is 'smoothed' out from that for BRL 180.

**Graph 10: Weekly Average Prices (BRL 5);**

It can be seen that for the majority of Settlement Periods, the System Sell Price is the single price applied in the Settlement Period. However, due to the switches in market length (shown in graph 4) the System Buy Price does get applied for some Settlement Periods, having the effect of raising the average single price for the period analysed.

**Graph 11: Average Prices Per Period (BRL 5);**

The graph looks at all the Settlement Days in the period analysed (30 September 2001 to 26 May 2002) and provides an average price for each Settlement Period in this period. Again, the same effect, as noted for graph 10, can be seen for the within day trace.

**Graph 12: Example Day – 17 Dec 2001 (BRL 5);**

Here, an example day was chosen (17 December 2001 was chosen as an extreme day where there were a relatively high number of switches in the market length throughout the Settlement Day, and the System Buy Price was quite high for a number of Settlement Periods. The graph shows that the single price would have flip-flopped between the (relatively low) System Sell Price, and (relatively high) System Buy Price, with five Settlement Periods having a single Energy Imbalance Price of in excess of £50 (up to £200 for two Settlement Periods).

**Graph 13: Price Frequency (BRL 5);**

This graph shows the number of occurrences where the System Buy Price or the System Sell Price would have set the single price under Modification P74, against the single price that would have been set. From this graph it can be seen that the vast majority of Settlement Periods would have been cashed out at between £10/MWh and £20/MWh, set, in the main, by the System Sell Price. However, it can also be seen that the influence of the System Buy Price would have set a number of Settlement Periods to cash-out prices in excess of £30/MWh, up to £340/MWh, whilst the negative prices (seen in graph 9) have been removed.

The following set of graphs are the same as those above, but for a Balancing Reserve Limit of zero. This could be considered (following the verification undertaken at graphs 1 through 5, i.e. an indication that BSAD and CADL volumes are relatively immaterial, thus indicating that use of BRL zero would provide an relatively close approximation of the NIV tagging process) to provide an Energy Imbalance Price representative of that which would be obtained via the Net Imbalance Volume calculation (section 5.3). Again, the single price resulting from the BRL 180 calculations is overlaid on these graphs in order to provide a comparison of the single price under both regimes. It should also be noted that the System Buy Price and System Sell Price represented on the graphs are that which would be calculated under the current cash-out mechanism for BRL 0.

**Graph 14: Weekly Average Prices (BRL 0);**

It can be seen that the average single price has been smoothed somewhat, but is still relatively similar to that obtained under BRL 180.

**Graph 15: Average Prices Per Period (BRL 0);**

The graph looks at all the Settlement Days in the period analysed (30 September 2001 to 26 May 2002) and provides an average price for each Settlement Period in this period. Again, the same effect, as noted for graph 14, can be seen for the within day trace.

**Graph 16: Example Day – 17 Dec 2001 (BRL 0);**

Here, an example day was chosen (17 December 2001 was chosen as an extreme day where there were a relatively high number of switches in the market length throughout the Settlement Day, and the System Buy Price was quite high for a number of Settlement Periods. The graph shows that the average single price has been smoothed somewhat, but is still relatively similar to that obtained under BRL 180, with the more extreme prices being smoothed somewhat.

**Graph 17: Price Frequency (BRL 0);**

This graph shows the number of occurrences where the main price would have been set by Offers (System Buy Price) or by Bids (the System Sell Price) under Alternative Modification P74, against the single price that would have been set. From this graph it can be seen that the vast majority of Settlement Periods would have been cashed out at between £10/MWh and £20/MWh, set, in the main, by the System Sell Price. However, it can also be seen that the influence of the System Buy Price would have set a number of Settlement Periods to cash-out prices in excess of £30/MWh, up to £340/MWh, whilst the negative prices (seen in graph 9) have been removed.

## **8 APPLICABLE BSC OBJECTIVES**

The Applicable BSC Objectives are set out in paragraph 3 of Condition C3 of the Transmission Licence, as follows:

- (a) The efficient discharge by the Transmission Company of the obligations imposed under the Transmission Licence;
- (b) The efficient, economic and co-ordinated operation by the Transmission Company of the Transmission System;
- (c) Promoting effective competition in the generation and supply of electricity, and (so far as consistent therewith) promoting such competition in the sale and purchase of electricity;
- (d) Promoting efficiency in the implementation and administration of the balancing and settlement arrangements.

The PIMG, having reached a conclusion on each of the Assessment Criteria (see section 6 and ANNEX 9), considered how the conclusions on the impacts and incentives of the Proposed and the Alternative Modification would lead to the Proposed and the Alternative Modification better facilitating achievement of each of the Applicable BSC Objectives, and the extent to which this is the case.

At a high level, the PIMG believe that both the Proposed and the Alternative Modification better facilitate achievement of the Applicable BSC Objectives for the reasons set out in the following sections.

However, on balance, the majority of the PIMG believe that the Alternative Modification is better than the Proposed in the overall facilitation of the Applicable BSC Objectives. The PIMG believe this to be the consequence of the Proposed not being robust for the purposes of prompt price reporting.

The majority of the PIMG agreed that in all other respects, the Proposed and the Alternative Modification were equal in better facilitating the Applicable BSC Objectives.

#### **8.1.1 Objective 3(a)**

The PIMG believe that both the Proposed and the Alternative Modification are neutral to this objective.

#### **8.1.2 Objective 3(b)**

The majority of the PIMG believe that both the Proposed and the Alternative Modification better facilitate achievement of the Applicable Objective pertaining to the economic and efficient operation of the Transmission Network as follows:

- A proposed outcome of both the Proposed and the Alternative Modification is that the market will come closer to overall balance, and consequently parties will not hold so much self reserve. On this basis, the system operator should be able to balance the market more efficiently and effectively; and
- Improving the cost-reflectivity of the Energy Imbalance Prices should promote this Objective by providing more accurate signals to the system operator of the costs of balancing the system.

#### **8.1.3 Objective 3(c)**

The majority of the PIMG believe that both the Proposed and the Alternative Modification better facilitate achievement of the Applicable BSC Objective pertaining to the promotion of effective competition in the sale and purchase of electricity, for the following reasons:

- Reduction in the risk of exposure to imbalance, as a consequence of the removal of the buy – sell spread, and the associated costs from implementation of a single Energy Imbalance Price will help to promote competition in generation and supply;
- The implementation of a more cost-reflective cash-out price regime could incentivise participants to balance their individual positions ahead of Gate Closure, therefore minimising the actions that the system operator has to take to correct the system energy imbalance. Thus, this assists in minimising the role of centrally administered mechanisms and facilitates the bilateral trading of energy; and
- Reduction in the risk of exposure to imbalance, whilst maintaining the incentives to balance, and therefore trade bilaterally, ahead of Gate Closure, may have the effect of encouraging participants to trade closer to real-time, with the associated effect of improving liquidity in the forwards and spot markets, thus increasing competition.

Some members of the PIMG believe that both the Proposed and the Alternative Modification have aspects which do or do not better facilitate achievement of the Applicable BSC Objective pertaining to the promotion of effective competition in the sale and purchase of electricity (depending upon perspective), for the following reason:

- The Proposed and the Alternative Modification value 'uninstructed assistance' to the system (i.e. imbalances in the opposite direction to the overall system imbalance) at the same price as imbalances in the same direction to the overall system imbalance, this may not be reflective of the costs they may be imposing on the system. However, there is no value of uninstructed assistance that can be definitively more cost-reflective and no evidence that the price for such assistance is not cost – reflective.

Conversely, some members of the PIMG believe that both the Proposed and the Alternative Modification have aspects which do not better facilitate achievement of the Applicable BSC Objective pertaining to the promotion of effective competition in the sale and purchase of electricity, for the following reasons:

- If the cost-reflectivity of the Energy Imbalance Price for imbalances in the opposite direction to the overall system imbalance is dubious, (and it may not be the case that it is) it means that the cost of energy balancing is less correctly targeted at those causing the imbalance, and therefore this reduces competition by promoting cross-subsidies; and
- A single cash-out regime may have the effect of encouraging the development of Contracts for Difference, thus removing trading from the forwards and spot markets (although it could be argued that liquidity is merely moving to a different market), and reducing the incentive to trade notified contracts bilaterally, ahead of Gate Closure, which may in turn have the effect of discouraging participants to trade closer to real-time, with the associated effect of decreasing liquidity in the forwards and spot markets, thus reducing competition, in this particular market.

However, the majority of the PIMG believe that the benefits from the achievement of this Applicable BSC Objectives (set out above) outweigh the detrimental impact on this objective.

#### 8.1.4 Objective 3(d)

The PIMG believe that both the Proposed and the Alternative Modification are neutral to this objective.

## 9 IMPACT ON BSC SYSTEMS

The Detailed Level Impact Assessment is provided in ANNEX 3 of this Assessment Report.

### 9.1 Proposed Modification

**Development and implementation of all changes to support the (variation on the) Proposed Modification:**

- Development and Implementation costs: **£80,600**
- Ongoing Operate and Maintain costs: **£940 per month**
- Development Timescales: **7 weeks**

## 9.2 Alternative Modification

Development and implementation of all changes to support the Alternative Modification:

- Development and Implementation costs: **£356,000**
- Ongoing Operate and Maintain costs: **£4,160 per month**
- Development Timescales: **15 weeks**

## 10 IMPACT ON CORE INDUSTRY DOCUMENTS AND SUPPORTING ARRANGEMENTS

### 10.1 Supplemental Agreements: Balancing Services Adjustment Data Methodology Statement

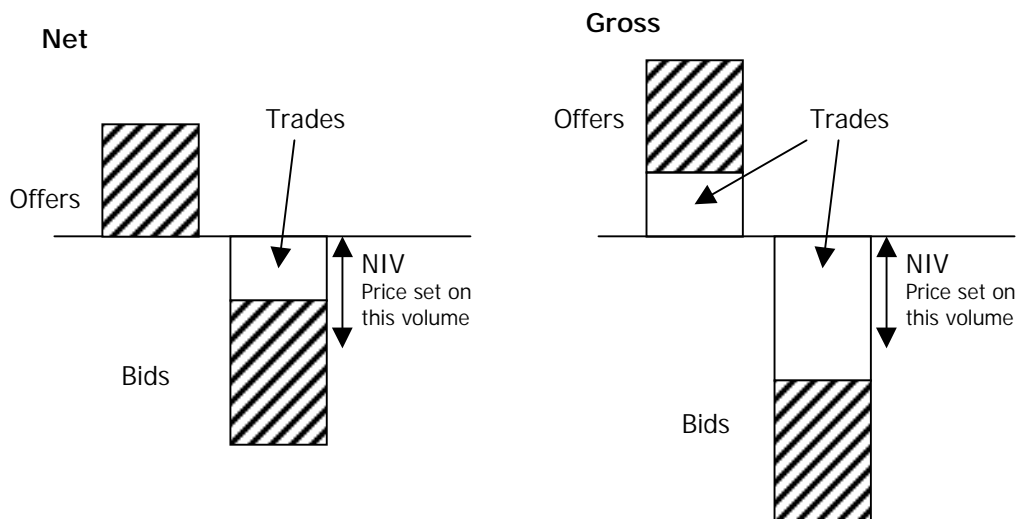
#### 10.1.1 Amendments to BSAD Reporting

In order to support the Alternative Modification P74, it is proposed that BSAD is reported on a net basis to avoid pre-Gate Closure trades being over represented in the Energy Imbalance Price calculation.

The following amendments to BSAD were proposed by the Transmission Company in support of Modification Proposal P78. However, in principle the same amendments to BSAD are required to support this Alternative Modification P74. Therefore, it is assumed that the Transmission Company will support the amendments required for this alternative option for Modification P74.

The following figure, (figure 10.3 (1)) taken from the Transmission Company document 'Modification Proposal P78: Revised SBP & SSP' (an expanded annex to Modification Proposal P78), reflects how the Transmission Company perceive any effect from gross reporting to be ameliorated by the incorporation of net BSAD.

In support of Figure 10.3 (1) the Transmission Company asserts (in the source document for Modification Proposal P78) that in the gross reporting of BSAD the Energy Imbalance Price would reflect only BSAD trades, despite them resolving only a proportion of the Net Imbalance Volume, therefore this would not be robust against the Transmission Company (System Operator) having to unwind its pre-Gate Closure trades in the Balancing Mechanism.



**Figure 10.3 (1):** Net vs Gross Reporting / Usage of BSAD in the Energy Imbalance Price calculation.

The Transmission Company proposed, in the expanded annex to Modification Proposal P78, that BSAD be reported as follows:

	<b>Net Purchase Pre-Gate Closure</b>	<b>Net Sale Pre-Gate Closure</b>
<b>Buy Price Volume Adjustment (BVA)</b>	Net purchase volume	0
<b>Sell Price Volume Adjustment (SVA)</b>	0	Net sale volume
<b>Buy Price Cost Adjustment (BCA)</b>	(BVA) * (weighted average price of energy trades)	0
<b>Sell Price Cost Adjustment (SCA)</b>	0	(SVA) * (weighted average price of energy trades)
<b>Buy Price Price Adjustment (BPA)</b>	No change from existing methodology	No change from existing methodology
<b>Sell Price Price Adjustment (SPA)</b>	No change from existing methodology	No change from existing methodology

The exact amendments to BSAD are yet to be defined / agreed by the Transmission Company, however, it is believed that there are two options, option 1, net reporting only (set out in 5.2.1) and option 2, net and gross reporting (set out in 5.2.2)

### 10.1.2 BSAD and System Balancing Trades

The current BSAD Methodology requires that only those trades, (or part of), deemed to be attributable to energy balancing are reported in BSAD.

This alternative option for Modification P74 seeks to amend the BSAD Methodology such that volumes deemed to have been traded by the Transmission Company for system balancing purposes are included in the net reported volumes (Net SVA / Net BVA). It should be noted that the intent is that

only the volumes feed into the net BSAD figures, with the associated price being disregarded, and consequently not reported / included in the net price reported. The intent of this is to ensure that the Net Imbalance Volume calculation provides a 'true' reflection of the overall system imbalance, without the cost of system balancing actions 'polluting' the associated Energy Imbalance Price.

Although this is beyond the scope of this Assessment Report, it is referenced for completeness and clarity, as it has some effect upon the mechanism for calculating the Energy Imbalance Prices, specifically with regards to the application of CADL (Continuous Acceptance Duration Limit) on Bid – Offer Acceptances.

## 10.2 Settlement Agreement for Scotland (SAS)

The Scottish Administered Wholesale Pricing Arrangements, namely the Scottish trading arrangements for dealing with imbalance volumes, use a component of the England and Wales Energy Imbalance Prices for calculating the imbalance cash-out prices. Therefore any amendment to the mechanism used in England and Wales, such as that proposed for this Modification, may require a consequential amendment to the Scottish arrangements. However, this is outside of the vires of this Modification and Assessment Report, but is noted for completeness.

## 11 IMPACT ON ELEXON

The ELEXON Detailed Level Impact Assessment is provided in ANNEX 4 of this Assessment Report.

### 11.1 Proposed Modification

It is expected that ELEXON would incur effort in the region of **50 man days** for the implementation and development of the Proposed Modification P74, require an **additional 3 weeks** at the end of the development and implementation of the BSC Central Service Agent for Participant testing and regression testing.

ELEXON is impacted by the amendment to the Settlement calculations and by the consequential changes to the Settlement Report. It is believed that the amendments to TOMAS required to support the Alternative Modification are significant and will require a material amount of time and resource to implement. It is expected that this will incur **80 man days** of effort for the amendment and subsequent testing of TOMAS.

### 11.2 Alternative Modification

It is expected that ELEXON would incur effort in the region of **105 man days** for the implementation and development of the Alternative Modification P74, require an **additional 3 weeks** at the end of the development and implementation of the BSC Central Service Agent for Participant testing and regression testing.

ELEXON is impacted by the amendment to the Settlement calculations and by the consequential changes to the Settlement Report. It is believed that the amendments to TOMAS required to support the Alternative Modification are significant and will require a material amount of time and resource to implement. It is expected that this will incur **85 man days** of effort for the amendment and subsequent testing of TOMAS.

## **12 IMPACT ON PARTIES AND PARTY AGENTS**

### **12.1.1 Amendments to the Settlement Report**

All Parties, the Transmission Company and ELEXON (as they also receive the Transmission Company variant of the Settlement Report) are impacted by the amendments to the Settlement Report, as set out in section 5.4.

However, it should be noted that Parties can determine whether they wish to continue receiving the old version of the report (i.e. without the amendments and therefore reducing the ability to accurately verify their trading charges), or the new report, with the amendments. This enables them to determine the timeframes for implementation of an amended interface independently of its development within the Central Services (unlike a 'big bang' approach). However, the impact from the implementation of amendments to the Settlement Report is still likely to be significant.

### **12.1.2 Verification of the Settlement Calculations**

It is believed that the majority of BSC Parties recreate, to some degree, the Settlement Calculations in order to verify their Trading Charges. Therefore any amendment to the mechanism for calculating and applying the Energy Imbalance Prices will have an impact. The changes proposed by Alternative Modification P74 are significant and potentially have a large impact on system used in such verification.

The responses to CPC0196 are provided in ANNEX 2(b) of this Assessment Report.

## **13 LEGAL ISSUES**

None identified at this time.

## **14 SUMMARY OF REPRESENTATIONS**

### **14.1 First Assessment Consultation Responses**

The first assessment consultation comprised a set of nineteen questions posed by the PIMG in order to obtain industry opinion on the key assessment criteria (as set out in section 6). Each question is listed, following by a high level summary of the responses.

The full set of consultation responses is provided in ANNEX 2 (a).

The PIMG considered the responses to this assessment consultation at their meeting of 19 June 2002. The PIMG believed that all but one of the issues raised by the consultation responses have already been identified and discussed, as part of the consideration of the assessment criteria (section 6), and that therefore there was only one new and substantive issue raised by the consultation responses.

Consultation Response P74\_ASS\_014, in answering question 14 (regarding the development of risk managements products under Modification P74) highlighted a potential issue with Credit Cover, were use of Contracts for Differences, or decreases in forward contracting (in preference to cashing out in imbalance) to occur. Therefore this issue has been added into the assessment criteria (6.1.13) for consideration by the PIMG



Twenty responses, on behalf of sixty-five Parties, were received in response to the Modification Proposal P74 Assessment Consultation.

The following represents a high level summary of the responses.

**Q1** In your opinion, does Modification Proposal P74 give a better separation of balancing actions (i.e. system vs energy) used in setting the Energy Imbalance Price(s), if so, how?

At a high level:

- Fifteen responses (fifty-seven Parties, responses 001, 002, 003, 006, 007, 008, 009, 011, 013, 014, 015, 016, 017, 018 and 020) do not believe that Modification Proposal P74 gives a better (direct) separation of balancing actions;
- Two responses (three Parties, responses 010 and 012) believe that Modification Proposal P74 does give a better separation of balancing actions;
- One response (three Parties, response 005) believes that the separation will be different, not necessarily better; and
- Two responses (two Parties, responses 004 and 019) made no comment.

**Positive comments:**

- P74, in removing the whole of the reverse stack will change the separation of balancing actions by removing some of these acceptances which were taken for both reasons;
- P74 does not directly address the split between system balancing and energy balancing actions, but by leading to a more balancing market, system balancing actions could be 'diluted' by energy actions, lessening their impact. The resulting price is less likely to be extreme and will better reflect the price at which the Transmission Company is a net buyer of energy; and
- By using the same price as the main price, all Parties who are out of balance face the same cost, which is more representative of the costs of balancing.

**Negative comments:**

- The mechanism for calculating the Energy Imbalance Prices is retained unchanged under Modification P74, and therefore does not improve the separation of system and energy balancing costs;
- The application of the Energy Imbalance Price associated with the larger stack to imbalances in the opposite direction means that these imbalance volumes are subject to Energy Imbalance prices that include energy balancing actions which are unrelated to the correction of these imbalances;
- Imbalance prices will still be 'polluted' by system actions in the same direction; and
- Modification P74 continues to use the BRL concept to tag trades deemed to be for system balancing purposes. The BRL mechanism is generally recognised to be flawed under the current dual cash-out arrangements. However, if P74 did lead to a more balanced market, then the Transmission Company will have to hold more reserve on both sides of the market and BRL would become more relevant. However, with a single cash-out price. This reserve holding will not be reflected in the cash-out for the smaller stack.

**Q2** In your opinion, is Modification Proposal P74 valuing actions more correctly, if so, why and if not, why not?

At a high level:

- Eleven responses (thirty-one Parties, responses 001, 005, 006, 008, 009, 011, 014, 015, 016, 017 and 018) do not believe that Modification Proposal P74 values actions more correctly;
- Six responses (eleven Parties, responses 003, 007, 010, 012, 013 and 020) believe that Modification Proposal P74 does value actions more correctly; and
- Three responses (twenty-three Parties, responses 002, 004 and 019) made no comment, or expressed no opinion in support or otherwise.

**Positive comments:**

- The single cash-out price better values those participants who are helping the system into balance via their contractual imbalance, for example, if the system is long, those who are short are better rewarded than under the current arrangements;
- It could be argued that it leads to actions being more accurately valued in as much as it reflects the actions the Transmission Company has to take to deal with the net imbalance;
- Suppliers contract positions relative to their demand forecast will not change the Transmission Company's balancing actions because the deviations of customer offtake relative to the Transmission Company demand forecast will be the same. Therefore the value of actions taken by NGC will be the same regardless of any supplier's contract position and the single price proposed by P74 reflects this; and
- In terms of top-up and spill, to some extent imbalances in the opposite direction of the system have a positive value to the system that is not recognised under the current arrangements.

**Negative comments:**

- Modification P74 values actions in the direction of the system imbalance in the same way as at present. The change is in the valuation of the reverse price, and there is no direct relationship between reverse actions and the single price.

**Q3** In your opinion, how does Modification Proposal P74 change the relative reward for notified and instructed actions and how do you believe this to impact on the Transmission Company's balancing of the system, and do you believe this is appropriate?

**Comments:**

- Notified actions, where beneficial to the balance of the system, will be relatively better rewarded than now. This should aid balancing of the system by providing better dynamic cash-out incentives to participants;
- Participants are able to set their perceived value for instructed actions via Bid – Offers, and it is possible that these may increase in value as they may only be required by the Transmission Company for refined balancing near real time;
- The reward for notified actions will be unaffected, but the relative reward of unnotified actions should increase;

- P74 decreases the value of instructed actions in relation to notified and un-notified actions by reducing the incentive on individual Parties to balance their position. Instead, parties will be incentivised to watch the overall position of the market and to take a position in the opposite direction;
- Bid – Offer Acceptances give the Transmission Company more control over balancing the market than relying on FPNs being delivered. Therefore these should be valued more highly than accidental actions to balance;
- In a BM acceptance, the price is one that is acceptable to the bidder or offerer, whereas in unnotified spill/shortfall the risk is that the price will be unfavourable and is as likely to be a loss or a gain. This is interpreted by NGC as a reward for gambling when going against the direction of the system but it is really simply paying the value of your position to the system (i.e. it is cost-reflective) bearing in mind that there will be very few parties who will take a physical position in this way intentionally rather than due to errors in their forecasts of their own metered position;
- Modification P74 changes from a system that is inherently penal to one that can also be attractive and rather than balancing may encourage participants to second-guess the system imbalance to the point that top up and spill may be more rewarded than Bid – Offer Acceptances. This would potentially make it more difficult and expensive for the Transmission Company to balance the system.
- P74 seeks to relate the value of notified actions that assist in system balancing to the value of the actions taken in the Balancing Mechanism for the same purpose. The current methodology, however, penalises these notified actions. Consequently P74 better reflects the value of the energy at any time regardless of origin. This should facilitate the actions those willing to assist in balancing the system and thus lower the costs faced by the Transmission Company. This should lead to more efficient system operation and energy balancing.
- As long as System Operator can rely on accurate FPNs it should balance the system based only on FPN data and demand forecasts. P74 weakens the commercial incentives on Parties to balance contractually through the removal of the dual price. This could lead to a greater role for the Transmission Company in system balancing.

**Q4** In your opinion, does Modification Proposal P74 more correctly target the cost of energy balancing actions to those causing the imbalance over the current baseline?

At a high level:

- Eight responses (twenty-one Parties, responses 001, 008, 009, 011, 014, 016, 017 and 018) do not believe that Modification Proposal P74 targets the costs of actions more correctly;
- Eight responses (eighteen Parties, responses 003, 006, 007, 010, 012, 013, 015 and 020) believe that Modification Proposal P74 does target the costs of actions more correctly; and
- Four responses (twenty- six Parties, responses 002, 004, 005 and 019) made no comment, expressed no support or otherwise, or made a qualified response (005).

**Positive comments:**

- Modification P74 targets the cost of energy imbalance on those causing it and gives the benefit to those who help the system. The current system punishes regardless and certainly mis-targets the costs on positions that can help the system;

- Those participants that are out of balance in the same direction as the system are targeted. Those participants that are out of balance in the opposite direction will receive, in principle, market price for their actions. This is an improvement on the present arrangements;
- A dual cash out process inevitably requires the construction of an “artificial” price for imbalances that are in the opposite direction to system balance (the so-called “reverse” direction). Therefore, because the cost of balancing the system is dependent upon the direction of the system imbalance (i.e. whether the system is long or short), Modification P74 will more correctly target the cost on those causing the imbalance;

**Negative comments:**

- Modification P74 will weaken the incentives on parties to balance their own position and instead look to the overall direction of the market in order that they can be cashed out at the best price. This will effectively reward participants for being out of balance as they are seen as ‘helping’ the system, even if the Transmission Company has to take additional actions as a consequence and cannot therefore be seen as cost reflective;
- Modification P74 targets the net cost of imbalance on those who caused it. However, Modification P74 allows those participants with a ‘helpful’ position to profit fortuitously at the expense of the other players;
- For participants out of balance in the opposite direction to the market, costs will not be properly targeted as a better price will be achieved than if trading had taken place on the exchanges. It is inappropriate that parties that are out of balance receive / pay a better price than have balanced their positions before Gate Closure;

**Other comments:**

- The current baseline is not trying to target costs to those that ‘cause’ them, rather it is an incentive to balance;
- If a more appropriate split of system and energy is achieved under this proposal, then it will deliver a more appropriate targeting of the cost of energy balancing;
- [Currently] the cost of imbalance faced by individual participants is not cost reflective or directly related to the corresponding energy balancing action;

**Q5** In your opinion, how does Modification Proposal P74 change the perceived risk of Bid - Offer submission, how would it change the level of participation seen in the Balancing Mechanism under the current baseline and how do you believe it would affect system balancing?

At a high level:

- Nine responses (fifteen Parties, responses 003, 006, 007, 012, 013, 016, 017, 018 and 020) believe that Modification Proposal P74 will increase the level of participation in the Balancing Mechanism;
- Two responses (five Parties, responses 010 and 011) believe that Modification Proposal P74 will reduce the level of participation in the Balancing Mechanism;
- Six responses (thirty-nine Parties, responses 001, 002, 005, 008, 014 and 015) believe that Modification Proposal P74 will not effect the level of participation in the Balancing Mechanism; and

- Three responses (six Parties, responses 004, 009 and 019) made no comment.

**Positive comments:**

- By reducing/eliminating unfairly penal aspects of cash-out prices, the risk-reward balance for generators should shift to the extent that the tendency would be for greater participation from a greater variety of participants, especially small and/or non-portfolio generators;
- It is possible that Modification P74 will reduce the risk of imbalance and will result in the market going less long. If it does so, then we would expect more volume to be offered into the balancing mechanism and there to be a corresponding reduction in bids;
- Assuming there are less strong incentives to over contract under Modification P74, participants may see more opportunities for offering marginal supply into the Balancing Mechanism, and they may be less inclined to hold plant in reserve to self balance;
- The impact of fewer balancing actions to back off excess generation needs to be taken into account, and this should increase options available to the Transmission Company through the Balancing Mechanism;
- Modification P74 reduces the risk of Bid - Offer submission because if an acceptance is made that cannot be delivered then the cost of that failure is not necessarily changed. Given that self-reserve is offered to the Transmission Company as Offers at present, the main expected change will be in the price at which such Offers are made which should be lower if the cost of failure is lower;

**Negative comments:**

- There is a danger that participants may be incentivised to use their flexibility to choose their imbalance rather than submit Bid – Offers;
- Difficult to quantify, but likely that Bid – Offer submission will become more volatile, as some participants may hold back plant for Balancing Mechanism participation, while some may forward contract the bulk of it. This effect will be exacerbated by the reduction in Gate Closure, as participants have longer in which to make the decision;

**Other comments:**

- It would be anticipated that the same level of participation would be seen in the Balancing Mechanism, but there should be greater symmetry between the stacks. However, it is conceivable that the Offers could be at more expensive prices than currently seen;
- No change from currently, if participants have a choice between a firm trade ahead of Gate Closure, or the possibility of having a Bid – Offer Acceptance made in the Balancing Mechanism, given the surplus capacity at present, then the firm trade would be taken; and
- It is unlikely that Modification P74 would have any impact on the Balancing Mechanism, as Modification P74 retains incentives on participants to submit Bids and Offers, via the 'paid as bid' auction.

- Q6** In your opinion, how do you believe Modification Proposal P74 would affect the level of part loading seen under the current arrangements and in what way do you believe it would be more or less efficient for participants and for the system as a whole?

At a high level:

- Six responses (fifteen Parties, responses 003, 006, 009, 012, 015 and 018) believe that Modification P74 will reduce part loading;
- One response (three Parties, response 001) believes that Modification P74 will reduce part loading, but that this is not efficient for the market;
- Five responses, (thirty-two Parties, responses 002, 008, 010, 011 and 014) believe that Modification P74 will have no effect on the level of part loading;
- Three responses (seven Parties, responses 007, 013 and 020) believe that Modification P74 has the potential to have both a beneficial and detrimental effect on part loading;
- One response (three Parties, response 005) believes that no assessment of any incremental effect of Modification P74 on the level of part loading can be made until the reduced Gate Closure has been implemented;
- One response (two Parties, response 017) does not believe that the level of part loading is a relevant consideration for Modification P74; and
- Three responses (three Parties, responses 004, 016 and 019) made no comment or assessment.

**Positive comments:**

- Whilst the level of part loading is affected by a number of factors, the commercial incentives to part load would be reduced by Modification P74 and thus in general there ought to be less. This, by definition, would reflect that it is more efficient operationally and commercially for participants;
- Modification P74 should reduce part loading as a consequence of a more balanced market requiring fewer bids to be taken, thus reducing the possible commercial upside of part loading on pulled back plant;
- Modification P74 should reduce part loading as a consequence of the reduction in the cost of generator trip reducing the requirement for self reserve, with fewer plant then operating at fuller load; and
- Balancing action taken by the Transmission Company should be on a more efficient basis in terms of the system as a whole rather than, for example, through the provision of free reserve by long positions taken into the Balancing Mechanism.

**Negative comments:**

- Potentially there would be some reduction in part loading if Modification P74 did lead to a reduction in the imbalance price as there would be less incentive for parties to hold their own reserve as insurance against a plant trip. This could be seen as being less efficient for the market as a whole although possibly not for individual participants;
- Modification P74 could increase part loading as a consequence of a more balanced market increasing the probability of an offer being taken, increasing the reward for part loading; and
- With fewer plant scheduled by participants under Modification P74, the Transmission Company may need to schedule more part loaded plant via reserve contracts.

**Other comments:**

- Modification P74 may change part loading such that you would see it in order to give flexibility for offering into the market, however, reduction in Gate Closure is a significant factor and until the effects of P12 have been implemented and has settled down, incremental effects of P74 cannot be gauged;

- Energy Imbalance Prices are not the prime driver for part loading, therefore it is unlikely that there will be a change to part loading in response to Modification P74; and
- The imbalance price should reflect the costs of imbalances on both sides of the market. Market participants are then best placed to respond to this dynamic price signal and judge whether part-loading is an appropriate commercial response.

**Q7** In your opinion, does Modification Proposal P74 change the incentives to deviate from FPN over the current baseline, if so, how and why?

- Nine responses (forty-four Parties, responses 002, 005, 006, 008, 011, 014, 015, 016 and 017) believe that Modification P74 will have no affect on the incentives to deviate from FPN;
- Five responses (eleven Parties, responses 001, 009, 010, 012 and 018) believe that Modification P74 will increase the incentives to deviate from FPN;
- Four responses, (eight Parties, responses 003, 007, 013 and 020) believe that Modification P74 will decrease the incentives to deviate from FPN, thus providing greater incentive to adhere to FPN;
- Two responses (two Parties, responses 004 and 019) have no comment;

**Positive comments:**

- Modification P74 reduces the incentive to deviate from FPN, as on balance, there is less commercial incentive provided by a single cash out price to do so; and
- Adequate arrangements are already in place through the Grid Code to ensure accurate FPN submission. The Transmission Company has not reported significant problems to date and the Authority has powers to fine where breaches take place.

**Negative comments:**

- With Modification P74, participants will know that if the Transmission Company has accepted a large volume of Offers then the cash-out price is likely to be high. Likewise if the Transmission Company has accepted a large volume of bids the cash-out price is likely to be low. This could give an incentive to deviate from submitted FPNs in order to benefit from the cash-out prices;
- If participants are incentivised to second guess the system imbalance there will also be an incentive to deviate from their FPN post Gate Closure. If adherence to the Grid Code is insufficient and deviation from FPN becomes a problem this could be countered by a non-zero Information Imbalance Charge. However, an Information Imbalance Charge would be particularly detrimental to those participants that the mod is trying to help; and
- Modification P74 reduces the incentive for generators to deviate from FPN in the case of unforced outages as SBP will be less penal, but increases the incentive for small deviations from FPN to take advantage of market conditions.

**Q8** In your opinion, (noting the forthcoming implementation of Modification P12 to reduce Gate Closure to one hour), does Modification Proposal P74 increase the incentive on parties to change Physical Notifications shortly before Gate Closure and do you believe this to be a good or bad thing?

- Ten responses (twenty-four Parties, responses 003, 006, 007, 009, 010, 012, 013, 014, 015 and 020) believe that Modification P74 will incentivise the changing of PNs close to Gate Closure, and that this is a good thing;
- Four responses (ten Parties, responses 001, 011, 017 and 018) believe that Modification P74 will incentivise the changing of PNs close to Gate Closure, and that this is a bad thing;
- Three responses, (twenty-six Parties, responses 002, 008 and 016) believe that Modification P74 will not affect the frequency of changing PNs;
- One response (three Parties, response 005) believe that any change introduced by Modification P74 cannot be assessed until the reduction in Gate Closure has been implemented and the affects of that seen; and
- Two responses (two Parties, responses 004 and 019) have no comment;

A number of responses indicated that they perceived the reduction in Gate Closure to have a material affect on the incentive to change PNs close to Gate Closure.

**Positive comments:**

- More dynamic cash-out price signals and likely greater trading activity close to Gate Closure reflects a competitive, liquid, efficient, dynamic market working effectively right up to Gate Closure;
- Opportunities for price-seeking by changing a physical position will only arise to the extent that there is extra information about system balance available. Given that IPNs will be less useful as a predictor of system balance due to these same late changes from other parties, excessive speculation on the physical position of the market will be muted;
- Modification P74 may make system management more difficult for the Transmission Company but the big change in difficulty arose from P12 (reduced Gate Closure) and the difficulty was thought to be outweighed by the improvements due to parties being able to balance more closely;
- IPNs usually represent the contracted position at a point in time, rather than an expectation of striking contracts. Therefore it would be expected that changes up to FPN will be more frequent, as parties trade closer to real time. There remains, however, the need to safeguard against the provision of mis-information to the System Operator;
- Any restriction on changes to FPN close to gate closure would discriminate against flexible plant who will be trading closer to real time and also discourage investment in systems that allow trading close to Gate Closure; and
- In so much as P74 encourages liquidity in the prompt market and thus the ability to trade it will increase the incentive on parties to change PNs to better reflect their operating intentions after Gate Closure. This will allow the Transmission Operator to balance the system based on those FPNs with greater confidence and at lower cost.

**Negative comments:**

- If Parties believe they could accurately predict the direction of the market, then they may change their PNs close to Gate Closure. This increases the uncertainty faced by the Transmission Company and could ultimately increase the cost of balancing actions;
- The introduction of P12 gives more time for parties to change PN submissions and also more time to monitor market conditions and make PN adjustments accordingly. This will not necessarily



mean that more accurate PN submissions will be made – it could provide opportunities for certain larger players to influence the market thus providing potential 'gaming opportunities'; and

- Modification P74 encourages participant behaviour to change PNs to go long or short into imbalance and take the cash-out price where it is less costly than trading out the imbalance.

**Q9** In your opinion, to what extent will Modification Proposal P74 address the issue of asymmetric risk?

- Eleven responses (twenty-seven Parties, responses 003, 005, 006, 007, 011, 012, 013, 015, 016, 017 and 020) believe that Modification P74 will reduce asymmetric risk;
- Five responses (eleven Parties, responses 001, 008, 010, 014 and 018) believe that Modification P74 will not address the issue of asymmetric risk; and
- Four responses (twenty-seven Parties, responses 002, 004, 009 and 019) have no comment or expressed no opinion.

**Positive comments:**

- Modification P74 reduces natural asymmetric risk to a more reasonable level (i.e. the market will be less lop-sided) and thus provides a natural index to enable complete risk management via hedging instruments;
- Modification P74 will give more symmetry to risk as a single price will be a logical move of power to the region of highest reward, and prevent product lock-in to avoid penalty pricing; and
- Modification P74 will raise the opportunity cost of spilling because, as generators have the opportunity to spill at a potentially higher price, they will not offer power to suppliers at a prompt price that does not reflect this opportunity. This raises the spot price and makes the risks more symmetrical. Modification P74 therefore addresses the causes of the observed (i.e. ex post) asymmetry in prices.

**Negative comments:**

- Asymmetry will be removed from the pair of cash-out prices calculated for any given period, but the underlying asymmetry will remain. Therefore Suppliers in particular will still be incentivised to take long positions and thereby avoid the risk of paying SBP if the market was short and they were short;
- Because the Offer stack has a steeper tail than the Bid stack, asymmetric risk will still exist and the market will remain long albeit the length of the system will reduce slightly. This will mean that the cash-out price will mostly 'flop' to the SSP. It would be an easy step to a perpetually long market where the cash-out price is always SSP causing spot and forward prices to fall further; and
- Modification P74 addresses any perceived asymmetry by definition. However, if the asymmetry is cost reflective (and there are good reasons why it might be given the relative costs associated with flexing up and down) then it should not be addressed.

**Q10** In your opinion, do you believe that Modification Proposal P74 will change the incentives on parties to balance their individual (contractual) trading positions before Gate Closure, if so, how and why?

- Nine responses (twenty-two Parties, responses 005, 006, 007, 010, 012, 013, 014, 015 and 016) believe that Modification P74 will increase the incentive on Parties to balance their individual positions before Gate Closure;
- Four responses (seven Parties, responses 001, 003, 017 and 018) believe that Modification P74 will decrease the incentive on Parties to balance their individual positions before Gate Closure;
- Four responses (thirty Parties, responses 002, 008, 011 and 020) believe that Modification P74 will not change the incentive on Parties to balance their individual positions before Gate Closure; and
- Three responses (six Parties, responses 004, 009 and 019) had no comment;

**Positive comments:**

- Modification P74 will raise the cost of excessive spill, which will thereby reduce, leading to a more balanced market. Similarly, as the cost of going short remains a high price (although relatively reduced), the incentive on all parties with uncertainty about their ex post physical position remains to balance;

Modification P74 appears to incentivise participants to make contracting decisions based on their view of the system balance and the cash-out price rather than to balance (or over contract) as now. However, it is believed that in reality this behaviour could lead to greater price volatility and risk and in turn encourage a strategy of balanced positions; and

- Modification P74 reduces the risk of imbalance to all parties. Therefore, the incentive for parties to balance their contractual positions prior to Gate Closure, rather than go long should be greater.

**Negative comments:**

- Modification P74 will encourage participants to follow the market rather than to balance their own positions, thus hunting type behaviour will result;
- There may be less incentive for portfolio generators or vertically integrated companies to balance their individual trading positions as they can offset exposure to energy imbalance prices through adjusting their physical positions;
- The incentives on Parties to self balance before Gate Closure will be reduced as the exposure to punitive dual cash out prices is reduced. Furthermore, parties (with for instance those with large volumes of excess and flexible generating capacity) will have the capability of manipulating the market position by changing between IPN to FPN positions. A variance in IPN to FPN may increase the volume of balancing mechanism activity, thus further incentivising owners of excess flexible generating capacity to manipulate the mechanism and realise enhanced income from balancing mechanism activity; and
- Modification P74 will change the current stable incentive to over-contract. There will be a more dynamic relationship between participant's FPNs and contract positions as they respond to cash-out price signals i.e. if the system is long participants would wish to be short and vice versa.

**Q11** In your opinion, do you believe that Modification Proposal P74 will change the incentives for parties as a whole (i.e. in total, even if not balanced on an individual basis) to balance the market as a whole before Gate Closure, if so, how and why?

- Nine responses (twenty-one Parties, responses 003, 005, 007, 010, 012, 013, 015, 016 and 020) believe that Modification P74 will increase the incentive to balance the market as a whole;

- Four responses (eight Parties, responses 001, 014, 017 and 018) believe that Modification P74 will decrease the incentive to balance the market as a whole;
- Four responses (thirty Parties, responses 002, 006, 008 and 011) believe that Modification P74 will not change the incentive to balance the market as a whole; and
- Three responses (six Parties, responses 004, 009 and 019) had no comment;

**Positive comments:**

- Modification P74 will provide better incentives for the system as whole to remain close to an equilibrium of zero imbalance, due to the dynamic incentives provided by the single cash-out price.
- Modification P74 will lead to a more balanced market because balancing decisions will be informed by expected market balance, which is not the case at present. Also, if suppliers seek to be closer to balance individually (by going less long), the market will be closer to balance; and
- Modification P74 should encourage parties to 'read' the market and if appropriate trade in the short term markets and such activity should assist in balancing the market as a whole.

**Q12** In your opinion, does Modification Proposal P74 lead Parties to anticipate the 'direction' of the market, and therefore the Energy Imbalance Price. Could this lead to volume volatility and consequential price instability in the market?

- Twelve responses (forty-five Parties, responses 001, 002, 003, 005, 006, 009, 010, 011, 012, 014, 017 and 018) believe that Modification P74 will lead Parties to anticipate the direction of the market, leading to volume and price instability;
- Six responses (eighteen Parties, responses 007, 008, 013, 015, 016 and 020) believe that Modification P74 will not lead Parties to anticipate the direction of the market, and thus will not lead to volume and price instability; and
- Two responses, (two Parties, responses 004 and 019) have no comment.

**Positive comments:**

- Parties will only price-seek under Modification P74 to the extent that they have good information about the direction of market imbalance; and
- The difference between a long and short market could be as simple as one generator set tripping. In any case if parties thought the market was going to be short they would go long to get paid SBP thereby perhaps by their own action, driving the market long, making such action of limited benefit.

**Negative comments:**

- It is possible that parties may speculatively try to anticipate the market and that it would lead to volume volatility; and
- Parties with the correct profile (i.e. Large volumes of flexible, low utilisation excess generating capacity) may also attempt to manipulate the "direction" of the market, especially at peak periods when the SBP- SSP margin is most pronounced. Plants with load restrictions due to environmental constraints could also be used to manipulate the market in this way.

**Other comments:**

- There is potential for some volume volatility and price instability initially as participants adapt their behaviour. However, much like the start of NETA itself, as participants become more knowledgeable and sophisticated it should on the whole settle down to see limited volume volatility and perhaps occasional price instability. The key aspect is that the dynamic incentive is to converge to a stable balanced equilibrium.

**Q13** What effect do you think Modification Proposal P74 will have on liquidity and prices in the forwards and spot markets, the interrelation of forwards and spot markets with Energy Imbalance Prices and also the level of Energy Imbalance Prices themselves?

- Eight responses (eighteen Parties, responses 003, 006, 007, 012, 013, 015, 016 and 020) believe that Modification P74 will increase liquidity and have a positive effect on the forwards and spot markets;
- Six responses (sixteen Parties, responses 005, 009, 011, 014, 017 and 018) believe that Modification P74 will decrease liquidity and have a detrimental effect on the forwards and spot markets;
- Two responses (five Parties, responses 008 and 010) believe that Modification P74 will have no effect on the forwards and spot markets;
- Two responses (twenty-four Parties, responses 001 and 002) do not know what effect Modification P74 will have on the forwards and spot markets; and
- Two responses, (two Parties, responses 004 and 019) have no comment.

**Positive comments:**

- Modification P74 should increase depth and liquidity in the traded markets as well as providing a clearer linkage between Energy Imbalance Prices and spot/forward market prices; and
- Modification P74 should increase much needed liquidity in the spot markets because it reduces the impact of notification risk which therefore changes the costs of buying out of imbalance. This change should mean it will have less effect on forward prices, though fewer volumes overall should be contracted over whatever timeframes.

**Negative comments:**

- There is likely to be a depressing effect on liquidity in the forwards market as players reduce contract volume through general reduction in the length of their positions and potentially take higher volume imbalance risk;
- It will be possible for CfDs to be struck around the single imbalance price and this may have the effect of reducing liquidity in the forwards/spot markets; and
- Modification P74 will have a detrimental effect on market liquidity, as it could encourage participants to hold energy back for the Balancing Mechanism if they feel current market conditions would facilitate higher levels of contribution from Balancing Mechanism activity than from short term and prompt markets. Any lack of liquidity would have an upward effect on prices, thus making the prompt market more unattractive to participants. The effect would continue to perpetuate.

**Q14** Do you believe that the implementation of Modification Proposal P74 will encourage the development of risk management products and new types of contracts, and what effect do you think this will have on competition and the efficiency of the forwards and spot markets?

- Twelve responses (thirty Parties, responses 001, 003, 005, 006, 007, 009, 012, 013, 014, 015, 016 and 020) believe that Modification P74 encourages the development of new types of contract / risk management products;
  - However, of these responses, three (nine Parties, responses 005, 009 and 014) specifically stated that they believed that such new products / contracts would have the effect of reducing liquidity in the forwards and spot markets.
- Six responses (thirty-three Parties, responses 002, 008, 010, 011, 014 and 018) believe that Modification P74 will not encourage the development of new types of contract / risk management products; and
- Two responses, (two Parties, responses 004 and 019) made no comment.

**Positive comments:**

- Modification P74 will increase competition and efficiency in the forward markets and provide protection/stimulus for smaller and more risky forms of generation and demand;
- Under a single cash-out price as in Modification P74, volume risk management can be offered across the system rather than just behind the meter. Much of this will probably be via CfDs but traders will offer other products as well because they would be able to take a physical position if the price risk was not always negative.

**Negative comments:**

- CfDs might emerge but they will reduce liquidity in the forwards and spot markets;
- CfDs will remove notification risk but will increase the BSC credit burden for pure suppliers and remove it entirely for generators and vertically integrated companies whose Generation Capacity (GC) is greater than Demand Capacity (DC) as there will be no need to notify Energy Contract Volumes. BSC credit cover will therefore fall entirely on pure suppliers and vertically integrated companies with DC greater than GC. Pure suppliers would be disadvantaged as the costs of CfDs would be prohibitive. This will be exacerbated when live prices are used to calculate credit cover. BSC credit arrangements will therefore need to be addressed if P74 is implemented;
- Modification P74 would actively discourage the development of risk management products and new types of contracts for third parties. It allows portfolio players and vertically integrated players to strengthen their influence over short term power markets, and increases their income from such activity at the overall expense of the system and eventually the customer. They have more perfect information and greater price transparency due to their internal position;
- Such portfolio players currently are able to enjoy the benefits of internal risk management products. Reducing the perceived margins in providing risk management services such as Consolidation will discourage market entry by Independent Service Providers; and
- Influence of short term power prices allows a party a trading advantage in the forward markets. An imperfect short term market distorts the forward market as parties seek to maximise their income and mitigate risk. Modification P74 makes the short term market more imperfect and makes price transparency more opaque.

**Q15** In your opinion what would be the impact on the risk profile of different categories of party from the implementation of Modification Proposal P74?

**The following lists the points made in respect of this question:**

- Risk profiles should be reduced across the board, particularly for the inherently more risky and small participants, such as unpredictable generators and small suppliers, but also to a lesser degree for large suppliers and vertically integrated players;
- Modification P74 focuses on unpredictable generators and small suppliers who are most disadvantaged by the current system particularly as it should encourage consolidation. It is not believed that the risk is greatly reduced for these players. It seems that Modification P74 may have greatest benefit to participants who are flexible;
- All classes of party will continue to go long to protect from imbalance charges;
- All classes of party will benefit from the reduction in risk;
- The risk profile of vertically integrated companies will reduce as they will be able to net off production and consumption accounts at the same cash-out price and will only have to balance one book. In particular, these companies will have an unfair advantage over other players through the use of load management options allowing self balancing post gate closure, an option that will not be open to other types of player without breaching the Grid Code;
- Modification P74 would artificially reduce the risk of certain parties (e.g. small suppliers, unpredictable generators) at the expense of other parties through the application of imbalance prices that do not reflect costs;
- Modification P74 could reduce the costs of all participants to meet their risk profile (i.e. risk profiles themselves will not change) and it should reduce the price risk to generators of trips and reduce cost to suppliers of meeting their particular risk profile;
- Small suppliers will benefit from Modification P74 because the artificial penalty applied to small portfolios (with a statistically greater imbalance risk) is removed;
- Larger suppliers benefit like smaller ones in not needing to over-contract and they can buy better risk management across the system. However, they benefit less than small suppliers because their artificial relative advantage in portfolio size is removed;
- Licence Exempt Generators (LEGs) are significant winners from Modification P74. This is because the value of spill – the price that many embedded generators have been offered in contracts – has increased to incorporate a possibility of earning from SBP. Suppliers will therefore be able to offer contracts to embedded generators at a price reflecting this. In addition, in a more balanced market, the Transmission Company will provide more of the reserve (rather than suppliers doing so via over-contracting) and so embedded benefits will improve. For LEGs in CVA, the cost of consolidation will be removed by P74.
- Unpredictable generators will benefit by being able to contract to their average expected output rather than to the minimum because shortfalls will not always be punished at SBP. They will therefore spill less;
- Non-portfolio generators face lower trip risk and so will earn at a higher rate. To the extent that the average spot price increases, they may be able to strike better contracts, but if the forward market does not move then this will not be the case;

- Portfolio generators will lose market power and so will be slightly worse off, but to the extent that their effective trip insurance cost will be lower, they will benefit;
- Vertically integrated parties will similarly lose market power but will still operate in a more efficient, lower cost, market;
- Non-physical traders will have the opportunity to take on a degree of physical risk under P74 (but not under P78) and so will benefit from being able to offer a fuller range of risk management products;
- The Transmission Company will not be directly financially affected by either of these proposals because it passes through costs anyway. Longer term it stands to lose out to the extent that the growth of embedded generation will no longer be stunted by the current penal pricing system;
- The Consultation document fails to mention the following relevant parties:
  - Flexible plant will benefit from a balanced market where NGC contracts for rapid reserve when needed rather than only varying the extent to which excessive plant is pulled back;
  - Consolidators will lose out under P74 – they will be redundant;
  - Exchanges will benefit from improved liquidity under P74 due to reduced notification risk;
  - Consumers will benefit from a more efficient market whereby suppliers are not over-contracting and generators are not self-reserving. The spot market may move up but, to the extent that forward prices are driven by Europe through arbitrage across both the gas and electricity interconnectors, it is far from certain that consumer contract prices will move to any great degree. Longer term, consumers can only benefit from a rational market in which the risk of a “California” scenario – where uneconomic generating plant is excessively mothballed because market returns are so depressed so that the market is rapidly tipped into shortage – is reduced.

**Q16** Do you believe that Modification Proposal P74 better facilitates achievement of the Applicable BSC Objectives, if so, which one(s) and why?

- Nine responses (nineteen Parties, responses 003, 006, 007, 012, 013, 015, 016, 019 and 020) believe that Modification P74 better facilitates the Applicable BSC Objectives;
- Eight responses (thirty-nine Parties, responses 002, 008, 009, 010, 011, 014, 017 and 018) believe that Modification P74 does not better facilitate the Applicable BSC Objectives; and
- One response, (one Party, response 001) stated that it was too early to tell, one response (one Party, response 005) stated that no assessment could be made until reduced Gate Closure has been implemented and the effects of this noted, and one response (one Party, response 004) made no comment.

**Reasons given for Modification P74 better facilitating the Applicable BSC Objectives:**

- Modification P74 is more cost-reflective in that it reduces penal charges arising from balancing energy. It also targets costs on those causing the imbalance rather than penalising parties who are helping the system. It therefore facilitates competition;

- Modification P74 will lead to a more balanced system, reducing the Transmission Company's need to take balancing actions, which is more economic and efficient;
- Improved removal of 'polluting' system balancing actions from the energy imbalance price tends towards a more cost reflective imbalance price. A less penal reverse price is also more cost reflective. This improved cost reflectivity better meets the Applicable BSC Objective to further promote effective competition in the generation and supply, and sale and purchase of electricity. However, increasing consolidation in the market place will serve to decrease effective competition;
- The incentive for parties to balance, both individually and collectively, prior to Gate Closure better meets the Applicable BSC Objective to ensure the efficient discharge by the Transmission Company of the obligations imposed under the Transmission Licence;

**Reasons for not better facilitating the Applicable BSC Objectives:**

- Prices in the opposite direction to the market will not be cost reflective;
- Modification P74 is likely to provide windfall gains which do not reflect the cost of imbalance energy and leave this cost with the same participants who are paying for the net imbalance;
- Modification P74 will fail to promote effective competition in the generation and supply of electricity as it could potentially reduce market liquidity and encourage some participants to withhold positions.
- Modification P74 could hamper the role of the Transmission Company in its obligations imposed under the Transmission Licence as it could have a detrimental effect on participants within the Balancing Mechanism and prices sought by participants for Balancing Mechanism activity;
- Since Modification P74 will perpetuate the long market, it will not improve the efficient economic and co-ordinated operation by the Transmission Company of the Transmission System
- Modification P74 will not improve incentives to balance rather than spill as by spilling there is the possibility of receiving SBP. Modification P74 does not therefore better facilitate the efficient discharge by the Transmission Company of the obligations under the Transmission Licence; and
- Since pure Suppliers will incur costs in the use of CfDs which will not apply to other types of participant, Modification P74 will not promote competition in the sale and purchase of electricity.

**Q17** Do you believe that an Alternative Modification Proposal better facilitates achievement of the Applicable BSC Objectives than Modification Proposal P74, if so, what is it?

The balancing actions utilised to alleviate the Net Imbalance Volume (as defined for Modification Proposal P78) setting the single price.

**Q18** Are there any other issues not identified in the supporting document which you believe should be considered during the assessment of Modification Proposal P74.

- P12 implementation should be considered, as it materially effects market and participant behaviour, and Modification P74 should not be implemented until there has been some experience of the market under reduced Gate Closure (responses 005 and 011);
- Wider government objectives such as CHP strategy (response 006);



- The Consultation Document fails to address the specific problems faced by embedded generation in the current mechanism. The only way for such players to participate in the current process is to:
  - Either go into CVA and be consolidated, which is an administratively expensive process relative to the scale of generation and is not currently offering any attractive prices anyway; or
  - To sell to suppliers in SVA and be offered the derisory spill price.

The reason that suppliers are offering embedded generation such low prices is not related to inherent variability of output (which Ofgem has already demonstrated is generally not the case) but because the product that an embedded generator must offer to suppliers is different to the one offered by CVA generation. This is because CVA generation delivers firm energy through contracts with the generator able to manage its own meter risk, whereas an embedded generator must sell that meter risk to the supplier and has no opportunity to manage it.

Because the current mechanism is not rewarding upward flexibility properly (because the spill market means that excessive downward flexibility is being taken), consumers are being forced to overpay for self-reserve rather than for the product that the Transmission Company would otherwise contract for. This depresses BSUoS, which has an adverse impact on embedded benefits (responses 007 and 013).

- The purity of the Energy Imbalance Prices should be considered further, as under Modification P74, the existing mechanism is utilised to calculate the Energy Imbalance Prices, thus retaining a measure of 'pollution' from system balancing actions (response 012);
- The assessment also needs to consider the incentives on the Transmission Company. Whilst these issues might be considered to be outside of the vires of the PIMG, in its determination on Modification P3, Ofgem considered that 'NGC would have faced distorted incentives relating to its balancing services purchasing strategy of variations in energy imbalance prices were related to whether it had contracted forward, rather than to fundamental market conditions'. The PIMG does therefore need to consider what impact Modification P74 will have on Transmission Company's incentive scheme since the Transmission Company benefits in its incentive scheme from a long market (response 014);
- Portfolio Players and vertically integrated players currently have the ability to employ internal Risk Management Strategies both within Gate Closure and prior to Gate Closure. Modification P74 moves this advantage over independent players to the day ahead market and to earnings that may be realised from the Balancing Mechanism. In a perfect market independent service providers would be able to deliver services (and benefits) to small and independent players comparable with those naturally realised by portfolio and vertically integrated players. Modification P74 discourages the emergence of such service providers (response 018).

**Q19** Do you believe that further analysis / modelling is required over that currently identified by the PIMG (in the supporting document), and if so, what specific form should this take?

- The impact of Modification P74 should be fully assessed, specifically the likely incentives to balance and contract (responses 001 and 008). Any modelling should take into consideration the likely effects of Modification P12 (response 005);

- Tangible analysis in the form of scenarios and simulations should be undertaken, as this is preferable to pure conjecture (response 003);
- Robust comparison of Modifications P74 and P78 should be undertaken to enable an evaluation of which better facilitates achievement of the Applicable BSC Objectives;
- Modelling and analysis should be thorough and consider the effect of the Modification on intermittent generators and CHP participation (response 006); and
- Any analysis provided and reported should be heavily caveated and should list the assumptions made when modelling. Without a detailed explanation of the limitations it is likely that Parties will choose the Modification which meets their cash-out expectations / requirements, without exploration of the implications of the change (response 014).

## 14.2 Second Assessment Consultation Responses

*Pending Receipt / consultation*

## 15 SUMMARY OF TRANSMISSION COMPANY ANALYSIS

### 15.1 Response to First Request for Analysis

The Transmission Company was provided with a request for analysis in parallel with the first Assessment consultation undertaken. The request for analysis comprises the set of consultation questions posed to BSC Parties, as well as three additional questions specifically aimed at the Transmission Company.

The following presents the Transmission Company response in full, with the Annex provided by the Transmission Company (in response to question 21, and referred to throughout the responses) attached in ANNEX 5.

**Q1** In your opinion, does Modification Proposal P74 give a better separation of balancing actions (i.e. system vs energy) used in setting the Energy Imbalance Price(s), if so, how?

Yes. P74 will eliminate the use of the reverse stack in setting the imbalance prices, which is currently mainly made up of system balancing actions. This will therefore improve the separation between system and energy actions. However, the main stack price relies upon the existing methodology and hence the separation of system and energy will depend upon the level of BRL.

**Q2** In your opinion will Modification Proposal P74 / P78 have an impact on system security?

Potentially, yes. In P74 there is a possible impact on system security<sup>2</sup>, as the incentives may encourage parties to be out of balance. The incentive is to go short in a long market and vice versa. Parties could achieve this by either not following FPNs or changing PNs close to gate closure. Either of these actions would make it harder for the System Operator to secure the system. Under one-hour gate closure, more actions will be needed pre-gate closure, increasing the risk associated with having an incentive to change PNs at short notice. (see Q 4 & 11)

**Q3** In your opinion, what would be the effect on the level of BSUoS charges from the implementation of Modification Proposal P74 / P78, considered in the context of the overall costs of balancing.

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<sup>2</sup> The Transmission Company representative on the PIMG clarified (at the meeting of 12 June 2002) that in this context, system security means securing the system, by taking appropriate balancing actions.

Currently the market is generally long which leads to more bids than offers being accepted and hence low BSUoS charges. If implemented, P74 may lead to a more balanced market and this in turn would lead to higher BSUoS charges as the System Operator actions were more equally divided between bids and offers. However, this should be more than counteracted by lower contract costs, as suppliers no longer over-contract. (N.B. Total Imbalance Charges + Beer Fund = 0) However, P74 employs an incentive with a single step change to encourage participants to balance the market as a whole. It is difficult to predict how well such an arrangement will balance the market. (See separate analysis in annex)

**Q4** In your opinion, is Modification Proposal P74 valuing actions more correctly, if so, why and if not, why not?

No. Applying P74 to a short market will allow those who spill to receive SBP that by definition is the average price of those offers instructed by the System Operator. Therefore half of those who had offers accepted would have been better off financially to unilaterally spill. Furthermore, it is perverse to place the same value on a unilateral action as on one that has been instructed by the System Operator. Similar arguments can be applied in a long market.

**Q5** In your opinion, how does Modification Proposal P74 change the relative reward for notified and instructed actions and how do you believe this to impact on your balancing of the system, and do you believe this is appropriate?

As stated in the answer to Q4, P74 will reward those parties with errors in the reverse direction to market length. Unlike Bid/Offer acceptances, these unilateral actions may not help with meeting the minute by minute demand profile and, if un-notified, will introduce uncertainty. We believe that it is both inappropriate and perverse to reward unilateral actions on a similar basis to instructed actions.

**Q6** In your opinion does such a change correctly reflect your perceived value and if not, what costs are not included and how significant do you deem them to be? Could these be calculated and / or estimated in advance?

No. We believe that those delivering instructed actions deserve a greater reward than those acting unilaterally do. Those making offers also need to be mindful of the cost of making the offer available when it is not accepted. Plant running part loaded, saves its short run marginal cost (say £10/MWh for coal) but will also lose the revenue from the energy that could have been sold at the relevant market price (say £16/MWh). The difference (in this example £6/MWh) can be viewed as the cost of making the offer available. Participants then need to factor this cost, and the probability of the offer being accepted, into the price. Those participants electing to spill on a short system will receive SBP, including the allowance for making an offer available, but will not incur the associated costs.

**Q7** In your opinion, does Modification Proposal P74 more correctly target the cost of energy balancing actions to those causing the imbalance over the current baseline?

No, we believe that P74 fails to distinguish between those delivering bids/offers to instruction and those with an imbalance that happens to reduce the market imbalance. Those in the latter group are therefore rewarded for their imbalance inappropriately. (See answers to Q5 & Q6).

**Q8** In your opinion, how does Modification Proposal P74 change the perceived risk of Bid - Offer submission, how would it change the level of participation seen in the Balancing Mechanism under the current baseline and how do you believe it would affect system balancing?

We do not anticipate any change to the perceived risk of bid/offer submission or BM participation. However, we note that P74 will encourage notified imbalances at gate closure. This, combined with the likelihood of short notice changes to IPNs could make the BM less stable/predictable.

**Q9** In your opinion, how do you believe Modification Proposal P74 would affect the level of part loading seen under the current arrangements and in what way do you believe it would be more or less efficient for participants and for the system as a whole?

Part loading can be split into 'voluntary' and 'instructed' by the System Operator. There are two reasons for voluntary part loading: to provide flexibility in future FPN submissions to cover unexpected events and the possibility of having an offer accepted. If the motivation is to provide flexibility in future FPNs and hence avoid imbalance charges, the incentive will weaken as the likely costs of imbalance are reduced. The incentive to have an offer accepted could also be reduced if participants chose to spill rather than part load and submit an offer. It follows that P74 is likely to reduce voluntary part loading. The volume of instructed part loading would depend upon the market length and the need to provide frequency response/regulating reserve. With a more balanced market less instructed part loading would be expected, provided the total level of part loading was sufficient for frequency response/regulating reserve.

**Q10** In your opinion, does Modification Proposal P74 change the incentives to deviate from FPN over the current baseline, if so, how and why?

Yes. Under the current arrangements a party is trying to meet their contract position and only has an incentive to move away from FPNs in order to cover for unexpected changes post gate closure. Under P74, a party will generally have an incentive to generate more against a short market and less against a long market. This is an increase in the incentive to move away from their FPNs.

**Q11** In your opinion, (noting the forthcoming implementation of Modification P12 to reduce Gate Closure to one hour), does Modification Proposal P74 increase the incentive on parties to change Physical Notifications shortly before Gate Closure and do you believe this to be a good or bad thing?

Yes. P74 introduces an incentive to guess the market direction and to take a position in the opposite direction (see answer to Q2). Participants will wish to make their forecast of market length as close to real time as possible, implying significant changes to PNs in the run up to gate closure. This effect will be particularly undesirable with one hour gate closure as National Grid could be entering into Pre-Gate Closure BMU Specific Trades at the same time as PNs are undergoing significant change with the risk that we commit to unnecessary balancing actions.

**Q12** In your opinion, to what extent will Modification Proposal P74 address the issue of asymmetric risk?

Refer to analysis in separate Annex

**Q13** In your opinion, do you believe that Modification Proposal P74 will change the incentives on parties to balance their individual (contractual) trading positions before Gate Closure, if so, how and why?

P74 relies upon second order effects to incentivise participants to balance their individual positions. The effectiveness of these effects has yet to be determined. (see analysis in separate Annex)

**Q14** In your opinion, do you believe that Modification Proposal P74 will change the incentives for parties as a whole (i.e. in total, even if not balanced on an individual basis) to balance the market as a whole before Gate Closure, if so, how and why?

Yes. P74 encourages participants to balance the market as a whole but it requires each individual participant to guess the net position of the other participants and adopt the reverse position. It is not clear that participants will have the information required for their behaviour, in response to these incentives, to be helpful in balancing the system. (see analysis in separate Annex)

**Q15** In your opinion, does Modification Proposal P74 lead Parties to anticipate the 'direction' of the market, and therefore the Energy Imbalance Price. Could this lead to volume volatility and consequential price instability in the market?

Yes, P74 incentivises participants to anticipate the direction of the market (see analysis in separate Annex). Furthermore this could lead to volatility in volume if participants collectively fail to predict the market length (e.g. inaccurate weather forecast). Imbalance prices under P74 are designed to flip from high to low as the market moves from short to long.

**Q16** What, in your opinion, is the effect on the Transmission Company in terms of balancing actions, of a balanced market?

In a truly balanced market the System Operator would still have to instruct system balancing actions and, depending upon the level of part-loaded plant available, may need to create regulating reserve/pull back for frequency response. However, generally less action by the System Operator would be required.

**Q17** What effect do you think Modification Proposal P74 will have on liquidity and prices in the forwards and spot markets, the interrelation of forwards and spot markets with Energy Imbalance Prices and also the level of Energy Imbalance Prices themselves?

If the market becomes less long under P74 then the forward price may reduce slightly as the contract volume falls. Also, if the market is more balanced then SBP will reduce and SSP will increase, as they will only be set when they are the 'main' price: the problem of system actions dominating the reverse stack price will be removed. (However the extent that system actions affects the main price will still depend upon the value of BRL). This softening of imbalance prices may encourage parties to trade closer to gate closure, as the fear of a notification failure leading to imbalance exposure will be reduced.

**Q18** Do you believe that the implementation of Modification Proposal P74 will encourage the development of risk management products and new types of contracts, and what effect do you think this will have on competition and the efficiency of the forwards and spot markets?

The single cash out price under P74 would negate the business case for using (or providing) a consolidation service. It will also open the way for parties to use "contracts for differences" as happened under the Pool.

**Q19** Do you believe that Modification Proposal P74 better facilitates achievement of the Applicable BSC Objectives, if so, which one(s) and why?

No to 3(b) 'The efficient, economic and co-ordinated operation by the Transmission Company of the Transmission System' see answer to Q2 & Q4.

Yes to 3(c) 'Promoting effective competition in the generation and supply of electricity, and (so far as is consistent therewith) promoting such competition in the sale and purchase of electricity', as P74 would deliver better separation of energy and system balancing actions subject to the qualification in answer to Q1.

**Q20** Do you believe that an Alternative Modification Proposal better facilitates achievement of the Applicable BSC Objectives than Modification Proposal P74, if so, what is it?

No

**Q21** Are there any other issues not identified in the supporting document which you believe should be considered during the assessment of Modification Proposal P74.

See analysis in separate Annex

**Q22** Do you believe that further analysis / modelling is required over that currently identified by the PIMG (in the supporting document), and if so, what specific form should this take?

The analysis in the attached annex suggests that P74 relies on second order effects to make a participant balance its own position. Until this mechanism is understood, the likely impact on the incentive to forward contract cannot be assessed.

## ANNEX 1 – PROPOSED TEXT TO MODIFY THE BSC

*It should be noted that this proposed text is in draft format for this Assessment Report, and is provided as an indication of the potential amendments required. This text will be finalised prior to being issued as a final draft in the Modification Report.*

### a Alternative Modification

#### General

Replace 'Trade Tagging' with 'NIV Tagging' throughout Section T.

#### Section T 1.5

Clause 1.5 should be deleted / removed from the BSC in entirety, as it refers to the Balancing Reserve Level. Under this Alternative Modification P74, the determination of the Net Imbalance Volume supersedes the use of BRL and therefore makes it redundant, requiring its removal from the Code.

#### Section T 4.4.4

Clause 4.4.4 should be reworded as follows:

4.4.4 In respect of each Settlement Period, some of the accepted Bids and accepted Offers may be defined as ~~Trade~~ NIV Tagged Bids and ~~Trade~~-NIV Tagged Offers respectively in accordance with the provisions in Annex T-1, and all such ~~Trade~~ NIV Tagged Bids and ~~Trade~~ NIV Tagged Offers shall be disregarded for the purposes of the calculation of energy imbalance prices.

In respect of each Settlement Period, some of the BVA and SVA may be defined as NIV Tagged BVA and SVA respectively in accordance with the provisions in Annex T-1, and all such NIV Tagged BVA and SVA shall be disregarded for the purposes of the calculation of energy imbalance prices.

In respect of each Settlement Period, some of the Total System Un-priced Bid Volume and Total System Un-priced Offer Volume may be defined as NIV Tagged Total System Un-priced Bid Volume and NIV Tagged Total System Un-priced Offer Volume respectively in accordance with the provisions in Annex T-1, and all such NIV Tagged Total System Un-priced Bid Volume and NIV Tagged Total System Un-priced Offer Volume shall be disregarded for the purposes of the calculation of energy imbalance prices.

#### Section T 4.4.4A

A new clause is required to reflect the calculation of the Net Imbalance Volume (required to determine the Energy Imbalance Price formulation to be applied), as follows:

4.4.4A In respect of each Settlement Period, the Net Imbalance Volume is determined as follows:

$$NIV_j = \{TQPAO_j + BVA_j + TQUAO_j\} - \{(-TQPAB_j) + (-SVA_j) + (-TQUAB_j)\}$$

#### Section T 4.4.5

Clause 4.4.5 could be reworded as follows:

4.4.5 In respect of each Settlement Period:

- (a) if the Net Imbalance Volume is not equal to zero, and is positive, then the System Buy Price will be determined as follows:

$$SBP_j = \frac{\{\sum_i \sum^n \{QAPO_{ij}^n * PO_{ij}^n * TLM_{ij}\} + TBCA_j\}}{\{\sum_i \sum^n \{QAPO_{ij}^n * TLM_{ij}\} + TBVA_j\}} + \{BPA_j\}$$

Where  $\sum_i$  represents the sum over all BM Units and  $\sum^n$  represents the sum over those accepted Offers that are not De Minimis Accepted Offers and not Arbitrage Accepted Offers and not NIV Tagged Offers.

- (b) if the Net Imbalance Volume is negative, then the System Buy Price will be equal to the SSP<sub>j</sub>
- (c) if the Net Imbalance Volume is zero, then the System Buy Price will be determined as the maximum of:
- (i) The Offer price of the cheapest non Arbitrage Accepted Offer in that Settlement Period, which has a positive Bid – Offer Pair Number;
  - (ii) or, the Bid Price of the most expensive non Arbitrage Accepted Bid available in that Settlement Period, which has a negative Bid – Offer Pair Number;
  - (iii) or, zero.

#### Section T 4.4.6

Clause 4.4.6 could be reworded as follows:

4.4.6 In respect of each Settlement Period:

- (a) if the Net Imbalance Volume is not equal to zero, and is negative, then the System Sell Price will be determined as follows:

$$SSP_j = \frac{\{\sum_i \sum^n \{QAPB_{ij}^n * PB_{ij}^n * TLM_{ij}\} + TSCA_j\}}{\{\sum_i \sum^n \{QAPB_{ij}^n * TLM_{ij}\} + TSVA_j\}} + \{SPA_j\}$$

Where  $\sum_i$  represents the sum over all BM Units and  $\sum^n$  represents the sum over those accepted Bids that are not De Minimis Accepted Bids and not Arbitrage Accepted Bids and not NIV Tagged Bids.

- (b) if the Net Imbalance Volume is positive, then the System Sell Price will be equal to SBP<sub>j</sub>
- (c) if the Net Imbalance Volume is zero, then the System Sell Price will be determined as the maximum of:
- (i) The Offer price of the cheapest non Arbitrage Accepted Offer in that Settlement Period, which has a positive Bid – Offer Pair Number;
  - (ii) or, the Bid Price of the most expensive non Arbitrage Accepted Bid available in that Settlement Period, which has a negative Bid – Offer Pair Number;
  - (iii) or, zero.

#### Section T 4.4.10

Clause 4.4.10 could be reworded as follows:

4.4.10 In respect of each Settlement Period, the Total ~~Trade~~-NIV Tagged Volume will be determined as follows:



$$TCQ_j = \{\sum_i (\sum^{n'} QAPB^{n'}_{ij} - \sum^{n*} QAPO^{n*}_{ij})/2\} + \{(NTQUAB_j - NTQUAO_j) / 2\} + \{(TSVA_j - TBVA_j)/2\}$$

### Section T ANNEX T-1

Section T Annex T-1, Clause 3 requires amendment to reflect the NIV Tagging of the ranked accepted Bids and Offers, BSAD Volumes and Total System Un-priced Bid – Offer Volume, the potential amendments could be as follows:

*It should be noted that the basis for the amendments is Section T Annex T-1, V4.0, overlaid by the amendments proposed by Modification Proposal P72 'Correction of a Minor Inconsistency in the BSC Arbitrage and Trade Tagging Methodology' (Reference 7), which was submitted to the Authority on 16 May 2002, and approved by the Authority for implementation on 12 July 2002.*

### 3 ~~Trade~~-NIV Tagging

3.1 In respect of each Settlement Period, ~~Trade~~-NIV Tagged Offers, ~~Trade~~-NIV Tagged Bids, ~~NIV Tagged SVA and NIV Tagged BVA~~ will be defined in the following way:

(a) If:

$$\{\{\sum^{n'} (-QAPB^{n'}_{ij})\} + (-SVA_j) + (-TQUAB_j)\} = 0 \text{ BRL}_j$$

where  $\sum^{n'}$  is the sum over those accepted Bids that are both Non-De Minimis Bids and Non-arbitrage Bids; or

$$\{\{\sum^{n*} QAPO^{n*}_{ij} + BVA_j + TQUAO_j\} = 0 \text{ BRL}_j$$

where  $\sum^{n*}$  is the sum over those accepted Offers that are both Non-De Minimis Offers and Non-arbitrage Offers

then no Bids or Offers or BSAD volume will be ~~Trade~~ NIV Tagged.

(b) Otherwise, the following procedure will be carried out. The set of all accepted Priced Bids, which are neither De Minimis Bids nor Arbitrage Bids, will be ranked in price order, cheapest first. In any case where such Bids have the same price as each other, the ordering of such Bids will be random, subject to paragraph (g). The set of Non-De Minimis and Non-arbitrage Bids  $\{QAPB^{n_1}_{ij}, QAPB^{n_2}_{ij}, \dots, QAPB^{n_w}_{ij}\}$  is then a set of Ranked ~~Priced~~ Bids.

The Sell Price Volume Adjustment ( $SVA_j$ ) will be added into the set of Ranked ~~Priced~~ Bids according to the Sell Price Cost Adjustment ( $SCA_j$ ) (converted to £ / MWh, i.e.  $SCA_j / SVA_j$ ). The volume will, for the purposes of the NIV calculation only, be assigned an  $n'$  value.

Where the price of the Sell Price Volume Adjustment is the same as other Ranked ~~Priced~~ Bids, then the Sell Price Volume Adjustment volume will be given the lowest  $n$  value of the Bids with the same price.

The Total System Un-priced Bid Volume ( $TQUAB_j$ ) will be added into the set of Ranked Bids as the highest value of  $n'$ . The volume will, for the purposes of the NIV calculation only, be assigned an  $n'$  value.

This then, for the purposes of this NIV Tagging calculation only, comprise a set of Ranked Bid Volumes, as follows:

$$(-QAPB^{n'}_{ij}), (-SVA^{n'}_j), (-TQUAB^{n'}_j)$$

The set of all accepted Priced Offers, which are neither De Minimis Offers nor Arbitrage Offers will be ranked in price order, most expensive first. In any case where such Offers have the same price as each other, the ordering of such Offers will be random, subject to paragraph (g). The set of Non-De Minimis and Non-arbitrage Offers  $\{QAPO^{n^1}_{ij}, QAPO^{n^2}_{ij}, \dots, QAPO^{n^x}_{ij}\}$  is then a set of Ranked Priced Offers.

The Buy Price Volume Adjustment (BVA<sub>j</sub>) will be added into the set of Ranked Priced Offers according to the Buy Price Cost Adjustment (BCA<sub>j</sub>) (converted to £ / MWh, i.e. BCA<sub>j</sub> / BVA<sub>j</sub>). The volume will, for the purposes of the NIV calculation only, be assigned an n value.

Where the price of the Buy Price Volume Adjustment is the same as other Ranked Priced Offers, then the Buy Price Volume Adjustment volume will be given the highest n value of the Offers with the same price.

The Total System Un-priced Offer Volume (TQUAO<sub>j</sub>) will be added into the set of Ranked Offers as n\*=1. The volume will, for the purposes of the NIV calculation only, be assigned an n value.

This then, for the purposes of the NIV Tagging calculation only, comprise a set of Ranked Offer Volumes, as follows:

$(QAPO^{n^*}_{ij}), (BVA^{n^*}_j), (TQUAO^{n^*}_j)$

(c) If:

$$\{\{\sum^{n'} (-QAPB^{n'}_{ij}) + (-SVA^{n'}_j) + (-TQUAB^{n'}_j)\} \leq \{\sum^{n^*} QAPO^{n^*}_{ij} + BVA^{n^*}_j + TQUAO^{n^*}_j\}\}$$

where  $\sum^{n'}$  is the sum over those ~~Ranked Bids accepted Bids that are both Non-De Minimis and Non-arbitrage Bids~~ and  $\sum^{n^*}$  is the sum over those ~~accepted Offers that are both Non-De Minimis and Non-arbitrage-Ranked Offers Volumes~~

then for the smallest value of q such that

$$\sum^{n' v > q} (-QAPB^{n^v}_{ij}), (-SVA^{n^v}_j), (-TQUAB^{n^v}_j) \leq 0$$

where  $\sum^{n' v > q}$  is the sum over those ~~Non-De Minimis and Non-arbitrage Ranked Bids Volumes~~ for which v is greater than q

then, subject to paragraph (g):

(A) for all  $q \geq 1$  the Ranked ~~Non-De Minimis and Non-arbitrage Bids Volumes~~ numbered  $n'_1$  to  $n'_{q-1}$  will be defined as ~~Trade NIV Tagged Bids, and NIV Tagged Sell Price Volume Adjuster, and NIV Tagged Total System Un-priced Bid Volume, and~~

(B) if

$$\sum^{n' v > q} (-QAPB^{n^v}_{ij}), (-SVA^{n^v}_j), (-TQUAB^{n^v}_j) = 0$$

then the Ranked ~~Non-De Minimis and Non-arbitrage Bid~~ numbered  $n'_q$  will be defined as a ~~Trade NIV Tagged Bid, or NIV Tagged Sell Price Volume Adjuster, or NIV Tagged Total System Un-priced Bid Volume; or if~~

$$\sum^{n' v > q} (-QAPB^{n^v}_{ij}) < 0$$

~~then the fraction  $\gamma$  of  $QAPB^{n^*q}_{ij}$  which satisfies~~

$$\text{-(}\sum^{n^*v>q} QAPB^{n^*v}_{ij} + (1-\gamma) * QAPB^{n^*q}_{ij}\text{) = } BRL_j$$

~~will also be defined as a Trade Tagged Bid.~~

- (d) Since  $\{\{\sum^{n^*} (-QAPB^{n^*}_{ij}) + (-SVA^{n^*}_j) + (-TQUAB^{n^*}_j)\} \leq \{\sum^{n^*} QAPO^{n^*}_{ij} + BVA^{n^*}_j + TQUAO^{n^*}_j\}$  there must exist a number  $e$  and a number  $\phi$  (which may be a fraction or zero) for which

$$\{\{\sum^{n^*v<q} (-QAPB^{n^*v}_{ij}), (-SVA^{n^*v}_j), (-TQUAB^{n^*v}_j)\} + \{(-QAPB^{n^*q}_{ij}), (-SVA^{n^*q}_j), (-TQUAB^{n^*q}_{ij})\}\} = \{\sum^{n^*v<e} (QAPO^{n^*v}_{ij}), (BVA^{n^*v}_j), (TQUAO^{n^*v}_j)\} + \{\phi * \{(QAPO^{n^*e}_{ij}), (BVA^{n^*e}_j), (TQUAO^{n^*e}_j)\}\}$$

where  $\sum^{n^*v<q}$  is the sum over those ~~Non-De-Minimis and Non-arbitrage~~ Ranked Bids for which  $v$  is less than  $q$  and  $\sum^{n^*v<e}$  is the sum over those ~~Non-De-Minimis and Non-arbitrage~~ Ranked Offers for which  $v$  is less than  $e$ .

Subject to paragraph (g), the Ranked Offers numbered 1 to  $e-1$  for which this is true will be defined as ~~Trade-NIV~~ Tagged Offers, ~~and-NIV~~ Tagged Buy Price Volume Adjuster, and NIV Tagged Total System Un-priced Offer Volume. If  $\phi$  is a fraction rather than 0, then the fraction  $\phi$  of the Ranked Offer numbered 1 will be defined as a ~~Trade~~ NIV Tagged Offer, NIV Tagged Buy Price Volume Adjuster, or NIV Tagged Total System Un-priced Offer Volume.

For the purposes of the Energy Imbalance Price calculation (T 4.4.5 and 4.4.6):

The NIV Untagged Buy Price Volume Adjuster ( $TBVA_j$ ) is the portion of volume going forward, i.e. the untagged volume.

The NIV Untagged Buy Price Cost Adjuster ( $TBCA_j$ ) is then the cost associated with the volume going forward:

$$TBCA_j = TBVA_j * (BCA_j / BVA_j)$$

The NIV Untagged Total System Un-priced Offer Volume ( $NTQUAO_j$ ) is the portion of volume to be reported, i.e. the untagged volume.

- (e) If:

$$\{\{\sum^{n^*} (-QAPB^{n^*}_{ij}) + (-SVA^{n^*}_j) + (-TQUAB^{n^*}_j)\} > \{\sum^{n^*} QAPO^{n^*}_{ij} + BVA^{n^*}_j + TQUAO^{n^*}_j\}\}$$

where  $\sum^{n^*}$  is the sum over those ~~Ranked Offers accepted Offers that are both Non-De- Minimis and Non-arbitrage Offers~~ and  $\sum^{n^*}$  is the sum over those ~~accepted Offers that are both Non-De- Minimis and Non-arbitrage-Ranked~~ Offers

then for the smallest value of  $q$  such that

$$\sum^{n^*v>q} (QAPO^{n^*v}_{ij}), (BVA^{n^*v}_j), (TQUAO^{n^*v}_j) \leq 0$$

where  $\sum^{n^*v>q}$  is the sum over those ~~Non-De- Minimis and Non-arbitrage~~ Ranked Offers for which  $v$  is greater than  $q$

then, subject to paragraph (g):

(A) The Ranked Offers numbered  $n^*_1$  to  $n^*_{q-1}$  will be defined as ~~Trade~~ NIV Tagged Offers, and NIV Tagged Buy Price Volume Adjuster, and NIV Tagged Total System Un-priced Offer Volume, and

(B) if

$$\sum^{n^*_{v>q}} (QAPO^{n^*v}_{ij}), (BVA^{n^*v}_j), (TQUAO^{n^*v}_j) = 0$$

then the Ranked ~~Non-De Minimis and Non-arbitrage~~ Offer numbered  $n^*_q$  will be defined as a ~~Trade~~ NIV Tagged Offer, or NIV Tagged Buy Price Volume Adjuster, or NIV Tagged Total System Un-priced Offer Volume; ~~or if~~

$$\sum^{n^*_{v>q}} (-QAPO^{n^*v}_{ij}) < 0$$

~~then the fraction  $\gamma$  of  $QAPO^{n^*q}_{ij}$  which satisfies~~

$$-(\sum^{n^*_{v>q}} QAPO^{n^*v}_{ij} + (1-\gamma) * QAPO^{n^*q}_{ij}) = BRL_j$$

~~will also be defined as a Trade Tagged Bid.~~

(f) Since  $\{\{\sum^{n^*}_{v<q} (-QAPB^{n^*v}_{ij}) + (-SVA^{n^*v}_j) + (-TQUAB^{n^*v}_j)\} > \{\sum^{n^*} QAPO^{n^*}_{ij} + BVA^{n^*}_j + TQUAO^{n^*}_j\}\}$  there must exist a number e and a number  $\phi$  (which may be a fraction or zero) for which

$$(\sum^{n^*}_{v<q} (QAPO^{n^*v}_{ij}), (BVA^{n^*v}_j), (TQUAO^{n^*v}_j)) + ((QAPO^{n^*q}_{ij}), (BVA^{n^*q}_j), (TQUAO^{n^*q}_j)) = (\sum^{n^*}_{v<e} (-QAPB^{n^*v}_{ij}), (-SVA^{n^*v}_j), (-TQUAB^{n^*v}_j)) + \{\phi * ((-QAPB^{n^*e}_{ij}), (-SVA^{n^*e}_j), (-TQUAB^{n^*e}_j))\}$$

where  $\sum^{n^*}_{v<q}$  is the sum over those ~~Non-De Minimis and Non-arbitrage~~ Ranked Offers for which v is less than q and  $\sum^{n^*}_{v<e}$  is the sum over those ~~Non-De Minimis and Non-arbitrage~~ Ranked Bids for which v is less than e.

Subject to paragraph (g), the Ranked Bids numbered 1 to e-1 for which this is true will be defined as ~~Trade~~-NIV Tagged Bids, ~~and~~-NIV Tagged Sell Price Volume Adjuster, and NIV Tagged Total System Un-priced Bid Volume. If  $\phi$  is a fraction rather than 0, then the fraction  $\phi$  of the Ranked Bid numbered  $n^*_1$  will be defined as a ~~Trade~~ NIV Tagged Bid, NIV Tagged Sell Price Volume Adjuster, or NIV Tagged Total System Un-priced Bid Volume.

For the purposes of the Energy Imbalance Price calculation (T 4.4.5 and 4.4.6), the NIV Untagged Sell Price Volume Adjuster (TSVA<sub>j</sub>) is the portion of volume going forward, i.e. the untagged volume.

The NIV Untagged Sell Price Cost Adjuster (TSCA<sub>j</sub>) is then the cost associated with the volume going forward:

$$TSCA_j = TSVA_j * (SCA_j / SVA_j)$$

The NIV Untagged Total System Un-priced Bid Volume (NTQUAB<sub>j</sub>) is the portion of volume to be reported, i.e. the untagged volume.

(g) However, for each of paragraphs (c), (d), (e) and (f) (each a "relevant provision") separately, if the application of the relevant provision (the 'initial calculation') would result in there being any Ranked Bid or Ranked Offer which:

- (1) is not a ~~NIV Trade~~-Tagged Bid or (as the case may be) ~~NIV Trade~~ Tagged Offer, but
- (2) has the same price (other than merely by virtue of being a fraction  $(1 - \gamma)$  or  $(1 - \phi)$  pursuant to the initial calculation) as a Ranked Bid which is a ~~NIV Trade~~-Tagged Bid or (as the case may be) Ranked Offer which is a ~~NIV Trade~~-Tagged Offer,

then:

- (i) all such Ranked Bids  $QAPB^{n'_{ij}}$  or Ranked Offers  $QAPO^{n'_{ij}}$  (whether or not ~~NIV Trade~~ Tagged Bids or ~~NIV Trade~~ Tagged Offers on the basis of the initial calculation) which have the same price are "threshold Bids" or "threshold Offers";
- (ii) no threshold Bid or threshold Offer shall be defined as a ~~NIV Trade~~ Tagged Bid or ~~NIV Trade~~ Tagged Offer pursuant to the relevant provision, but instead the fraction  $\delta$  of each threshold Bid  $QAPB^{n'_{ij}}$  or threshold Offer  $QAPO^{n'_{ij}}$  which satisfies the following shall be defined as a ~~NIV Trade~~ Tagged Bid or (as the case may be) ~~NIV Trade~~ Tagged Offer:

$$\delta * \sum^{n'_{ij}} QAPB^{n'_{ij}} = \sum^{n'_{ij}} QAPB^{n'_{ij}}$$

or (as the case may be)

$$\delta * \sum^{n'_{ij}} QAPO^{n'_{ij}} = \sum^{n'_{ij}} QAPO^{n'_{ij}}$$

where

$\sum^{n'_{ij}}$  is the sum over all threshold Bids or (as the case may be) threshold Offers, and

$\sum^{n'_{ij}}$  is the sum over all threshold Bids or (as the case may be) threshold Offers (including a fraction  $\gamma$  or  $\phi$  thereof) which, on the basis of the initial calculation would have been defined as ~~NIV Trade~~ Tagged Bids or ~~NIV Trade~~ Tagged Offers.

## Definitions Required to Support the Alternative Modification P74

This alternative option to Modification P74 requires new definitions to support the implementation of the amendments to the settlement calculations.

Therefore Section X ANNEX X-2 Table X-2 'Technical Glossary' requires amendment to include the requisite new and amended definitions, as follows:

*It should be noted that the following assumes the adoption of Option 2 with regards to BSAD reporting (i.e. net and gross reporting).*

Defined Term	Acronym	Units	Definition / Explanatory Text
<b>Balancing Reserve Level</b>	<b>BR<sub>L</sub><sub>i</sub></b>	<b>MWh</b>	<b>The value established and from time to time revised and approved in accordance with Section T1.5</b>  <i>In respect of a Settlement Period, in the event that any accepted Offer or accepted Bid is defined as a Trade Tagged Offer or Trade Tagged Bid, the Balancing Reserve Level is equal to the minimum aggregate quantity of accepted Offers or the minimum aggregate quantity of the magnitude of accepted Bids used in the determination of the System Buy Price and System Sell Price respectively.</i>
<b>Buy Price Cost Adjustment</b>	<b>BCA<sub>i</sub></b>	<b>£</b>	<b>The amount sent by the Transmission Company as the gross Buy Price Cost Adjustment in accordance with Section O6.3.</b>
<b>Buy Price Volume Adjustment</b>	<b>BVA<sub>i</sub></b>	<b>MWh</b>	<b>The amount sent by the Transmission Company as the gross Buy Price Volume Adjustment in accordance with Section O6.3.</b>
<b>Net Buy Price Cost Adjustment</b>	<b>NBCA<sub>i</sub></b>	<b>£</b>	<b>The amount sent by the Transmission Company as the Net Buy Price Cost Adjustment in accordance with Section O6.3.</b>
<b>Net Buy Price Volume Adjustment</b>	<b>NBVA<sub>i</sub></b>	<b>MWh</b>	<b>The amount sent by the Transmission Company as the Net Buy Price Volume Adjustment in accordance with Section O6.3.</b>
<b>Net Sell Price Cost Adjustment</b>	<b>NSCA<sub>i</sub></b>	<b>£</b>	<b>The amount sent by the Transmission Company as the Net Sell Price Cost Adjustment in accordance with Section O6.3.</b>
<b>Net Sell Price Volume Adjustment</b>	<b>NSVA<sub>i</sub></b>	<b>MWh</b>	<b>The amount sent by the Transmission Company as the Net Sell Price Volume Adjustment in accordance with Section O6.3.</b>
<b>NIV Untagged Buy Price Cost Adjustment</b>	<b>TBCA<sub>i</sub></b>	<b>£</b>	<b>Has the meaning given to that term in Annex T-1.</b>
<b>NIV Untagged Buy Price Volume Adjustment</b>	<b>TBVA<sub>i</sub></b>	<b>MWh</b>	<b>Has the meaning given to that term in Annex T-1.</b>

Defined Term	Acronym	Units	Definition / Explanatory Text
<u>NIV Untagged Sell Price Cost Adjustment</u>	<u>TSCA<sub>j</sub></u>	<u>£</u>	<u>Has the meaning given to that term in Annex T-1.</u>
<u>NIV Untagged Sell Price Volume Adjustment</u>	<u>TSVA<sub>j</sub></u>	<u>MWh</u>	<u>Has the meaning given to that term in Annex T-1.</u>
<u>NIV Untagged Total System Un-priced Bid Volume</u>	<u>NTQUAB<sub>j</sub></u>	<u>MWh</u>	<u>Has the meaning given to that term in Annex T-1.</u>
<u>NIV Untagged Total System Un-priced Offer Volume</u>	<u>NTQUAO<sub>j</sub></u>	<u>MWh</u>	<u>Has the meaning given to that term in Annex T-1.</u>
<u>Sell Price Cost Adjustment</u>	<u>SCA<sub>j</sub></u>	<u>£</u>	<u>The amount sent by the Transmission Company as the <b>gross</b> Sell Price Cost Adjustment in accordance with Section O6.3.</u>
<u>Sell Price Volume Adjustment</u>	<u>SVA<sub>j</sub></u>	<u>MWh</u>	<u>The amount sent by the Transmission Company as the <b>gross</b> Sell Price Volume Adjustment in accordance with Section O6.3.</u>
<u>Total <del>Trade</del> NIV Tagged Volume</u>	<u>TCO<sub>j</sub></u>	<u>MWh</u>	<p><u>The quantity determined in accordance with Section T4.4.10.</u></p> <p><u>Total <del>Trade</del>-NIV Tagged Volume is a MWh quantity equal in magnitude to both the Period <b>Priced Accepted Offer Volume</b>, <b>NIV Tagged Buy Price Volume Adjustment</b>, and <b>NIV Tagged Total System Un-priced Offer Volume</b> summed over all <b><del>Trade</del>-NIV Tagged Offers</b>, <b>NIV Tagged Buy Price Volume Adjustment</b>, and <b>NIV Tagged Total System Un-priced Offer Volume</b> and all the <b>Period Priced Accepted Bid Volume</b>, <b>NIV Tagged Sell Price Volume Adjustment</b>, and <b>NIV Tagged Total System Un-priced Bid Volume</b> summed over all <b><del>Trade</del> NIV Tagged Bids</b>, <b>NIV Tagged Sell Price Volume Adjustment</b>, and <b>NIV Tagged Total System Un-priced Bid Volume</b> in Settlement Period <b>j</b>.</u></p>
<u><del>Trade</del>-NIV Tagged Bids</u>			<u>Has the meaning given to that term in Annex T-1.</u>
<u><del>Trade</del>-NIV Tagged Offers</u>			<u>Has the meaning given to that term in Annex T-1.</u>

Section X ANNEX X-2 Table X-3 'Glossary of Acronyms Applying Except in Relation to Section S' requires amendment to include the requisite new and amended definitions, as follows:

<b>Acronym</b>	<b>Units</b>	<b>Corresponding Defined Term or Expression</b>
<b><u>BRL<sub>i</sub></u></b>	<b><u>MWh</u></b>	<b><u>Balanceing Reserve Level</u></b>
<b><u>NBCA<sub>i</sub></u></b>	<b><u>£</u></b>	<b><u>Net Buy Price Cost Adjustment</u></b>
<b><u>NBVA<sub>i</sub></u></b>	<b><u>MWh</u></b>	<b><u>Net Buy Price Volume Adjustment</u></b>
<b><u>NSCA<sub>i</sub></u></b>	<b><u>£</u></b>	<b><u>Net Sell Price Cost Adjustment</u></b>
<b><u>NSVA<sub>i</sub></u></b>	<b><u>MWh</u></b>	<b><u>Net Sell Price Volume Adjustment</u></b>
<b><u>NTQUAB<sub>i</sub></u></b>	<b><u>MWh</u></b>	<b><u>NIV Untagged Total System Un-priced Bid Volume</u></b>
<b><u>NTQUAQ<sub>i</sub></u></b>	<b><u>MWh</u></b>	<b><u>NIV Untagged Total System Un-priced Offer Volume</u></b>
<b><u>TBCA<sub>i</sub></u></b>	<b><u>£</u></b>	<b><u>NIV Untagged Buy Price Cost Adjustment</u></b>
<b><u>TBVA<sub>i</sub></u></b>	<b><u>MWh</u></b>	<b><u>NIV Untagged Buy Price Volume Adjustment</u></b>
<b><u>TCQ<sub>i</sub></u></b>	<b><u>MWh</u></b>	<b><u>Total <del>Trade</del> NIV Tagged Volume</u></b>
<b><u>TSCA<sub>i</sub></u></b>	<b><u>£</u></b>	<b><u>NIV Untagged Sell Price Cost Adjustment</u></b>
<b><u>TSVA<sub>i</sub></u></b>	<b><u>MWh</u></b>	<b><u>NIV Untagged Sell Price Volume Adjustment</u></b>



## ANNEX 2 – BSC PARTY CONSULTATION RESPONSES

### a First Consultation Responses

See attached document:


MAR074\_Annex 2a Consultation Responses

Representations were received from the following Parties:


No	Company	File Number	No Parties Represented
1	British Gas Trading	P74_ASS_001	3
2	TXU Europe	P74_ASS_002	21
3	Williams Energy Marketing & Trading Europe Ltd	P74_ASS_003	1
4	Aquila Networks	P74_ASS_004	1
5	PowerGen	P74_ASS_005	3
6	Immingham CHP LLP	P74_ASS_006	1
7	Combined Heat and Power Association	P74_ASS_007	1
8	London Electricity Group	P74_ASS_008	4
9	Scottish and Southern	P74_ASS_009	4
10	SEEBOARD Energy	P74_ASS_010	1
11	ScottishPower	P74_ASS_011	4
12	Damhead Creek Ltd	P74_ASS_012	2
13	Campbell Carr	P74_ASS_013	5
14	Edison Mission	P74_ASS_014	2
15	Innogy plc	P74_ASS_015	6
16	RWE Trading Direct	P74_ASS_016	1
17	AEP Energy Services	P74_ASS_017	2
18	Eledor Limited	P74_ASS_018	1
19	Vattenfall AB	P74_ASS_019	1
20	BP Gas Power & Renewables	P74_ASS_020	1

## b Detailed Level Impact Assessment Responses

Carried out by	Approve	Reject	Comments
<p>Robert Gildert ELEDOR Limited</p>		<p>✓</p>	<p>P74 Disagree. Impact - Yes. This modification fundamentally undermines Eledor's business case. Eledor is a new market entrant and has contracted for systems specified to meet the requirements of the BSC. The proposed modification would fundamentally change the system, increase costs and delay market entrance. Removing the margin between System Buy Price and System Sell Price would prevent Eledor's market entrance as an Independent Consolidator. Other comments: The proposal removes the incentive on participants to self balance. It strengthens the advantages of portfolio players in the prompt pre gate closure markets. This will make the market more imperfect in the pre gate closure stage to the detriment of independent players and smaller participants. Ofgem have sought to encourage independent Consolidators to enter the market. This proposal fundamentally discourages such entrance and the proposal does not assist the long term interests of retaining a competitive market.</p> <p>P78 Disagree Impact - Yes. This modification undermines Eledor's business case. Rationale for the costs and timescales Eledor is a new market entrant and has contracted for systems specified to meet the requirements of the BSC. The proposed modification would fundamentally change the system, increase costs and delay market entrance. Other comments: The proposal dilutes the incentive on participants to self balance. It strengthens the advantages of portfolio players in the prompt pre gate closure markets. This will make the market more imperfect in the pre gate closure stage to the detriment of independent players and smaller participants. Ofgem have sought to encourage independent Consolidators to enter the market. This proposal discourages such entrance and the proposal does not assist the long term interests of retaining a competitive market.</p>
<p>Rachel Ace British Energy Generation</p>			<p>P74 Impact – Yes.  Rationale for the costs and timescales: Option1 - no impact Option 2 - 3 months. Option 1 involves no change to the SAA-I014 file so no impact but Option 2 does involve changes to SAA-I014 and as such will have a medium impact  Do you agree with the change? See our response to the Modification Proposals.</p> <p>P78 Impact – Yes.  Rationale for the costs and timescales 3 months. Option1 has the largest impact due to extra group in SPI sub group. Option 2 also has an impact however. Both have medium impact.  Do you agree with the change? See our response to the modification proposals.</p>

<p><b>John W Russell</b> Calanais</p>			<p>P74  <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b>          Basic Proposal: No Impact          Alternative Option 1: No Impact          Alternative Option 2: Low / Medium impact (due to changes in BSAD)</p> <p>Sonet Changes:          Alternative Option 1 No Impact          Alternative Option 2 £12,000</p> <p><b>Do you agree with the change?</b>          With reference to previous consultation responses, ScottishPower believes that P74 will have a detrimental effect on market liquidity and that the proposal will fail to promote effective competition in the generation and supply of electricity as it could potentially reduce market liquidity and encourage some participants to withhold positions, therefore we reject this mod.</p> <p>P78  <b>Does this Modification Proposal affect your organisation regarding costs and timescales?</b>          Option 1: Low / Medium impact (due to changes in BSAD)          Option 2: Low / Medium impact (due to changes in BSAD)          Alternative Option 1: Low / Medium impact (due to changes in BSAD)          Alternative Option 2: Low / Medium impact (due to changes in BSAD)</p> <p>Sonet Changes:          Basic £18,000          Alternative £12,000</p> <p><b>Do you agree with the change?</b>          With reference to previous consultation responses, ScottishPower believes that possibly the proposal could help to promote more effective competition in the generation and supply of electricity as it could potentially increase market liquidity, however as with any such wide-reaching modification, it would be wise to allow more time for the market to settle down (ideally another NETA winter) and possibly there may be some further self-regulation with the introduction of P12. If such a cash-out method is still thought to be effective in ensuring compliance with applicable BSC objectives, it should be rethought at the start of 2003.</p>
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<p><b>Janice Tanner</b> Barking Power</p>		<p>P74 <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b> Yes</p> <p><b>Rationale for the costs and timescales:</b> Imbalance charges are an important element of our costs therefore any changes to the method of calculation has the potential to significantly impact upon those costs.</p> <p><b>Do you agree with the change?</b> Without further modelling, we cannot fully assess the impact of such a change.</p> <p><b>Other comments:</b> We would expect the originator of the modification to include the results of their modelling under different scenarios to support their proposal. Without such analysis, we believe that the proposal is incomplete.</p> <p>P78 <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b> Yes</p> <p><b>Rationale for the costs and timescales:</b> Imbalance charges are an important element of our costs therefore any changes to the method of calculation has the potential to significantly impact upon those costs.</p> <p><b>Do you agree with the change?</b> Without further modelling, we cannot fully assess the impact of such a change.</p> <p><b>Other comments:</b> We would expect the originator of the modification to include the results of their modelling under different scenarios to support their proposal. Without such analysis, we believe that the proposal is incomplete. It is also necessary to consider the changes to Central Systems should this modification be implemented and the costs that will fall upon BSC Parties as a result.</p>
<p><b>Ros Parsons</b> Npower Ltd, Npower Direct Ltd, Npower Yorkshire Ltd</p>	<p>✓</p>	<p>P74 <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b> YES</p> <p><b>Rationale for the costs and timescales</b> Impact on SONET – Option 1 - No Cost Impact on SONET - Option 2 - £12,000</p> <p><b>Do you agree with the change?</b> YES</p> <p>P78 <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b> YES</p> <p><b>Rationale for the costs and timescales</b> Impact on SONET - £18,000 Impact on SONET (P78 alternative) - £12,000</p> <p><b>Do you agree with the change?</b> YES</p>


<p><b>Dave Morton</b> SEEBOARD Energy Limited</p>			<p>P74  <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b>        Yes, although only option 2 has a cost, approximately £2,000 and a lead in time of between 3-6 months.</p> <p><b>Rationale for the costs and timescales</b>        Details in one are for software development and timescales are due to problems with matching a development cycle and give potential best and worst case scenarios depending upon decision made for this change.</p> <p><b>Do you agree with the change?</b>        No, we still do not believe that this change, in either option, is an appropriate method of handling this problem.</p> <p>P78  <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b>        Yes, and in both cases this will require software changes with an implementation notice required of between 3-6 months. Cost for original P78 are around £6,750 and for alternative £4,500.</p> <p><b>Rationale for the costs and timescales</b>        Details in one are for software development and timescales are due to problems with matching a development cycle and give potential best and worst case scenarios depending upon decision made for this change.</p> <p><b>Do you agree with the change?</b>        Only with original version of this change, even though it is most expensive option. We have always considered this as most appropriate solution to this issue. We do not agree with alternative.</p>
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<p><b>Geoff Allen</b> Powergen UK plc.</p>			<p>P74  <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b>          Yes</p> <p><b>Rationale for the costs and timescales</b>          Option 1 has minimal impact on Powergen's systems and processes, and therefore could be implemented with minimum disruption. Option 2 would appear to require a change to the SAA_I014 sub-flows 1, 2 &amp;3. Work to enable these revised flows to be properly received, and the data extracted and imported into our internal systems would be necessary. Initial indicative costs associated with the design, development, testing and implementation of the required changes are estimated to be £25k., with a minimum lead time of 3 months.</p> <p><b>Do you agree with the change?</b>          This response considers the impact on Powergen's systems of the proposed changes. Powergen will be making comment on its support or otherwise of the proposed modification through the normal processes. The above information should not be considered as support by Powergen for the proposed changes, it is provided solely to enable ELEXON to understand the implications on Powergen's systems if the proposed changes were to be made.</p> <p>P78  <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b>          Yes</p> <p><b>Rationale for the costs and timescales</b>          This Modification proposal would appear to require, for either of the Options presented, a change to the structure of the SAA-I014 sub-flow 1, 2 &amp; 3 files. Accordingly work would be required on Powergen's hub to enable these files to be properly received, and the data extracted to our systems as necessary. Initial indicative costs associated with the design, development, testing and implementation of the required changes are estimated to be £25k., with a minimum lead time of 3 months.</p> <p><b>Do you agree with the change?</b>          This response considers the impact on Powergen's systems of the proposed changes. Powergen will be making comment on its support or otherwise of the proposed modification through the normal processes. The above information should not be considered as support by Powergen for the proposed changes, it is provided solely to enable ELEXON to understand the implications on Powergen's systems if the proposed changes were to be made.</p>
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<p>Clare Talbot National Grid</p>	<p>✓ (P78)</p>	<p>✓ (P74)</p>	<p><b>P74</b> <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b> Yes. We note that there would be associated changes to our BSAD processes and Methodology Statement to facilitate the implementation of the alternative to this modification. This consultation will be started once the Assessment stage has been completed successfully. As a recipient of the SAA-IO14 flow our processes will have to be amended to read the new version. We support the recommendation of the modification group to seek a change over period when both versions are available. We have not identified any impact to our Grid Code or CUSC processes.</p> <p><b>Rationale for the costs and timescales</b> P74 Option 1, a cost of £62.5k internal cost estimate. P74 Option 2, a cost of £100k internal cost estimate. 3 – 6 months notice to implement depending on other commitments.</p> <p><b>Do you agree with the change? No</b></p> <p><b>Other comments:</b> The issue of correctly deriving a prompt indication of market length was brought to our attention after this DLIA was issued and we intend to confirm our initial thoughts at the next PIMG meeting. However, this issue will require a full impact assessment by National Grid, which we hope to complete before the end of the report stage of the modification process.</p> <p><b>P78</b> <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b> Yes We note that there would be associated changes to our BSAD processes and Methodology Statement to facilitate the implementation of this modification. This consultation will be started once the Assessment stage has been completed successfully. As a recipient of the SAA-IO14 flow our processes will have to be amended to read the new version. We support the recommendation of the modification group to seek a change over period when both versions are available. We have not identified any impact to our Grid Code or CUSC processes.</p> <p><b>Rationale for the costs and timescales</b> P78 option 1, £111.5k internal cost estimate. P78 option 2, £145k internal cost estimate. 3 – 6 months notice to implement depending on other commitments.</p> <p><b>Do you agree with the change? Yes</b></p> <p><b>Other comments:</b> The issue of correctly deriving a prompt indication of market length was brought to our attention after this DLIA was issued and we intend to confirm our initial thoughts at the next PIMG meeting. However, this issue will require a full impact assessment by National Grid, which we hope to complete before the end of the report stage of the modification process.</p>
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<p><b>Paul Mott</b> London Electricity</p>		<p>✓</p>	<p><b>P74</b> <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b> This modification proposal does not affect our organisation with respect to costs. However, we would like 6 weeks notice of implementation.</p> <p><b>Rationale for the costs and timescales</b> No systems changes are required but the change would have a significant commercial effect. The 6 week notice period would allow our organisation to prepare for the commercial impact of implementation.</p> <p><b>Do you agree with the change?</b> No.</p> <p><b>Other comments:</b> Our comments would be the same for P74 Alternative.</p> <p><b>P78</b> <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b> This modification proposal does not affect our organisation with respect to costs. However, we would like 6 weeks notice of implementation.</p> <p><b>Rationale for the costs and timescales</b> No systems changes are required but the change would have a significant commercial effect. The 6 week notice period would allow our organisation to prepare for the commercial impact of implementation.</p> <p><b>Do you agree with the change?</b> No</p> <p><b>Other comments:</b> Our comments under 1 and 2 would be the same for P78 Alternative. With respect to 3, we are more favourably inclined towards P78 Alternative than we are towards P78 Original.</p>
<p><b>Rachael Gardener</b> Aquila Networks</p>			<p>No comment.</p>
<p><b>Roger Grew</b> Siemens</p>			<p>No impact.</p>
<p><b>Chris Ridgway</b> InterGen</p>	<p>✓</p>		<p><b>P74</b> <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b> Yes</p> <p><b>Rationale for the costs and timescales</b> Operational changes – minimal costs</p> <p><b>Do you agree with the change?</b> Yes</p> <p><b>P78</b> <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b> Yes</p> <p><b>Rationale for the costs and timescales</b> Operational changes – minimal costs</p> <p><b>Do you agree with the change?</b> Yes</p>



<p><b>Sarah Ames</b> TXU</p>			<p>Impact – Yes, please see attached Logica response.</p>  <p>Impact Analysis CPC196 I1.0.doc</p>
<p><b>Sue Macklin</b> Scottish and Southern</p>	<p>✓ (P78)</p>	<p>✓ (P74)</p>	<p>P74  <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b>        Yes. For Option 2 we would require a minimum of four months for implementation. No impact for Option 1.</p> <p><b>Rationale for the costs and timescales.</b> Option 2 requires changes to our IT systems.</p> <p><b>Do you agree with the change?</b> No. This Modification is likely to provide windfall gains which do not reflect the cost of imbalance energy and leave this cost with the same participants who are paying for the net imbalance. It therefore does not help to achieve this objective of the BSC.</p> <p>P78  <b>Does this Modification Proposal effect your organisation regarding costs and timescales?</b>        Yes. For either option we would require a minimum of 4 months for implementation</p> <p><b>Rationale for the costs and timescales.</b> Changes to IT systems</p> <p><b>Do you agree with the change?</b> Yes. This Modification is likely to target energy imbalance costs at those who cause that imbalance and therefore better satisfies that objective of the BSC.</p>

**c Second Consultation Responses**

*Pending receipt*

**ANNEX 3 – BSC AGENT IMPACT ASSESSMENTS**

<b>NETA Change Form</b>	<b>MP/CP/TP No:</b> MP74
	<b>Logica reference:</b> ICR390
<b>Title:</b> Single Cost-reflective Cash-out Price	
<b>Identified by:</b> Electricity Direct	<b>Date received:</b> 24-Jun-2002

<b>Statement of requirement</b>
<b>Baseline affected:</b> NETA Service Definition Baseline (V1.0)
<b>Assumed changes over baseline:</b> None
<b>Description of Change:</b> See Modification P74: 'Single Cost-reflective Cash-out Price' Requirements Specification v1.1 (Ref P074AS11.doc). See also attached original MP74.
<b>Proposed solution:</b> See Modification P74: 'Single Cost-reflective Cash-out Price' Requirements Specification v1.1 (Ref P074AS11.doc). This specifies two separate options to be assessed, which are referred to in this assessment as "Option 1" and "Option 2"
<b>Justification for Change:</b> See Modification P74: 'Single Cost-reflective Cash-out Price' Requirements Specification v1.1 (Ref P074AS11.doc). See also attached original MP74.
<b>Proposed changes to Service Levels:</b> None
<b>Proposed changes to the Agreement:</b> None
<b>Attachments/references:</b> MP74.

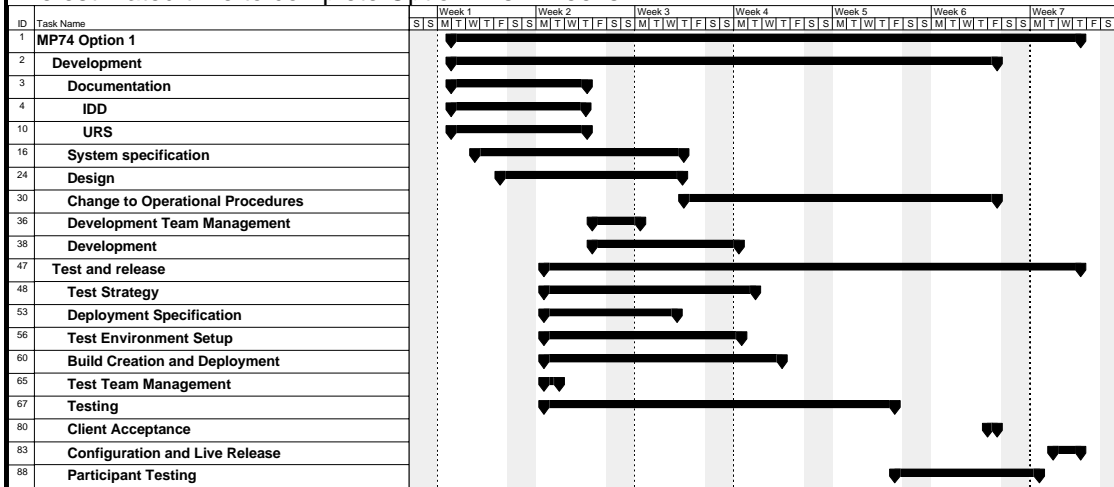
To be completed by Logica			
	High Level Impact Assessment	Detailed Level Impact Assessment	Quotation
Tick which stage is being completed:		✓	
Signed by Logica Contract Manager:			
Date:		05-Jul-2002	
HLIA category: Small/Medium/Large/Other		Price for DLIA:	
If this is a Quotation, are consequential modifications needed to the DLIA?    Yes			

Logica's proposal
<b>Logica's understanding of the requirement:</b> The current two price cash out regime fails to incentivise balance. The reason for this is that it delivers and symmetric punishment for errors, with larger risk cost to a participant for going short rather than going long. As a consequence, the economic driver for consumption accounts is to spill.

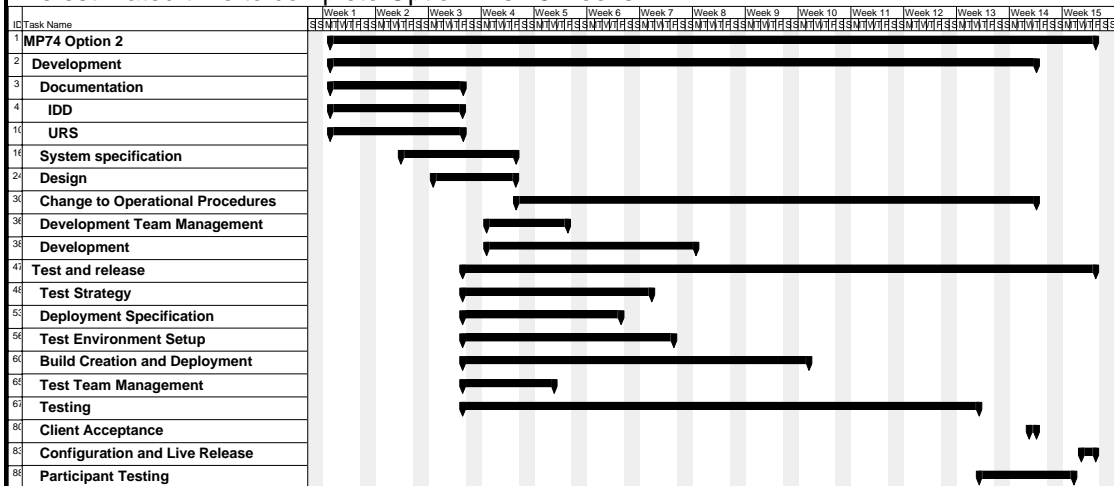
<b>Logica's proposed design solution:</b> See "Design Solutions" attached.
<b>Consequential changes to Project Deliverables:</b> See "Design Solutions" attached.
<b>Consequential impact on BSC Service Users or Other Service Providers:</b> None.
<b>Testing strategy:</b> Effort has been included for both participant testing and supporting ELEXON in witnessing tests.
<b>Management plan for developing the Change:</b>

**Project plan for developing the Change:**

The estimated time to complete Option 1 is 7 weeks.



The estimated time to complete Option 2 is 15 weeks.



**Method of deployment:**

Patch	Is a planned outage required? Yes
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**Price for Design and Build:**

Item description:	Price (ex VAT)	Type of price:
Option 1	£80 600	Fixed
Option 2	£356 600	Fixed

**Price for Operate and Maintain:**

Item description:	Price per month (ex VAT)	Type of price:
Operate	£0	Fixed
Maintain – option 1	£940	Fixed
Maintain – option 2	£4 160	Fixed

If this is a DLIA or Quotation, is a price breakdown in the agreed format attached? Yes

**Terms attaching to the offer**

Validity period of offer: 30 days	Type of offer: Firm
Assumed start date:	

<p><b>Payment milestones:</b>          Option 1:          Logica will invoice in full for this change on deployment or within one month of the change being ready for deployment.</p> <p>Option 2:          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.</p>
<p><b>Document turnaround time:</b>          5 days</p>
<p><b>Impact on Service Levels:</b>          None</p>
<p><b>Impact on performance of the System:</b></p>
<p><b>Other terms:</b></p>
<p>If this is a Quotation, is a draft contract amendment attached? Yes/No</p>
<p><b>Responsibilities of ELEXON:</b></p> <ul style="list-style-type: none"> <li>• For all DCRs which are 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.</li> <li>• Within reasonable levels, ELEXON will make available appropriate staff to assist Logica during the development of this change.</li> </ul>
<p><b>Assumptions made by Logica:</b></p> <ul style="list-style-type: none"> <li>• Price is for a separate patch to be deployed after Release 2.</li> <li>• Price and duration assume that this change is developed in isolation and the effects of other changes are excluded.</li> <li>• Price excludes provision for indexation of daily rates from 1<sup>st</sup> April 2003.</li> <li>• Price is for creating DCRs, not a formal documentation issue.</li> <li>• BMRS will publish the single price against both SSP and SBP.</li> <li>• SAA will report the single price against both SSP and SBP.</li> <li>• Neither SAA nor BMRS will report which of the three cases apply (i.e. whether price was set to computed SSP, SBP or average).</li> <li>• It is assumed that "gross" BSAD values will be used. If net values are used, it is anticipated there will be some marginal cost savings.</li> <li>• It is assumed that documentation/web pages/help text will have to be amended to reflect that BSAD is now "net".</li> </ul>
<p><u>Option 2</u></p> <ul style="list-style-type: none"> <li>• Once deployed, the new SAA format will apply even when reporting for pre-NIV dates.</li> </ul>
<p><b>Options and alternatives:</b></p>

## Design Solutions

### P74 - Single cost-reflective cash-out price (Option 1)

#### Document Changes

	BMRA	CDCA	CRA	ECVAA	SAA	TAA
<b>URS</b>	F004				F009	
<b>SS</b>	Yes				Yes	N/A
<b>DS</b>	Yes				Yes	N/A
<b>MSS</b>						N/A
<b>OSM</b>						

<b>IDD</b>	Part 1 document	
	Part 1 spreadsheet	
	Part 2 document	
	Part2 spreadsheet	

#### Software Changes

1. Add at end of SAA-F009/BMRA-F004 comparison of  $[TQAOj + BVAj]$  and  $[TQBOj + SVAj]$  . Depending on the result set SSP & SBP to computed SSP, SBP or average of the computed values.
2. Amend BMRS help text to reflect the change in derivation of SSP and SBP.

#### Testing

##### Core Business Functionality Testing

- Script R2T-22 will be updated and run for Regression purposes in both Dry and Main Runs.

##### System Testing

- None required – the minor changes in R2T-22 will be sufficient to prove the change.

## P74 - Single cost-reflective cash-out price (Option 2)

### Document Changes

	BMRA	CDCA	CRA	ECVAA	SAA	TAA
<b>URS</b>	F004 I014				F009 I026 I014	
<b>SS</b>	Yes				Yes	N/A
<b>DS</b>	Yes				Yes	N/A
<b>MSS</b>						N/A
<b>OSM</b>						

<b>IDD</b>	Part 1 document	TibCo (amend BSAD message) Csv (amend BSAD file format) SAA-I014
	Part 1 spreadsheet	S0141
	Part 2 document	BMRA-I014 SAA-I014 SAA-I026
	Part2 spreadsheet	BMRA-I014 SAA-I014 SAA-I026

### Software Changes

1. Amend SAA-I026 / BMRA-I014 to add 4 new BSAD figures.
2. Amend SAA-I014 to add 4 new BSAD figures and NIV interim values.
3. Amend BMRA (web page, TibCo message, csv format) to report 4 new BSAD elements (affects latest BSAD only, the BSAD data reported alongside prices will only report Net values as only these are used by the calculation).
4. In SAA-F009/BMRA-F004
5. replace Trade Tagging with Net Imbalance Volume Tagging.
6. compare  $|TQAOj + BVAj|$  and  $|TQBOj + SVAj|$  . Depending on the result set SSP & SBP to computed SSP, SBP or average of the computed values.
7. Amend BMRS help text to reflect the change in derivation of SSP and SBP.

### Testing

#### Core Business Functionality Testing

- Script R2T-22 will be updated and run for Regression purposes in both Dry and Main Runs.

#### System Testing

- None required – the minor changes in R2T-22 will be sufficient to prove the change.

## Detail of changes needed

Changes required	P74 option 1	P74 option 2	P78 original	P78 alternate
<b>New calculation rule</b>	*	*	*	*
<b>BSAD now "gross":</b> [ALTERNATIVE to "net"] web page changes csv/TibCo (BSAD only, not prices) loader changes <i>Changes to handle both 6 &amp; 10 value files</i>		*	*	*
<b>Net Imbalance Volume calculation</b> New database table to hold interim values for reporting; Calculation change NB includes system parameter to determine whether to use new or old rule		*	*	*
<b>S014</b> <i>BSAD extras(for gross)</i>		*	*	*
NIV extra values Note that where the old rules applies, these values will be reported as zero or null		*	*	*
Power Exchange prices Note that before change switched on, there will be no PX data so the new section of the report will simply not appear			*	
<b>Market data</b> Loader for new flow Database csv, TibCo, web page, web help Form to manually amend Manual flow for liquidity: Database Form			*	
Process to check for and chase missing data - operate impact (OSM)			*	
Process Manual flow to set liquidity threshold				

Text in *italics* indicates work NOT required if "net" BSAD option is taken. It is assumed that documentation/web pages/help text will have to be amended to reflect that BSAD is now "net".



## ANNEX 4 – BSCCO IMPACT ASSESSMENTS

<b>Mod No.</b>	P74	<b>Title:</b>	Single Cost-reflective Cash-out Price		
<b>Assessor Name</b>	Alex Grieve	<b>Assessor Team</b>	BSC Systems Delivery Programme	<b>Date</b>	25 June02
<b>Modification Summary:</b> see mod, requirements specification and associated reports					
<p><b>Summary of solution(s):</b> 2 Alternative solutions          Alternative 1: High Business Risk (price calculation is within operational audit scope), High complexity (change to calculation) and Medium impact (no flow impact) – approx 16 Config Items impacted           Alternative 2: High Risk, High complexity, High Impact (interface changes – from NGC &amp; to Parties) – approx 30 config items impacted.</p>					
<b>Product Affected Reference</b>			<b>Target Issue</b>	<b>Cost of Embodying CP – Man Days</b>	
This should include: <ul style="list-style-type: none"> <li>• Impact on NETA Services; (review)             <ul style="list-style-type: none"> <li>• BMRA, SAA URS</li> <li>• IDD (alt 2 only)</li> <li>• BMRA, SAA SS (DS)</li> <li>• OSM (alt 2 only)</li> </ul> </li> <li>• Code and Code Subsidiary Documents             <ul style="list-style-type: none"> <li>• BSC section T (check for issues &amp; incorporate)</li> <li>• BSC Section Q &amp; X (alt 2 only)</li> <li>• BMRA, SAA Service Descriptions</li> <li>• NDFC (alt 2 only)</li> <li>• REP Cat (alt 2 only)</li> </ul> </li> <li>• Business definition documents (review)             <ul style="list-style-type: none"> <li>• BPM</li> </ul> </li> <li>• Impact on flows (new/amended/deleted/BSC party impact); (manage party/NGC communications)             <ul style="list-style-type: none"> <li>• SAA-I014 (alt 2 only)</li> <li>• NGC-BMRA *alt 2 only)</li> <li>• NGC-ELEXON (alt 2 only)</li> </ul> </li> <li>• Impact on BSCCo systems/processes (review/manage)             <ul style="list-style-type: none"> <li>• TOMAS</li> <li>• MDM &amp; Web site (Alt 2 only)</li> </ul> </li> <li>• Other</li> </ul>			<p><b>(1) Decision + Logica dev timescale + 1 month min</b></p> <p><b>(2) suggest add another 2-3 weeks for testing I.e Decision + logica dev timescale +7 weeks</b></p>	<p><b>(1) 12</b></p> <p><b>(2) 21</b></p> <p><b>(1) 8</b></p> <p><b>(2) 12</b></p> <p><b>3</b></p> <p><b>(1) 0</b></p> <p><b>(2) 6+ 4</b></p> <p><b>(1) 5</b></p> <p><b>(2) 15</b></p> <p><b>(1) 10</b></p>	

<ul style="list-style-type: none"> <li>• Regression testing</li> <li>• Participant testing (alt 2 only)</li> </ul>		<b>(2) 10+5</b>
Additional Project documentation <ul style="list-style-type: none"> <li>• Release plan (assume part of planned release)</li> <li>• Test Strategy (assume part of planned release)</li> <li>• Business Requirements Solution</li> <li>• Participant Test Specification (alt 2 only)</li> <li>• Participant Test report (alt 2 only)</li> <li>• Deployment Plans (part of planned release)</li> </ul>		2md 5md 5md (2) 10 md (2) 5 md
Additional Audit activities (PwC)?		6%
Somewhere between 50 and 200 md effort from project + audit costs		(1) 50 md, £30k (2) 105 - 200 md,
<b>Impact on other Systems<sup>3</sup> –</b> Alt 2 – NGC BSAD methodology		
<b>Assumptions<sup>1</sup> –</b> <ol style="list-style-type: none"> <li>1. Assumed part of a planned release and does not require a separate BRS, Test Strategy, Plan and deployment plan;</li> <li>2. No additional analysis is required once Mod approved i.e the analysis in the requirements spec (ref P074AS) is correct and does not need revisiting.</li> <li>3. Alt 1 is a simpler approach which utilises existing flows. No requirement to redefine those flows anywhere;</li> <li>4. Alt 2 has significantly more impact</li> <li>5. Both will require additional specific testing including tests against live data, matching results with TOMAS.</li> <li>6. Implementation timescale allows for adequate regression testing and participant testing (alt 2).</li> <li>7. PTS will be available for structured testing in appropriate timescale</li> </ol>		
<b>Issues and Risks<sup>1</sup> –</b> <ol style="list-style-type: none"> <li>1. High Business Risk – this mod falls within the scope of the operational audit and within the materiality criteria. It is therefore high business risk. It is also High complexity (complex changes to complex calculation) and alt 2 has High scope/impact (multiple changes to multiple existing flows).</li> </ol>		
<b>Related CPs<sup>1</sup></b> <b>P78</b>		
<b>Comments<sup>1</sup></b>  Assume you have had impact assessments from NGC, TOMAS, MDM, web site for these changes <b>TIMESCALE –</b> <b>(1) Decision plus the logica development timescale + 4 weeks Min</b> <b>(2) Decision plus the logica development timescale + 7 weeks Min</b>		

<sup>3</sup> This field is not mandatory

<b><u>BSCSDP IA for Mods in assessment</u></b>	TARGET RELEASE				
Type	Item	P74 A1	P74 A2	P78 1	P78 A2
BSC	Section P				
BSC	Section Q		X	X	X
BSC	Section T	X	X	X	X
BSC	Section X Annex X-1				
BSC	Section X Annex X-2		X	X	X
BSC	Section X Annex X-3				
BSC Procedures 01	Settlement calendar			X	
BSC Procedures					
BSC Procedures					
Service Descriptions	SAA	X	X	X	X
Service Descriptions	BMRA	X	X	X	X
Service Descriptions	ECVAA				
Service Descriptions	CDCA				
Service Descriptions	TAA				
Service Descriptions	CRA				
Service Descriptions	FAA				
Business Definition Documents	NETA Data File Catalogue		X	X	X
Business Definition Documents	Interface Design Document - Logica - Part 1		X	X	X
Business Definition Documents	Interface Design Document - Logica - Part 2		X	X	X
Business Definition Documents	EPFAL IDD				
Business Definition Documents	Reporting Catalogue		X	X	X
URSs	BMRA	X	X	X	X
URSs	CDCA				
URSs	CRA				
URSs	ECVAA				
URSs	SAA	X	X	X	X
URSs	TAA				
URSs	FAA				
Software	CDCA				
Software	CRA				
Software	BMRA	X	X	X	X
Software	SAA	X	X	X	X
Software	ECVAA				
Software	FAA				
Other Docs	SAA Operating Procedures		X	X	X
Other Docs	CDCA Operating Procedures				
Other Docs	CRA Operating Procedures				
Other Docs	BMRA Operating Procedures		X	X	X
Other Docs	ECVAA Operating Procedures				
Other Docs	TAA Operating Procedures				

Other Docs	FAA operating Procedures				
Communication Req Document	Communication Req Document				
Business Process Model	Business Process Model	X	X	X	X
System Specification	BMRA	X	X	X	X
System Specification	CDCA				
System Specification	CRA				
System Specification	ECVAA				
System Specification	SAA	X	X	X	X
Design Specification	BMRA	X	X	X	X
Design Specification	CRA				
Design Specification	CDCA				
Design Specification	ECVAA				
Design Specification	SAA	X	X	X	X
Manual System Specification	CRA, SAA, ECVAA				
System/Design Spec	FAA				
Requirements Catalogue	TOMAS	X	X	X	X
Design Documents	TOMAS	X	X	X	X
Software	TOMAS	X	X	X	X
LWI	TOMAS	X	X	X	X
Process/Pages	ELEXON Website	?	X	X	X
URS	ELEXON Website	?	X	X	X
Data/Content	ELEXON Website	?	X	X	X
Configuration	Gatekeeper		X	X	X
IT Operations Guide	IT Operations Guide		X	X	X
Software	MDM		X	X	X
Logica Testing Contract	Logica Testing Contract (Ref ?CN0122)				
Logica Test Scripts	Logica Test Scripts				
BSCCo manual procedures	LWIs				
Workarounds	W001				
Workarounds	W006				
Workarounds	W013				
External Dependency	NGC		X	X	X
Business Definition Documents	BMRA SAA Interface Specifications – NGC		X	X	X
Business Definition Documents	NGC ELEXON Interface Specification		X	X	X
	Count of Possible impact	19	33	34	33
	Count of X	16	33	34	33

## ANNEX 5 – TRANSMISSION COMPANY ANALYSIS

See attached document:

MAR074\_Annex 5a.doc

## **ANNEX 6 – PROPOSERS ANALYSIS**

See attached documents:

MAR074\_Annex 6a.doc

MAR074\_Annex 6b.doc

MAR074\_Annex 6c.doc

## **ANNEX 7 – SUPPORTING ANALYSIS**

See attached documents:

MAR074\_Annex 7a graphs 1 to 5.xls

MAR074\_Annex 7b graphs 6 to 9.xls

MAR074\_Annex 7c graphs 10 to 13.xls

MAR074\_Annex 7b graphs 14 to 17.xls

## **ANNEX 8 – TERMS OF REFERENCE**

See attached document:

MAR074\_Annex 8.doc

## **ANNEX 9 – ASSESSMENT CRITERIA**

See attached document:

MAR074\_Annex 9.doc