

ASSESSMENT CONSULTATION for Modification Proposal P212 'Main Imbalance Price based on Market Price'

Prepared by: P212 Modification Group

For attention of: BSC Parties and other interested parties
Responses due: 12:00 on Thursday 18 October 2007
(to: modification.consultations@elexon.co.uk)

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This document has been distributed in accordance with Section F2.1.10 of the Balancing and Settlement Code.¹

Proposed Modification P212 seeks to replace part of the current Energy Imbalance Price methodology with an alternative method for determining the 'main' Energy Imbalance Price. The main Energy Imbalance Price is that paid by Parties who are in imbalance in the same direction as the system. P212 proposes that the main Energy Imbalance Price is the market price increased by 5% when the system is short, or the market price decreased by 5% when the system is long.

No change is proposed to the reverse price which is based solely on the market price.

PURPOSE OF CONSULTATION

This consultation seeks respondents' views regarding P212 and, in particular:

- Whether the Proposed Modification would better facilitate the achievement of the Applicable BSC Objectives² when compared to the current Code baseline;
- In the context of the additional analysis provided by the Modification Group (See Sections 3.6.3.2 and 3.7), whether you have any views or comments? Areas for consideration include:
 - Whether you support the conclusions reached by the Modification Group;
 - Impact on Net Imbalance volume (NIV);
 - Market Participant behaviour including incentives to balance;
 - The impact on different types of Party, e.g. small Supplier, embedded generator, etc;
 - System Operator (SO) balancing costs; and
 - Market liquidity.
- Whether P212 raises any issues that you believe have not been identified so far and that should be progressed as part of the Assessment Procedure?
- Whether you support the implementation approach described in the consultation document?

You are invited to provide a response to the questions contained in the attached pro-forma.

Please send responses, entitled 'P212 Assessment Procedure Consultation', by **12:00 on 18 October 2007** to the following e-mail address: modification.consultations@elexon.co.uk.

Any queries on the content of the consultation pro-forma should be addressed to Chris Stewart (020 7380 4309), e-mail address chris.stewart@elexon.co.uk.

¹ The current version of the Code can be found at <http://www.elexon.co.uk/bscrelateddocs/BSC/default.aspx>.

CONTENTS TABLE

Summary of Impacted Parties and Documents	3
1 Executive Summary	4
2 Description of Modification.....	4
2.1 Current Arrangements	4
2.2 Background to Proposal	6
2.3 Options for the Proposed Modification	7
2.4 Proposed Modification.....	8
3 Areas Raised by the Terms of Reference	9
3.1 Determination of System Length.....	9
3.2 Determination of Default Rules.....	10
3.3 The Value of the Percentage Premium/Discount.....	11
3.4 Impact on Energy Imbalance Prices	14
3.5 Cashflow Analysis.....	16
3.6 Market Participant behaviour, including incentives to balance and trade	17
3.7 Impact on the System Operator including impact on NIV and SO costs	24
3.8 Impact on Settlement	24
3.9 Implementation Approach	24
4 Assessment of Modification Against Applicable BSC Objectives	25
5 Terms Used in this Document	28
6 Document Control.....	29
6.1 Authorities.....	29
6.2 References	29
Appendix 1: Applicable BSC Objectives	30
Appendix 2: Process Followed	30
Appendix 3: Results of Impact Assessment.....	36
Appendix 4: Initial P212 Assessment Procedure Consultation Responses	38

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² A copy of the Applicable BSC Objectives is provided in Appendix 1.

SUMMARY OF IMPACTED PARTIES AND DOCUMENTS

As far as the Modification Group has been able to assess, the following parties/documents would be impacted by P212.

Please note that this table represents a summary of the full impact assessment results in Appendix 3.

Parties	Sections of the BSC	Code Subsidiary Documents
Distribution System Operators <input type="checkbox"/>	A <input type="checkbox"/>	BSC Procedures <input checked="" type="checkbox"/>
Generators <input checked="" type="checkbox"/>	B <input type="checkbox"/>	Codes of Practice <input type="checkbox"/>
Interconnectors <input checked="" type="checkbox"/>	C <input type="checkbox"/>	BSC Service Descriptions <input checked="" type="checkbox"/>
Licence Exemptable Generators <input checked="" type="checkbox"/>	D <input type="checkbox"/>	Party Service Lines <input type="checkbox"/>
Non-Physical Traders <input checked="" type="checkbox"/>	E <input type="checkbox"/>	Data Catalogues <input checked="" type="checkbox"/>
Suppliers <input checked="" type="checkbox"/>	F <input type="checkbox"/>	Communication Requirements Documents <input type="checkbox"/>
Transmission Company <input checked="" type="checkbox"/>	G <input type="checkbox"/>	Reporting Catalogue <input checked="" type="checkbox"/>
Party Agents		
Data Aggregators <input type="checkbox"/>	H <input type="checkbox"/>	Core Industry Documents
Data Collectors <input type="checkbox"/>	I <input type="checkbox"/>	Ancillary Services Agreement <input type="checkbox"/>
Meter Administrators <input type="checkbox"/>	J <input type="checkbox"/>	British Grid Systems Agreement <input type="checkbox"/>
Meter Operator Agents <input type="checkbox"/>	K <input type="checkbox"/>	Data Transfer Services Agreement <input type="checkbox"/>
ECVNA <input type="checkbox"/>	L <input type="checkbox"/>	Distribution Code <input type="checkbox"/>
MVRNA <input type="checkbox"/>	M <input type="checkbox"/>	Distribution Connection and Use of System Agreement <input type="checkbox"/>
BSC Agents		
SAA <input checked="" type="checkbox"/>	N <input type="checkbox"/>	Grid Code <input type="checkbox"/>
FAA <input type="checkbox"/>	O <input type="checkbox"/>	Master Registration Agreement <input type="checkbox"/>
BMRA <input checked="" type="checkbox"/>	P <input type="checkbox"/>	Supplemental Agreements <input type="checkbox"/>
ECVAA <input type="checkbox"/>	Q <input type="checkbox"/>	Use of Interconnector Agreement <input type="checkbox"/>
CDCA <input type="checkbox"/>	R <input type="checkbox"/>	BSCCo
TAA <input type="checkbox"/>	S <input type="checkbox"/>	Internal Working Procedures <input checked="" type="checkbox"/>
CRA <input type="checkbox"/>	T <input checked="" type="checkbox"/>	BSC Panel/Panel Committees
SVAA <input type="checkbox"/>	U <input type="checkbox"/>	Working Practices <input type="checkbox"/>
Teleswitch Agent <input type="checkbox"/>	V <input checked="" type="checkbox"/>	Other
BSC Auditor <input type="checkbox"/>	W <input type="checkbox"/>	Market Index Data Provider <input type="checkbox"/>
Profile Administrator <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Market Index Definition Statement <input type="checkbox"/>
Certification Agent <input type="checkbox"/>		System Operator-Transmission Owner Code <input type="checkbox"/>
Other Agents		
Supplier Meter Registration Agent <input type="checkbox"/>		Transmission Licence <input type="checkbox"/>
Unmetered Supplies Operator <input type="checkbox"/>		
Data Transfer Service Provider <input type="checkbox"/>		

1 EXECUTIVE SUMMARY

The key conclusions of the P212 Modification Group ('the Group') to date are outlined below.

The Group:

- **AGREED** an initial view that the Proposed Modification would not better facilitate the achievement of Applicable BSC Objectives (b), (c), and (d);
- **ASSESSED** a number of solutions which could be used to determine the premium and discount for the Proposed Modification or for a potential Alternative Modification. These being:
 1. An ex-ante fixed percentage premium/discount;
 2. An ex-ante time varying percentage premium/discount; and
 3. An ex-post dynamic percentage premium/discount;
 but **AGREED** by majority that the Proposed Modification should be based on an ex-ante fixed percentage premium/discount and that there was not time to fully assess a potential Alternative Modification within the Assessment Procedure timetable directed by the Panel;
- **UNDERTOOK** analysis to discharge the P212 Terms of Reference including additional scenario analysis of Party behaviour and SO costs (See Sections 3.6.3.2 and 3.7);
- **REQUESTED** a BSC Agent and Transmission Company impact assessment;
- **RECALCULATED** Energy Imbalance Prices for the Proposed Modification;
- **NOTED** that the implementation costs for the Proposed Modification were estimated to be £259,000; and
- **AGREED** an Implementation Date of 6 November 2008 if an Authority decision is received on or before 29 February 2008 or 25 June 2009 if the Authority decision is received after 29 February 2008 but on or before 16 October 2008.

A description of the P212 solution is provided in Section 2. Further information regarding the Group's initial discussions of the areas set out in the P212 Terms of Reference is contained in Section 3.

A summary of the Group's initial views regarding the merits of the Proposed Modification can be found in Section 3. A copy of the Group's full Terms of Reference can be found in Appendix 2.

2 DESCRIPTION OF MODIFICATION

This section outlines the solution for the Proposed Modification as developed by the Modification Group.

For a full description of the original Modification Proposal as submitted by Bizz Energy ('the Proposer'), please refer to the P212 Initial Written Assessment (IWA).

2.1 Current Arrangements

Under the current baseline, actions taken by the System Operator (SO) to balance Supply and Demand for a Settlement Period set the main Energy Imbalance Prices (System Buy Price (SBP) when the system is 'short' and System Sell Price (SSP) when the system is 'long').

The current methodology for determining system length (whether the system is 'long' or 'short') was introduced under Approved Modification P78 'Revised Definitions of System Buy Price and System Sell Price' and amended under Approved Modifications P194 'Revised Derivation of the Main Energy Imbalance Price' and P205 'Increase in PAR level from 100MWh to 500MWh'. Overall system imbalance (i.e. Net Imbalance

Volume or 'NIV') is currently determined by summing the Pre-Gate Closure trades (reflected in Balancing Services Adjustment Data or 'BSAD') with the Bids and Offers accepted by the SO. The system is 'long' when the volume of Bids and / or Relevant Balancing Services predominates and the system is 'short' when the volume of Offers and/or Relevant Balancing Services predominates.

The following information contributes to the calculation of the main Energy Imbalance Price:

- Actions taken within the Balancing Mechanism to increase the total energy on the system (Accepted Offers), or actions within the Balancing Mechanism to decrease the total energy on the system (Accepted Bids); and
- Relevant Balancing Services provided outside the Balancing Mechanism, represented via BSAD.

When the system is estimated by the method above to be short of energy, the main price (i.e. SBP as the price applied to imbalances in the same direction as the system) is based on the volume weighted average of the most expensive 500MWh³ of priced balancing actions (accepted Offers and BSAD) remaining, following the application of the following rules:

- **De Minimis:** Individual accepted Bid and Offer Volumes below a defined threshold (1 MWh) are excluded from the price calculation completely. This approach is intended to remove 'false' actions created due to the finite accuracy of the systems used to calculate Bid and Offer Volumes;
- **Arbitrage:** Accepted Bids and Offers where no net energy has been delivered to the system but which have provided an overall financial benefit to the system are excluded from the price calculation completely (i.e. where the price of an accepted Offer Volume is less than the price of an accepted Bid Volume);
- **CADL:** Acceptance Volumes associated with Acceptances of short duration (below the Continuous Acceptance Duration Limit (CADL) currently 15 minutes) are treated as un-priced⁴ in the price calculation;
- **BSAD:** The SO determines whether Relevant Balancing Services will be treated as priced or un-priced. BSAD is calculated net⁵ and represents both priced and un-priced Relevant Balancing Services in aggregate form;
- **Emergency Instructions:** On the determination of the SO, Accepted Bids and Offers associated with Emergency Instructions may be tagged as Excluded Emergency Acceptances and therefore treated as un-priced for the purpose of Energy Imbalance Price Calculation; and
- **NIV Tagging:** Following application of the rules outlined previously, the Net Imbalance Volume (NIV) tagging process is applied to determine which of the priced actions will be subject to PAR tagging.

These processes are collectively known as the 'tagging mechanism'. The de-minimis, CADL, emergency instructions and NIV Tagging functions are the processes to remove what are deemed to be system balancing actions from the main price.

In addition, trades undertaken on power exchanges feed into market prices provided by Market Index Data Providers (or a single provider, as it currently stands). The reverse Energy Imbalance Price (i.e. the price

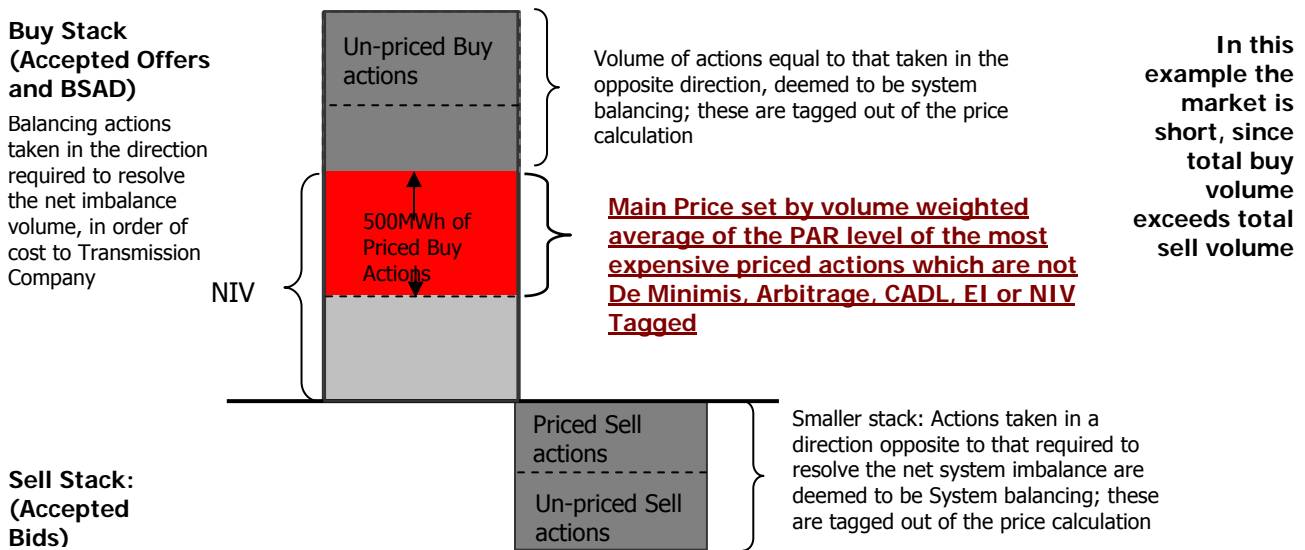
³ This is known as the Price Average Reference (PAR) volume. PAR is currently 500MWh. When the system has excess energy (said to be 'long') then the main price (SSP) will be based on the volume weighted average of the most expensive 500MWh of priced balancing actions (accepted Bids and Energy BSAD) remaining following the application of the tagging mechanism rules. If the NIV is less than 500 MWh then no volumes will be PAR tagged.

⁴ Un-priced volumes contribute to the determination of which actions set the main Energy Imbalance Price, however the costs of these actions are not included in the main Energy Imbalance Price.

⁵ This means that in any Settlement Period there can only be one non-zero volume of Energy BSAD (EBVA or ESVA), and one non-zero volume of System BSAD (either SBVA or SSVa).

applied to imbalances in the opposite direction to the system) is based on the market price derived from data submitted by Market Index Data Providers.

Figure 1. Example of the Existing Arrangements Main Imbalance Price Calculation (Short System)



2.2 Background to Proposal

Subsequent to the Ofgem-led Cash out Review that was re-established during winter 2006/2007, the Proposer believes that the current rules are not producing a “clean” energy price for the main price. This arises because the current tagging rules that seek to remove certain balancing actions from the pricing calculation are considered to be defective and result in a high level of ‘pollution’ of the energy price from costs that relate to maintaining the system balance.

Additionally, the Proposer stated that it has been shown that the current main Energy Imbalance Price calculation includes actions taken by the SO for reasons considered to be ‘energy plus’ even though a number of the current tagging mechanisms are used to try to remove some of these. Recent documentation available in support of the current tagging mechanism deficiencies has been provided in the Approved Modification P205 ‘Increase in PAR volume from 100MWh to 500MWh’ decision letter⁶ and from within the Ofgem-led Cash out Review⁷.

It should be noted that some Modification Group members believe that a sufficient level of materiality of this defect has not yet been established. ‘Energy plus’ actions are intended to encapsulate all those actions taken by the SO for more than just energy reasons. An ‘energy plus’ action might be taken for energy balancing reasons, but would also include actions taken for any one or more of the following reasons:

- Frequency response;
- Reserve creation;
- Fast reserve (intra half-hour events such as TV pickup);

⁶ Available from Ofgem’s website at:

<http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=86&refer=Markets/WhlMkts/CompanEff/CashoutRev>

⁷ See:

- NGET presentation to Cash out Review ‘What is the Impact of Non Exclusive Energy Actions on Imbalance Pricing’, 30 March 2007;
- Cash out Review 2007 ‘An Independent Perspective’, Nigel Cornwall, published 22 March 2007.

Ofgem documentation of the Cash Out Review can be found at:

<http://www.ofgem.gov.uk/MARKETS/WHLMKTS/COMPANDEFF/CASHOUTREV/Pages/CashoutRev.aspx>

- Constraint activities (including resolving locational issues).

The Proposer believes that any tagging process will always be an approximation and one that is prone to producing volatile and highly inaccurate energy prices: a more reliable and consistent proxy for a true energy price is the market price as it reflects the value of short-term energy trades and avoids complex tagging methodologies that depend on detailed technical rules and judgements that are applied after the event.

The Proposer stated that P212 would remove competition distortions inherent in the current arrangements that discriminate against intermittent technologies and non-vertically integrated players who are both systematically exposed to forecast error. It would also increase liquidity in the short-term market because operators would be less inclined towards "fear of cash-out", and they would be less concerned to self-hedge and trade their imbalance. It is the Proposers' view that this would have a positive impact on Applicable BSC Objective (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".

As P212 would also remove the complexity inherent in the current Energy Imbalance calculations, the Proposer also believes that this simplification will positively impact Applicable BSC Objective (d) "Promoting efficiency in the implementation and administration of the balancing and settlement arrangements".

The Proposer believes that P212 would reduce the volatility and improve the predictability of the main Energy Imbalance prices thus reducing the incentive for Parties to take a longer position into cash out to avoid the risk of high SBP. This would better facilitate Applicable BSC Objective (b) "the efficient, economic and co-ordinated operation of the Transmission System by the Transmission Company" by reducing the level of balancing required by the SO.

2.3 Options for the Proposed Modification

The Proposer did not specify the actual criteria for which the premium or discount on the market price would be selected (although a value of 5% was suggested). The Proposer suggested that this was left to the expertise of the Modification Group to determine. This led to the Group identifying three potential options:

1. Ex-ante Fixed Percentage;
2. Ex-ante Profiled Percentage (varying with time); and
3. Dynamic Percentage Determined Ex-post (varying with some measure of system stress).

The Group found it a difficult exercise to be able to select which option should form the Proposed solution (and potentially one Option could also form the solution for an Alternative Modification). The majority did not believe that any would constitute a methodology that can be quantitatively supported. Additionally, Option 3 was not a fully defined option (as it only provided the principles of what the solutions should look like) when further analysis relating to 'Party behaviour' was requested by the Panel.

The Group undertook an initial consultation to obtain industry views on the principles behind each option and which option was preferred. However, the responses from the consultation did not provide a clear steer or significant majority preference for a particular option. 21 responses were received, with a majority indicating that no solution better facilitated the Applicable BSC Objectives, 7 indicated no preference, 6 indicated their first preference was Option 3 and 5 indicated their first preference was Option 1.

Furthermore, during this time, the Group were also directed by the Panel, based on feedback from the Authority, to undertake additional analysis on Party behaviour, market impact and SO costs. The Group was given a two month extension in which to achieve this. As Option 1 was a fully defined solution for which the Group had obtained BSC Agent and Transmission Company impact assessments, the majority of the Group initially believed that this option should be progressed as the solution in isolation. This was due to the amount of time remaining in the Assessment Procedure and the desire of the Group to be able to provide an adequate Assessment Report that included the requested further analysis. The Group also believed that an

additional extension to the timetable would not have been forthcoming due to the view that the initial minded intent of the Authority was to conduct a regulatory impact Assessment of P211 and P212 in unison. The Proposer noted that they strongly believed Option 3 should also continue to be assessed as there were issues apparent with Option 1, which they believed that Option 3 addressed (for example, having an ex-post price rather than an ex-ante price). As the Group were subsequently split on whether to progress Option 1 in isolation or Option 1 and Option 3 together, the Group sought a steer in their Interim Report to the Panel.

The Panel endorsed the initial majority view of the Group that only Option 1 should be considered for further analysis. It was their unanimous view that Option 1 should be comprehensively assessed and that because Option 3 was still to be defined and agreed by the Group that there was not enough of the existing Assessment Procedure timetable remaining. Assessing Option 3 in parallel with Option 1 would give rise to a risk that an inadequate Assessment Report would be produced, where neither solution was sufficiently assessed to enable a reasoned recommendation to be provided by the Panel to the Authority.

2.4 Proposed Modification

The mechanism for calculating Energy Imbalance Prices for the P212 solution compares to the current baseline as follows:

- Rather than using actions taken within the Balancing Mechanism to increase the total energy on the system (Accepted Offers), or actions within the Balancing Mechanism to decrease the total energy on the system (Accepted Bids), the information that contributes to the calculation of the main Energy Imbalance Price will be a premium or discount of 5% applied to the Market Index Price⁸ in each Settlement Period. Note that this approach excludes the actions taken by the SO outside of the Balancing Mechanism such as BSAD, which are currently reflected into cash out;

The information that contributes to the calculation of the main Energy Imbalance Price will therefore be:

- A fixed percentage premium (5%) of the Market Index Price added to the Market Index Price in each Settlement Period when the system is short (and SBP is the main price); and
- A fixed percentage discount (5%) of the Market Index Price removed from the Market Index Price when the system is long (and SSP is the main price);

For example, if the Market Index Price is £100/MWh, the fixed percentage is set at 5%, and the system is:

- Short, then SBP will be £105/MWh and SSP (as the reverse price) will be £100/MWh;
 - Long, then SSP will be £95/MWh and SBP (as the reverse price) will be £100/MWh; or
 - In balance (NIV = 0), then SBP and SSP will be £100/MWh.
- The 5% value is set in the BSC as a parameter (ϕ). This is written into the BSC and can only be changed by a modification to the BSC;
 - The calculation of the Market Index Price as defined in the MIDS will not change (although the Group agreed that this would benefit from review outside this Modification were P212 to be approved);
 - The existing NIV methodology (using Accepted Bids, Offers and BSAD) will be retained to determine the direction of the system. However, as the prices of actual acceptances making up NIV would not

⁸ Whilst the title of P212 refers to 'Market Reference Price', this refers to the 'Market Index Price' which is the term used in the BSC and Market Index Definition Statement.

be used for the Main Imbalance Price calculation it should be noted that the existing process can be simplified as described in the P212 Requirement Specification⁹ and section 3.1.1;

- The Reverse Price will remain the Market Index Price as defined in the existing BSC pricing arrangements;
- The Default rules will be amended such that, when the volumes supplied by the Market Index Data Provider's are below the required threshold for liquidity in any Settlement Period, then the Market Index Price in the Settlement Period immediately prior will be used to determine both the Reverse Price and the main Energy Imbalance Price. The Reverse Price will default to the Market Index Price from the previous Settlement Period. The main Energy Imbalance Price will default to the Market Index Price from the previous Settlement Period plus or minus the percentage premium or discount as determined by the length of the system in the current Settlement Period. Where the previous Settlement Period has also not met the required threshold for liquidity then the most recent Market Index Price which did meet the threshold will be used¹⁰; and
- When NIV is equal to zero the main Energy Imbalance Price will revert to the Reverse Price.

3 AREAS RAISED BY THE TERMS OF REFERENCE

This section outlines the initial conclusions of the Modification Group regarding the areas set out in the P212 Terms of Reference, views of respondents to the initial Assessment procedure consultation, and the Modification Group's subsequent discussions. The areas set out in the terms of reference plus that required for the additional analysis are:

- Determination of System Length;
- Determination of the Default Rules;
- The value of the Percentage Premium/Discount;
- Impact on Energy Imbalance Prices;
- Cashflow analysis;
- Market Participant behaviour, including incentives to balance and trade;
- Impact on the System Operator including impact on NIV and SO costs; and
- Impact on Settlement.

The Initial P212 Assessment Phase consultation responses can be found in Appendix 4.

3.1 Determination of System Length

3.1.1 Modification Group's Initial Discussions

The Proposer highlighted that the existing methodology for determining system length in any Settlement Period (NIV) may need to be changed. It was suggested that system length might be defined by the difference between total notified contract volumes and a measure of Metered Volumes in any half hour. This is what the Total System Energy Imbalance Volume (TQEI) is. The Group undertook to compare NIV against TQEI. As only the determination of the direction of the system is required (whether NIV is greater than or less than zero), the Group compared how often NIV and TQEI indicated different system direction.

⁹ This can be found at:

<http://www.elexon.co.uk/ChangeImplementation/modificationprocess/modificationdocumentation/modProposalView.aspx?propID=232>

¹⁰ The reason that the previous Market Index Price is used here, and not the previous Main Imbalance Price, is because the direction of the system may change from one Settlement Period to the next.

For the year 1 April 2006 to 31 March 2007, 2.6% of Settlement Periods (that is 452 out of a potential 17,520 Settlement Periods) produced different signs for NIV as for TQEI. However, of those 452 Settlement Periods, 52% were when NIV was under 10MWh and only 3% were when NIV was over 100MWh. Additionally, 45% of the 452 Settlement Periods were in the Off-peak period for 11pm until 6:59am.

The Group could not identify any other means for determining system length as NIV represents what the SO had to do in real time to balance the system. The Group therefore concluded that NIV was a good estimate of TQEI and because it is available in prompt pricing timescales should be retained as the method for determining the length of the system under P212.

As the prices of actual acceptances making up NIV would not be used for the Main Imbalance Price calculation, the Group noted that the existing process should be simplified, if there was no additional cost in doing so. This was confirmed in the BSC Central Systems' impact assessment if P212 were to be progressed that simplifying NIV would be included in the estimated price. The NIV simplification is detailed in the P212 Requirement Specification. Additionally, the Group agreed that De-Minimis tagging would be removed from the current determination of NIV to increase the simplicity of the calculation.

3.1.2 Views of Respondents to Initial Assessment Procedure Consultation

There were no comments from respondents in relation to the determination of system length.

3.1.3 Modification Group's Further Discussions

The Group did not discuss the determination of system length further. The Group's conclusion on the determining system length rules did not change from those initial discussions.

3.2 Determination of Default Rules

3.2.1 Modification Group's Initial Discussions

The Proposer suggested that a default price for the main Energy Imbalance Price would be required to replace the current default methodology for any circumstances where the Market Index Definition Statement (MIDS) volume thresholds were not reached. This might be derived by reference to a price discovered in the preceding Settlement Period or be an administered price.

The Group noted that changing the default rules in effect changes the calculation of the reverse price in such situations of default. The current rules for the reverse price when the MIDS liquidity threshold is not met are that it will default to the main price. As the Proposal did not indicate any changes to the reverse price were required the Group has requested a legal view as to whether this is in scope.

The Group undertook analysis of Settlement Periods that had defaulted to identify whether the previous Settlement Period provided a good proxy for what the market price would have been, had the liquidity threshold been reduced from 25MW to 0MW. This analysis can be found in Section 3 of Attachment 1. The Group acknowledged that the previous Settlement Period did not always provide an exact proxy however, as the liquidity threshold was generally not met in low priced periods and the pound value of the difference is generally low, that using the price in the previous Settlement Period provided a reasonable default rule.

The Group agreed that the arbitrary nature of an administered price would make this approach inferior to using the market price in the previous Settlement Period which is more likely to provide a sensible price for the Settlement Period. No other approaches for setting default prices were identified.

The Group also assessed whether there would be any impact on the Market Index Data Provider. As the Proposed Modification specifically states that the main Energy Imbalance Price is to be based on the market price, the Group sought legal advice as to whether any changes can be made to the MIDS (in which the market price calculation is contained including the Market Index Definition liquidity volume thresholds). The legal advice was that any changes were out of scope for the Proposed Modification, although these could potentially form

part of an Alternative. Additionally, the Group could provide a recommendation to the Panel that the MIDS should be reviewed should P212 be approved by the Authority. As the P212 Proposed solution will use the market price as currently determined there would be not impact on Market Index Data Providers.

3.2.2 Views of Respondents to Initial Assessment Procedure Consultation

There were no comments from respondents in relation to the determination of default rules.

3.2.3 Modification Group's Further Discussions

The Group did not discuss the determination of default rules further. The Group's conclusion on the default rules did not change from those initial discussions.

3.3 The Value of the Percentage Premium/Discount

3.3.1 Modification Group's Initial Discussions

As the Proposer did not specify the actual criteria for which the premium or discount on the market price would be selected, this was left to the expertise of the Group.

This has led to Group discussion surrounding the value of the percentage premium and discount which is captured in, and has resulted in, the proposed Options described in Section 2.

One member also suggested a further alternative option to address the same defect. The suggested alternative was that unmatched Bids and Offers on the Power Exchanges are used to form a price curve from which a price for resolving NIV (as currently determined) can be established. Once an Offer curve has been derived, the price could be set using these Offers.

The Group believed that there may be merits in the concept proposed but believed that it involved a fundamental shift in the arrangements which would have large impacts on the SO and Parties. Such a solution could not be assessed as part of this modification due to it impacting areas far beyond those intended by the P212 change. The Group did believe that such a concept would benefit from further consideration outside of P212.

The Group discussed at length on what basis this premium or discount could be set. Whilst the three potential options below were identified by the Group, the majority did not believe that any would constitute a methodology that can be quantitatively supported to prove that one value was 'correct'. The approaches identified for setting the percentage premium or discount were:

- a) Using historical analysis of previous imbalance prices (see Section 2 of Attachment 1) which are assumed to contain some element of the defect. For example, the premium and discount could be set at the average percentage spread between market price and main imbalance price for the BSC Year 2006/07. Although this approach was not pursued by the Group, the analysis showed an increase of 86% to SBP over market price when the system was short and a decrease of 23% to SSP when the system was long;
- b) Referencing other electricity markets (for example the French market (see Attachment 3 for further information) currently uses a 5% uplift/discount on a price which is based on the costs of the French SO balancing the system); or
- c) Using the average percentage spread between an Ex-Post Unconstrained Schedule Price (as determined by the Proposed Modification P211 'Main Imbalance Price based on Ex-Post Unconstrained Schedule' solution) and market price for the BSC year 2006/07. This would be based on the assumption that the P211 calculated price is a proxy for a 'pure' energy price. Although this approach was not pursued by the Group, the analysis showed an increase of 63% to SBP over market price when the system was short and a decrease of 17% to SSP when the system was long

A number of Group members raised concerns in regard to these three approaches because they did not alleviate perceived concerns about the arbitrary nature of the percentage. Some members had the following comments:

- The solution does not provide any allowance for potentially significant changes in market participant behaviour under the P212 arrangements and the current baseline;
- Note the fundamental differences between other markets and the BSC arrangements. In particular, the Group could not identify another market in which a premium or discount was applied to a price discovered on the power exchanges;
- They did not believe it was possible to determine what a 'pure' energy price is. Some members argued there was also no evidence that (in relation to (c) above) the P211 solution would in fact be closer to a 'pure' energy price than the current arrangements; and
- Noted that providing analysis based on historical data would potentially give an impression to the industry that the percentage was not arbitrary.

The Proposer initially suggested that a fixed figure of 5% should be used for the premium and discount. The Proposer's justification for the 5% figure is that this was sufficient to retain the incentives on Parties to balance. The majority of the Group did not believe there was sufficient justification to be able to select a percentage figure. The Group subsequently had substantial discussion on the criteria.

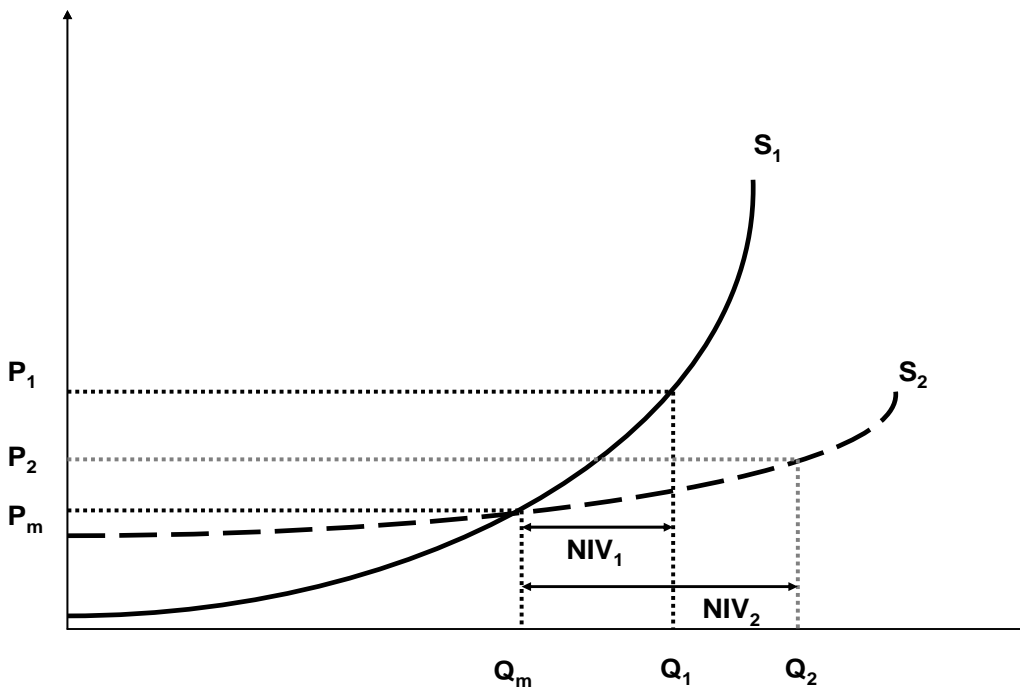
At the fourth meeting, the Proposer provided a paper which stated "The differential in the proposal is intended basically to act as a proxy for the increased costs that could be said to be incurred by the SO relative to market discovery, reflecting the fact the SO has no choice but to purchase and will do so inefficiently relative to the market". Additionally, the Proposer noted that "An alternative way is to see the cost differential purely as an incentive to contract. For this approach to stand up one must work from the assumption that the reference price must already be cost reflective as it is based on documented energy trades in short-time scales".

The Group considered the above analysis and investigated other markets. However, despite the substantial effort deployed by the Group, establishing a criteria for which it believes would provide a good proxy for the costs of the SO balancing the system was not possible. Additionally, the Group argued that if the aim of P212 is also to incentivise Parties to balance or to contract then any arbitrary percentage will achieve this to some degree; with an extremely high percentage creating significant incentives to balance/contract and a low percentage creating a reduced incentive.

Some members of the Group believed that the introduction of Energy Imbalance Prices based on a market price would create a disconnect between the forward market and the balancing mechanism (as the Energy Imbalance Prices would bear no relation to the costs incurred by the SO in balancing the system). Thus a fundamental feedback loop would be lost resulting in potentially significant changes in behaviour. Under P212, Parties would make rational decisions based on the opportunity costs they are faced with and this could cause a significant shift in when it is rational for a Party to choose to be in imbalance.

A number of members of the Group believe that the concept of P212 is flawed regardless of the option chosen. They used the following example, referring to figure 2, to illustrate their concerns.

Figure 2. Representative Supply Curves



Suppose that the market is faced by supply curve S_1 and trades pre Gate Closure up to a quantity Q_m that corresponds to a price P_m . Price P_m in the context of P212 would correspond to the Market Index Price. Suppose that the market is short after Gate Closure and that the NIV that the SO has to meet in this instance is NIV_1 . The SO would be faced with costs ranging from P_m to P_1 . In a marginal imbalance price setting mechanism the price would be set as P_1 , whilst in an average price the price would lie somewhere between this and P_m .

Now suppose that the market is faced by the curve S_2 and that it trades pre Gate Closure to the same quantity Q_m and sets the same market price of P_m , but that the curve thereafter increases at a lower rate than under curve S_1 . Again the market is short, but a higher NIV, NIV_2 , is required to be met by the SO. This time the SO is faced with prices ranging from P_m to P_2 . The Energy Imbalance Price with a marginal calculation would be set at P_2 , whereas an average set price would be somewhere between this and P_m . The average or marginal price faced by the SO is lower in this case due to the shape of the curve, even though the NIV is higher.

In order to reflect the costs faced by the SO in balancing the market, the imbalance price calculated under the second scenario with curve S_2 should indeed be lower than for the first scenario with curve S_1 . However, if either of the first two Proposed Options (Fixed or Variable Percentage) for P212 were to be adopted the Energy Imbalance Price would be identical under both scenarios, set as a fixed percentage uplift on P_m . Under P212 Proposed Option 3 (Dynamic Percentage) the Energy Imbalance Price in the first scenario could be lower than in the second scenario, as the NIV is smaller, even though the SO would be faced with higher costs.

The same Group members believed that this lack of cost reflectivity means that Parties in imbalance would not have the appropriate costs targeted at them which will be detrimental to competition and lead to inefficient balancing of the market.

Some other Group members recognised that P212 would not absolutely reflect the SO costs, (noting that it is very difficult to define the energy cost of the SO actions), but believed that the reduction in complexity of the way Energy Imbalance Prices are set outweighed this dis-benefit.

The Group considered various historic analyses, but in the absence of any satisfactory methodology or criteria for discovering the fixed percentage premium or discount that would remove its arbitrary nature, the Group believed that P212 should use the initial percentage suggested by the Proposer of 5%. For that reason the Group suggested that the uplift and discount for the Proposed Modification be fixed at 5%.

3.3.2 Views of Respondents to Initial Assessment Procedure Consultation

Some respondents noted that a 5% value has no greater or less validity than any other arbitrary figure as there was no quantitative analysis or potential quantitative analysis that would be able to support any single value. It was commented that this arbitrary nature does not reflect balancing costs historically or in real time.

There were no comments in support of 5% as opposed to any other value although views as to why the Proposal Modification (Option 1 in the initial consultation) better facilitates the Applicable BSC objectives are captured in Section 4 below.

3.3.3 Modification Group's Further Discussions

The Group did not change its initial view that it did not believe there was sufficient justification to be able to select a certain percentage figure over any other value. In the absence of any satisfactory methodology or criteria for discovering the fixed percentage premium or discount that would remove its arbitrary nature, the Group maintained that the initial percentage suggested by the Proposer of 5% should be used.

3.4 Impact on Energy Imbalance Prices

3.4.1 Modification Group's Initial Discussions

3.4.1.1 Evaluating the Defect

It is suggested by the Proposer that the Energy Imbalance Prices under the current arrangements are impacted to a high level of imperfection in the tagging mechanism. This is considered to be a concern due to the negative impacts of exposing Parties to cash out prices that are not reflective of the true cost of energy balancing of the system.

The Proposer indicated that evidence of the defect is already in the public domain¹¹. Further evidence had also been provided under P211 "Main Imbalance Price Based on Ex-post Unconstrained Schedule". The Proposer notes that it is difficult to assess the degree of the defect as only the SO can say why any individual action was taken.

The Group have considered the extent to which the current Energy Imbalance Prices reflect the true energy costs of the SO balancing the system. However, the Group noted that this would not be an easy exercise due to the difficulty in working out whether each action taken by the SO should be included, or not, in the Energy Imbalance Price calculation. Furthermore, for any action considered to be 'energy plus', this is a joint action that would have also been required for energy purposes by the SO. Therefore, the Group would be required to take a view to determine which joint actions should theoretically be included in an Energy Imbalance Price to discover a price that is not impacted by tagging imperfections. The Group could not establish such a view within the existing timescales.

The Group considered that determining an Energy Imbalance Price that reflects the true energy costs of the SO balancing the system would be too difficult to do on any large scale, because each Settlement Period would have to be scrutinised in detail. Furthermore, when scrutinising each action, there would need to be a

¹¹ See Section 2.6 for information available.

potentially subjective method by which each action taken by the SO can be categorised as one that should, partially should, or should not be included in Energy Imbalance Prices.

Some Group members expressed the view that the overall objective of any cash out regime is that the cash out prices should be a proxy of the short term costs of the SO balancing the system. This is a socialised cost that the cash out arrangements attempts to target on those Parties who are out of balance. If the SO did not exist and an individual Party had to balance on a moment to moment basis, then that Party would be likely to incur very significant costs. Thus given the SO does perform this role on behalf of all Parties then those Parties out of balance should face these costs as appropriately targeted as possible. An additional view of some Group members is that cash out prices should reflect the opportunity cost of managing the risk of imbalance in the forward market. Therefore, any solution should ensure that the BSC arrangements do not move further away from reflecting the costs faced by the SO in balancing the system.

Whilst there was a view that the defect has been shown to exist in certain Settlement Periods, some Group members were still not satisfied that evidence proving significant materiality of the defect existed (or that there is in fact a high level of imperfections in the current tagging mechanism).

3.4.1.2 Recalculated Energy Imbalance Prices

The Group considered the analysis illustrating the difference between the Energy Imbalance Prices calculated under the current baseline and those of the P212 Solution. The analysis is included in Section 4 of Attachment 1. On consideration of this analysis the Group noted that:

- When comparing the P212 Energy Imbalance Prices with the current live prices it should be noted that on 2 November 2006, PAR value of 500MWh was introduced. (Prior to this a volume weighted average price of balancing actions not removed via the Tagging Mechanisms was used and thus prices were by definition equal to or lower than a PAR500 price). For the period 1 March 2006 until 31 March 2007:
 - When the system was short, the P212 Proposed SBP was on average £28.29/MWh (or 38.8%) lower than the current arrangements (with a maximum decrease of £352/MWh);
 - When the system was long, the P212 Proposed SSP was on average £6.74/MWh (or 31%) higher than the current arrangements (with a maximum increase of £134/MWh);
 - There were 936 out of 19,005 Settlement Periods in which either SBP was greater than the current arrangements or SSP was less than the current arrangements. The Group noted that this was primarily due to the removal of the application of the default rule in which the current reverse price is capped by the main price.
- On 14 March 2006 which was the day following a Gas Balancing Alert (GBA)¹² and indicative of system stress, the P212 recalculated prices were significantly lower than those of the arrangements that existed at that time (a volume weighted average price of balancing actions not removed via the Tagging Mechanisms). Whilst the P212 recalculated prices did rise through the day toward the peak, the signal to balance was significantly weaker.

Therefore, the Group concluded that there is a divergence between the Energy Imbalance prices calculated from the current arrangements and those calculated under P212. The Group also noted that this divergence appeared to be more substantial in periods of System Stress. However, without any benchmark for where an optimal price (without any tagging imperfections) would lie (and acknowledging that this was not achievable), the Group could not conclude whether the P212 solution was a better estimate of the true energy costs of the SO balancing the system than the current arrangements.

¹² A GBA can occur under the Uniform Network Code (Great Britain's gas market) and its purpose is to indicate a potential requirement for demand response. It is based on a combination of the absolute Supply & Demand level and the impact of a potential breach of a Safety Storage Monitor. The GBA will not cover the likelihood of Interruption to manage Transportation Constraints.

3.4.2 Views of Respondents to Initial Assessment Procedure Consultation

3.4.2.1 *Evaluating the Defect*

Views of the respondents with regard to the defect reflected the varying views within the Group. Some respondents stated that there is significant evidence of the defect whilst the most common response was that the scale of the defect has not been proven to be material and as such a wholesale change in the arrangements cannot be justified.

A minority of respondents indicated that the current arrangements were too complex and that this may deter potential new entrants. One respondent noted that the degree of complexity in the current arrangements should not be seen as a defect. Whilst simplicity was desirable, where this can be achieved, this should not be at the expense of having cost reflective prices which is a simple concept.

3.4.2.2 *Recalculated Energy Imbalance Prices*

Some respondents noted the benign level of the recalculated energy prices. One respondent believed that the prices would therefore be less punitive.

3.4.3 Modification Group's Further Discussions

3.4.3.1 *Evaluating the Defect*

The Group's views on the defect have not changed from those initially expressed. The Proposer noted that there whilst the materiality of the defect may not be considered by all to have been demonstrated, that there was also no evidence provided that the defect was not material. Some members of the Group stated that the burden of proof should be to show that a defect exists.

3.4.3.2 *Recalculated Energy imbalance prices*

The Group reinforced its view that the impact P212 will have on Parties behaviour would mean that recalculating Energy Imbalance Prices based on a historic Market Index Price is unlikely to give a good indication of the prices that would actually occur if P212 were to be approved. The Group focused its analysis on the scenarios discussed in section 3.6.

3.5 Cashflow Analysis

3.5.1 Modification Group's Initial Discussions

For otherwise identical conditions, P212 will generally decrease Energy Imbalance Prices as compared to the current baseline and will do so throughout the whole period of analysis. It in turn follows that P212 Proposed will decrease the RCRC. The impact on RCRC can be seen in Figure 15 of Attachment 1.

Some members of the Group noted that under P136 'Marginal Definition of the 'main' Energy Imbalance Price', P137 'Revised Calculation of System Buy Price and System Sell Price' and P194 'Revised Definition of the Main Energy imbalance Price', the impacts of RCRC on incentives to balance had been well documented¹³. It was those members' belief that analysing RCRC could be considered of little value as it is a side effect of the Settlement calculations. The Settlement calculations can be unpredictable as the relative sizes of SBP and SSP could lead to the RCRC being either a debit or a credit. The inability to predict RCRC means that it would have little or no influence on Parties' incentives and will not cause any change in their behaviour. Therefore those members concluded that RCRC does not distort the incentive to balance provided by Energy Imbalance Prices.

¹³ The Assessment of these Modification's can be found on ELEXON's website at <http://www.elexon.co.uk/ChangeImplementation/modificationprocess/modificationdocumentation/default.aspx>
The Authority's decision in respect of each Modification can be found on Ofgem's website at: www.ofgem.gov.uk

3.5.2 Views of Respondents to Initial Assessment Procedure Consultation

There were no comments from respondents in relation to the cashflow analysis.

3.5.3 Modification Group's Further Discussions

The Group did not discuss the cashflow analysis further however they do note the impact of RCRC on the behavioural model discussed in section 3.6 below.

3.6 Market Participant behaviour, including incentives to balance and trade

3.6.1 Modification Group's Initial Discussions

The Proposer stated that under P212 some Parties will not be subject to the same volatility of prices (especially SBP) and they will therefore be less concerned about self-hedging and more open to trading their imbalance. The Proposer stated there would be a reduction in imbalance risk in the market more generally and incentives to vertically integrate would be reduced.

The Group believe that the P212 solution will lead to a change in behaviour of Parties when facing imbalance. Modelling behaviour is however a subjective exercise and as such the Group felt that an economic qualitative assessment of the likely change in behaviour that would materialise as a consequence of the Proposed options is required. The Group also undertook limited (in scope and given the required assumptions) analysis of nine Settlement Periods to help understand what rational behaviours might result from a P212 solution.

3.6.1.1 Qualitative Assessment of Behaviour

Some members noted that Energy Imbalance Prices provide an incentive for Parties to manage their risk of exposure to imbalance. As SBP currently tends to be more volatile than SSP, then to manage their risk appropriately they may choose to attempt to be long on average. One Group member proposed that when SBP was highest coincides with a time when the market tends to be short and demand is highest (weekday morning and evening peaks). Therefore the member did not agree that the behaviour suggested by the Proposer in which Parties tend to be long applies uniformly to all Settlement Periods.

As the Group had not initially confirmed the criteria for the percentage premium/discount, they noted that an incentive to balance depends entirely on the criteria chosen for the solution. Under P212, Parties will make rational decisions to balance based on their expectation of the market price plus the criteria. A fixed percentage of 5% provides a much weaker incentive to balance than the current arrangements. However, a fixed percentage of 1,000% would lead to much greater incentives to balance.

The Group noted that it would also be in Parties' interests to seek to influence the market price (within the rules) to their advantage. Thus under P212, given the market price is set on the trades taken in the power exchanges within 20 hours of Gate Closure, Parties have the ability to make trades that will consequently impact the Energy Imbalance Price. Further, one member noted that employing rational expectations, there is the potential for Parties to withdraw from trading on the power exchange (and thus impacting the Energy Imbalance Prices). A Party may do this if they believe it is beneficial to do so (that is, when their expectation of the Energy Imbalance Price is a more profitable option than that offered on the power exchange) and they form the view that it is also beneficial for all other Parties to withdraw from trading. Such behaviour may lead to benign Energy Imbalance Prices in periods of system stress. There is potential for this to occur given Parties can form an accurate expectation of the Energy Imbalance Price whilst still trading on the power exchange.

A number of Group members believe that P212 will not reflect any costs of Post Gate Closure plant loss and the Energy Imbalance Price would be related only to pre Gate Closure trades. This decreases the long term incentive on Parties to maintain their plant to ensure an efficient level of plant reliability.

Additionally, some Group members believe that the P212 solution will lead to increased actions having to be taken by the SO because the feedback loop to the SO costs to balance the system have been removed thus reducing the incentive to balance. This in turn increases the SO costs which, where the P212 price does not reflect the SO costs, would not be targeted on those in imbalance.

3.6.1.2 Analysis of Rational Behaviour

The Group initially undertook limited analysis of the trades that occurred on the power exchange in nine historic Settlement Periods to help understand what rational behaviours might result from a P212 solution. For this analysis, for each of the nine Settlement Periods the following assumptions were made:

- The trades that actually occurred were the least expensive available;
- Parties would choose to trade under the P212 arrangements based on their rational expectation of what market price would be;
- Expected Market Index Price (E(MIP)) is calculated at the point in which each actual trade was made and is based on all trades for the Settlement Period in question that have occurred (under the current arrangements) at a moment in time before Gate Closure and that are currently included in the market price according to the Market Index Definition Statement; and
- At any point in time when E(MIP) is calculated, a Party would have the expectation that there are no future trades.

Thus under P212, expected rational behaviour would result in:

- A Party only purchasing a contract if the price less than $E(MIP) + 5\%$; and
- A Party only offering to sell a contract at a price within 5% of $E(MIP)$

The Group caveat this analysis with the following observations:

- The trades that were struck (and which the analysis is based on) were done so under the current arrangements and the behaviours that led to that contract being struck were as a result of the current arrangements; and
- The contracts offered on the power exchange would potentially change (in both volume and price) under a P212 regime.

The analysis is detailed in Section 6 of Attachment 1.

The Group noted that it was often the case that with a fixed percentage of 5% it would not have been rational for a Party to strike many of the trades that were struck under the conditions that existed at the time. Under otherwise identical conditions this may be indicative of a reduced incentive to trade.

3.6.2 Views of Respondents to Initial Assessment Procedure Consultation

3.6.2.1 Qualitative Assessment of Behaviour

Some respondents noted that there would be less or no incentive to balance due to prices likely to be more benign but also not reflective of the SO costs to balance. There would also be less incentive to trade out imbalance positions following plant trip as such an event would not directly affect the price a Party would pay in imbalance. This would also lead to less incentive to invest in adequate forecasting tools or reliable plant. This would have long term implications for SO reserve requirements and security of supply. One respondent noted that NIV is likely to become less predictable and more volatile with a large number of respondents believing that the SO will have to take more balancing actions on Parties behalf due to the lower incentives to balance. These costs would then be recovered through BSUoS and therefore be socialised.

Some respondents noted their belief that trading would not occur outside the 5% range as it would not be rational to do so. One respondent also noted that Parties would have an incentive to trade to influence cash out prices rather than to balance.

3.6.2.2 Analysis of Rational Behaviour

One respondent noted that as only 9 individual Settlement Periods were looked at in isolation that this was not a large enough sample to allow for general conclusions to be drawn.

3.6.3 Modification Group's Further Discussions

3.6.3.1 Qualitative Assessment of Behaviour

The Group focused further discussion on behaviour on the modelling exercise discussed in 3.6.3.2 below.

3.6.3.2 Analysis of Rational Behaviour

The Group was tasked by the Panel, when an extension was given to the timetable, to provide further analysis on the expected Party behaviour that would occur under P212. The Group has therefore developed a simplified market model to attempt to establish what behaviours might rationally occur. Whilst this is a simplified model, the Group notes that the development and interpretation of the model was a significant exercise to undertake. The details of the model, results and conclusions are contained in Attachment 2. A brief overview is provided here.

The model was developed with five players in a market with 10,000MWh of demand and various initial positions of imbalance given to each Party. A range of scenarios were then applied to the model based on factors such as the length of the system, the price and volume of the initial trade, using different percentage premiums and discounts, and the impact of RCRC. Two trades occur in each scenario. A first trade to initiate the market and a final trade that confirms what SBP and SSP will be¹⁴. Additional scenarios were also run that included a third and fourth trade.

The model has a number of simplifying assumptions (see Section 5 of Attachment 2), which the Group made. The Group notes that adjusting the assumptions may lead to slightly different results although the number of scenarios performed does provide some rigour to the results. In the model, Parties will act rationally, and will therefore aim to maximise their total profits (or minimise their total costs) and not minimise their imbalance exposure. This means that a Party is not seeking to discover an efficient level of imbalance in which it becomes more cost effective for the SO to balance on a Party's behalf unless this happens to coincide with the maximising profit/minimising cost objective¹⁵.

The Group established that the following information would impact a Party's trading strategy and imbalance position:

- a) The price of the initial trade (considered critical, as this is the price that subsequent trading will revolve around);
- b) The default price which will influence whether an initial trade will occur;
- c) Price and volume of trades subsequent to the initial trade;
- d) Expectation of the Party's own imbalance position; and
- e) Expectation of Energy Imbalance Price which is based on:
 - o (a), (b) and (c) above;
 - o Expectation of system length;
 - o The impact of any potential trade once entered into; and

¹⁴ The Group note that these were considered to be the two critical trades as the initial trade sets the price surrounding which the market will trade, and the final trade is the last factor that impacts the imbalance prices.

¹⁵ Note that under the current arrangements, these arguably have a greater correlation.

- Other Parties' behaviours.

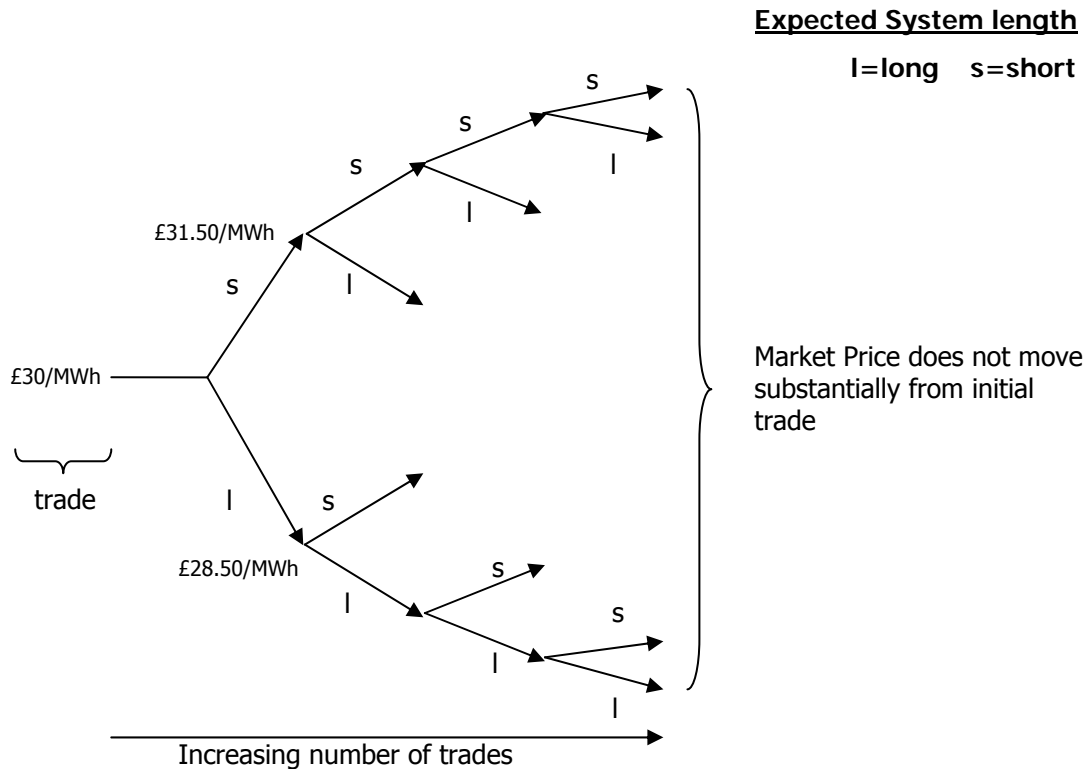
Trading will occur between two Parties in the model when it is beneficial in terms of total cash flows for both Parties to do so. The Group has provided a significant number of conclusions below of which a key point is that the initial trade is critical as this sets the price for which the market will then trade to and influence their trading strategies. Additionally, the scenario analysis which is detailed in Attachment 2 has enabled the Group to draw the following conclusions:

1. There are two states in which trading will occur:
 - A restricted state in which trades occur only within the 5% range of the premium and discount. Trades occur between long and short Parties; and
 - A non-restricted state where trades may occur outside the 5% range set by the premium and discount. Rational trades either occur between two long Parties or two short Parties. The trades are shown in the model to be rational because of the degree in which market price and therefore Imbalance Prices can be influenced and therefore result in better total cash flows for each Party involved in the trade.

The restricted state creates an 'envelope'¹⁶ of potential prices that starts from the initial trade. This is shown in Figure 3 below. At a first trade of £30/MWh the limit of potential rational trades between a long and a short Party occur within the 5% range (i.e. £28.50/MWh and £31.50/MWh) depending on the expectation Parties have of the system being long or short. After a second trade has occurred between £28.50/MWh and £31.50/MWh there is a new envelope of potential trades that can occur. However this is likely to be narrower due the fact that the volume of the next trade will have smaller impact on the (volume weighted average) market price. Similarly the outer bounds of the envelope increases at a decreasing rate due to the reduced ability for subsequent trades to impact the market price.

Figure 3. The 'envelope': Trades and affect on market price (Restricted state)

¹⁶ See Section 5 of Attachment 2. The envelope was used by the Group to describe how prices would move after an initial trade. For example if an initial trade was struck at £30MWh then the outer bounds of the envelope where trading between a long and short Party will occur is £28.50 and £31.50. This is the beginning of the envelope and it continues outwards as further trades are made.



The restricted state is vulnerable to trading occurring outside of these bounds that may potentially tip the market into a non-restricted state in which Parties strategies are likely to subsequently change;

Restricted state

2. An initial trade sets the price 'envelope' of the remaining trades for the Settlement Period (as the next trade will rationally only occur within a 5% range). There is an incentive to trade initially within any Settlement Period as this sets the expected trading envelope and cash out prices for the rest of the market at a level desirable to the Party making the trade. Additionally, the outcome Energy Imbalance Price may not be far removed from the initial trade due to the shape of the envelope;
3. Any completed trade will impact the market price and the level of the impact depends on the relative volumes and prices of each trade (given the nature of the volume weighted average price);
4. The range of prices where trades will occur is likely to be low with the model providing a range of prices in which trades will occur that is 1/5th the size of the premium/discount¹⁷. The price envelope does not move substantially from the price of the initial trade (with the scenarios showing that situations can occur when even after four trades the prices are still within 5% of the initial trade);
5. The change to RCRC and the level of imbalance as a result of a trade impacts total cash flow for each Party in the trade. A Party will therefore take this into account when deciding at which price the Party is willing to trade. This is why a Party is not always willing to trade at a price within the 5% range;
6. Trades impact non-trading Parties:
 - o There is a potential incentive to let others trade first where this is to a Party's benefit – i.e. when a Party is in imbalance in the opposite direction to the system the Party can obtain a

¹⁷ The figure of 1/5th is a result of the inputs used in this model. Changing the inputs will not change the fact that the range will decrease but it might change the value of 1/5th to a higher or lower ratio. Regardless, Parties are unlikely to trade at the level of the initial trade or at a level exactly 5% above or below as there would be some assumed level of RCRC impact (See conclusion 5).

more favourable price by free riding and letting other trades occur which result in a more favourable Energy Imbalance Price for which the Party's imbalance will be cashed out at. This may be riskier (the Party could be worse off if no other trades actually eventuate) but potentially more financially rewarding;

- Parties may race to be the counterparty to the next trade when this is to their benefit – i.e. when a Party is in imbalance in the same direction as the system then the Party can obtain a better price by trading than being in imbalance; and
 - A balanced Party (with metered volumes¹⁸) may be worse off from a 2nd trade that reduces the total level of imbalance due to the change in RCRC¹⁹.
7. The price a short Party is willing to pay in a long market is capped at the price of the initial trade (as short Parties will never pay more than this price as that is what they would pay in imbalance). Similarly, the price a long Party is willing to sell for in a short market has a floor at the price of the initial trade (as long Parties will never sell for less than this price as that's what they would receive in imbalance). This reinforces conclusion 4 above that the range of prices in which trades occur is likely to be low. If the length of the system is not known then there will be an initial cap and floor level at the initial trade price plus or minus the 5% premium/discount;
 8. Whether a party can close out their position impacts the price at which they are willing to trade at. Parties capable of closing out their position are willing to pay a less favourable price for this;
 9. Using percentage premiums higher than 5% would not change the patterns of behaviour noted under a 5% premium/discount although the range of prices in which trades would occur would increase in a linear manner (See scenarios 1a to 1d and 2a to 2b in Attachment 2). This modelling reinforced the Group's view that the percentage premium or discount is arbitrary in nature. It was noted that at a level of 100% any Parties who spill would not receive anything for this in a long market and that this would disadvantage those generators or Parties with less ability to accurately forecast their positions (for example intermittent generators); and
 10. Entering a 2nd trade sends a signal to the market of the expected direction of the system²⁰.

Non-restricted state

11. Resultant Energy Imbalance Prices are not related to economic fundamentals such as fuel price or energy scarcity as they are impacted by Parties who are trying to influence the price to a level that's beneficial for themselves;
12. The market could shift to one in which:
 - a. Short Parties trade with short Parties to influence price to zero;
 - b. Long Parties trade with long Parties to influence price to a high level; and
 - c. There are no trades between short Parties and long Parties;
13. Prices in which trades occur may become volatile and oscillate between very high prices and very low prices as Parties attempt to influence the resultant market and Energy Imbalance Prices. Because the Market Index Price is a volume weighted average price, the required volumes to impact market price (and therefore Energy Imbalance Prices) will need to increase with each trade therefore, on average, large players with large volumes would be able to influence the price more;

¹⁸ If there are no metered volumes then there will be no impact via RCRC as this is allocated on market share. Therefore non-physical Parties who are balanced would not have this impact.

¹⁹ Note that this is also the case under the current arrangements where a balanced Party may receive less in a short market if there are less short Parties paying into the Total Residual Cashflow (TRC) at SBP (and therefore TRC is lower) and may have to pay more in a long market if there are Parties who are less long who receive SSP (and therefore TRC is higher). TRC is the cashflow redistributed to Parties via RCRC when total TRC is positive based on market share.

²⁰For example, if the initial trade is at £30MWh and a second is at £31.50 then this signals the belief that the market is short (because if you thought it was long and you were short, you would not pay more than £30MWh as this is the price you would pay in imbalance if there are no further trades).

14. Small players could attempt to take positions greater than their physical capacity but may be limited by the amount of cash they can post on APX and their risk strategy (if the Party gets it wrong there is the potential for the Party to have solvency issues);
15. There could be situations where it is beneficial for Parties to go ever more into imbalance to make gains in the imbalance market. This is likely to result in increasingly higher imbalances and such a strategy favours large players as they have greater portfolios to enable such risks to be taken;
16. Risk increases (via greater imbalance position and potential cash flow exposure) with the number of trades;
17. A risky trading strategy favours long Parties as zero is an effective floor market price²¹ but there is no upper price limit;
18. A risky trading strategy could result in a high price known ex-ante which could lead to large amounts of spill onto the system (if assumption of fixed physical positions is relaxed). A high price presents a strong incentive to replace tripped plant;
19. A risky trading strategy could result in a low price known ex-ante which provides no incentive to replace tripped plant and also provides incentive to reduce Final Physical Notifications (FPN) (potentially to zero) and increase Bid Offer prices in the Balancing Mechanism. In this situation, the SO has to accept many balancing actions (Bid Offer Acceptances) to ensure that demand is met. This is likely to be a system security problem;
20. Greater imbalance (from conclusions 17 and 18) leads to greater NIV magnitude and volatility and therefore potential costs to the SO that are socialised through BSUoS;
21. Regulatory oversight might (at additional administrative cost) prevent extremes but this non-restricted state trading strategy could occur at much lower levels of price and volume;
22. Parties not participating in a risky trading strategy are heavily affected by extreme trades that are made purely to influence price;
23. Parties could trade substantial volumes in the Exchange²² market to influence price but might be able to counter this with over-the-counter trades thus not creating a large overall imbalance position but enabling them to impact the Market Index Price and therefore the Energy Imbalance Prices; and
24. Both counterparties in such trades could have the same parent company although this might be a risky strategy in a regulated market.

The Group have made the above conclusions based on the model they have developed. In the time available in this Assessment Procedure, this model provides the best quantification of the behaviours that the Group believe might occur. Whilst the Group believe that the results and conclusions drawn appear to be intuitive, the Group note that, to be able to model accurately the potential behaviours that might occur, a full economic model potentially with multiple layers of game theory would need to be developed and then tested in various simulations. This would be a substantial exercise that would not be able to be undertaken within the Assessment Procedure and requires levels of expertise that lies outside of the Group.

The Group noted that the Model did not cover if there was any benefit for a Party to change its physical position. The Exchange market closes 1.5 hours before the start of a Settlement Period and a FPN needs to be declared to the SO 1 hour before the start of the Settlement Period. This effectively gives Parties 30 minutes from the time that the Energy Imbalance Prices are known, to adjust their FPNs to a level most beneficial to the Party. There is no obligation on Parties for their FPN to be equivalent to their contract position; only that the FPN is an accurate reflection of what the Party intends to do. Thus conclusions 17 to

²¹ APX cannot allow negative prices, although this may be considered as a result of P212 approval.

²² The Exchange refers to the APX market and is one of the forward markets.

19 above may have potentially substantial impacts. Parties might therefore be able to maximise their profits or minimise costs by adjusting their physical positions. If price is high then a Party might have incentive to spill (and can validly do so by increasing their FPN to a level they consider optimal). If a price is low (for example below marginal cost) then a Party might not wish to generate and save on its fuel costs (and can do so by decreasing their FPN to an optimal level). As such a strategy is likely to lead to greater SO costs then the Party may wish to take into account the effect on BSUoS before adopting this strategy.

3.7 Impact on the System Operator including impact on NIV and SO costs

Following the Panel extension to the P212 Assessment Procedure, the Group endeavoured to provide an estimation of the change in costs of the SO if P212 were to be implemented. The majority of the Group concluded that P212 would lead to greater NIV volatility but were unable to provide a means to quantify this. The Group noted that quantifying the impact on NIV would require taking a view of the impact of all of the potential Party behaviours, including those identified within the simplified model in Section 3.6 above. This would be an exceptionally difficult exercise to undertake and could not be done within the Assessment Procedure.

Without an estimation of the impact on NIV, the SO has not been able to translate this into a certain cost estimate. Therefore the SO will provide a short paper that provides the expected costs to the SO if the arbitrary assumption is made that the average of NIV will not change but the standard deviation will increase by 10%. This assumption does not indicate that the SO believes that P212 will have this impact on NIV and only provides a benchmark of potential costs.

Similar to the Group, this has been a difficult exercise for the SO to be tasked with and has been a time-consuming process. Therefore, the SO paper is not initially available at the beginning of this consultation and has not been considered by the Group. Once the paper becomes available it will be distributed to all consultation Parties. It should be noted that the contents of the paper will only provide a benchmark figure and it is not indicative of the SO or the Group's expectation of the impact on NIV of P212. Therefore, the Group are likely to only be able to draw limited conclusions from this paper.

3.8 Impact on Settlement

The results of the BSC Agent and Transmission Company impact assessments indicated that P212 would not have any detrimental impact on prompt prices.

3.9 Implementation Approach

All prices assume Nov'08 Release is the target for this change.

Proposed Option (1) PROPOSED MODIFICATION IMPLEMENTATION COSTS²³

		Stand Alone Cost	Tolerance
Service Provider ²⁴ Cost	Change Specific Cost	£ 68,350	+/- 0%
	Release Cost	£ 49,650	+/- 0%

²³ An explanation of the cost terms used in this section can be found on the BSC Website at the following link: http://www.elexon.co.uk/documents/Change_and_Implementation/Modifications_Process_-_Related_Documents/Clarification_of_Costs_in_Modification_Procedure_Reports.pdf

²⁴ BSC Agent and non-BSC Agent Service Provider and software costs.

	Total Service Provider Cost	£ 118,000	+/- 0%
Implementation Cost	External Audit	£ 0	+/- 0%
	Design Clarifications	£ 5,900	+/- 0%
	Additional Resource Costs	£ 0	+/- 0%
	Additional Testing and Audit Support Costs	£ 5,000	+/- 20%
	TOMAS changes	£ 51,257	+/- 10%
Total Demand Led Implementation Cost		£ 180,157	+/- 10%

Port and Migrate Costs

Service Provider Cost	Port and Migrate ²⁵	£ 38,000	+/- 0%
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ELEXON Implementation Resource Cost		184 man days £ 40,480	+/- 10%
Total Implementation Cost		£ 258,637	+/- 20%

Implementation Approach:

Due to the size of the changes required for P212 Proposed it is recommended that P212 should form a complete Release on its own; no P212 cost benefits would be derived from the inclusion of other Change Proposals or Modifications in the same release as P212 Proposed (although there may be cost benefits for the other items included).

4 ASSESSMENT OF MODIFICATION AGAINST APPLICABLE BSC OBJECTIVES

This section outlines the initial views of the Modification Group regarding the merits of P212 against the Applicable BSC Objectives.

The initial **UNANIMOUS** view of the Modification Group was that the Proposed Modification **WOULD NOT** better facilitate the achievement of the Applicable BSC Objectives overall. When compared to the current Code baseline the majority of the Group believed that the Proposed Modification would not better facilitate the achievement of Applicable BSC Objectives (b), (c), and (d), for the following reasons:

²⁵ The Port and Migrate costs are an indicative cost related to Project Isis interaction. This cost covers the porting and migrating of the P211 changes from Tru-64 and Oracle 9i to HP-UX and Oracle 10g. This cost assumes that LogicaCMG is doing all calculations and also it is assumed that this work follows the main CVA Port and Migrate project. Note that the optional BMRA reporting was ignored for this indicative cost.

Applicable BSC Objective (b)

- Energy Imbalance Prices will not be cost reflective as P212 does not attempt to reflect what the SO actually did to resolve the imbalance on the system. Cost reflective Energy Imbalance Prices are essential to provide the correct incentives for Parties to balance. One member noted that 5% was too low to create the correct incentives.
- SO costs²⁶ should be appropriately targeted on those who are out of balance. As P212 will reduce the degree to which the SO's costs are reflected in Energy Imbalance Prices it follows that these costs will not be appropriately targeted and the incentives for Parties to balance will decrease. This in turn increases the actions required to be taken by the SO and increases the costs faced by the SO. This would be detrimental to the efficient operation of the GB transmission system;
- Better balancing comes at a cost to Parties through such things as investment in reliable technologies and the quality of staff employed. However, innovation and investment in technology will be stifled if the SO costs not being appropriately targeted as there is less reward for making these investments. In the longer term this could lead to less reliable plant as well as greater imbalance positions as Parties find it more difficult to forecast their positions accurately. Any plant loss post Gate Closure would be likely to require expensive actions to be taken by the SO and these are not accommodated for by the Proposed Modification. This results in the potential for increased future plant loss which will increase costs to the SO as they will have to procure more reserve to cover for this possibility; and
- The potential for Parties to change their physical positions rationally once the Exchange market closes (as described in Section 3.6.3.2 above) would mean there would be less predictability of NIV and the potential to take greater positions into imbalance. This would increase the SO costs of balancing the system as they have to take more actions to resolve the imbalance and would need to hold higher levels of reserve to cover the increase in unpredictability of NIV in certain Settlement Periods;

One member of the Group stated that they could not evaluate P212 against Applicable BSC Objective (b) without observing estimated costs of the SO.

Applicable BSC Objective (c)

- All Parties contribute proportionately to the costs of balancing via the Balancing Services Use of System (BSUoS) charge and those that are out of balance via SBP and SSP. P212 will not reflect the costs incurred by the SO to resolve the net imbalance on the system. This results in a greater costs of balancing being socialised across all Parties (though BSUoS) rather than providing an incentive on parties to minimise imbalance by reflecting actual energy imbalance costs on those out of balance. This cross subsidy will be detrimental to competition;
- There is the potential for perverse outcomes as illustrated in the scenario analysis (Section 3.6.3.2). This is because under P212 there is the potential for trading to not relate to economic fundamentals as the P212 solution creates an incentive (whether acted upon or not) to trade to influence the Market Index Price and therefore the resulting Energy Imbalance Prices. Incentives to trade to influence price rather than to achieve efficient balancing (as the current arrangements arguably do) would be detrimental to competition. Whilst this behaviour might be simple to identify where trades occur at extreme prices it is harder to identify at the margins;
- In a scenario where Parties change their physical position after the Exchange market closes, this would favour Generators over Suppliers as Generators have more ability to participate in the Balancing Mechanism to take advantage of this. Additionally, Generators have more control over

²⁶ This refers to the SO costs to balance the system.

their physical positions than Suppliers. This would distort competition by giving a distinct advantage to Generators and even more so to larger Generators; and

- The prices may be benign most of the time with a decreased level of volatility. Thus there is less incentive to balance or trade.

One member noted that whilst they did not believe the current baseline produced Energy imbalance Prices that were reflective of market conditions that the detrimental effects of P212 to competition noted above mean that P212 would not better facilitate Applicable BSC Objective (c) when compared to the current baseline. One member noted that they were neutral on this objective.

Applicable BSC Objective (d)

A majority of the Group believed that the Proposed Modification would have a neutral impact on Applicable BSC Objective (d).

A minority of the Group believed that the Proposed Modification would have a detrimental impact on Applicable BSC Objective (d).

- The current arrangements are based on a simple concept; to reflect the costs of the SO when balancing the system. P212 would move away from this simple concept;
- The introduction of P212 would be likely to trigger further Modifications to refine or redesign the solution; and
- The regulatory oversight required due to P212 creating incentives to trade to influence price (which currently do not exist) would be significant and result in increased ongoing costs to the industry.

A minority of the Group stated that the Modification did better facilitate the objective for the following reason:

- The Proposed solution is simpler for Parties to understand and for the industry to implement and operate.

The Group agreed that the Proposed Modification would have a neutral impact on Applicable BSC Objective (a).

Views of Respondents to Initial Assessment Procedure Consultation

When compared to the current Code baseline the majority of the respondents to the initial Assessment Procedure consultation believed that the Proposed Modification would not better facilitate the achievement of Applicable BSC Objectives (b), (c), and (d), for the following reasons:

- Energy Imbalance Prices would be dampened making them benign and less cost reflective (and inaccurate);
- Having cost reflective prices is more important than simple arrangements. There should be some link to SO actions taken to resolve the system imbalance;
- Incentives to balance:
 - Would be weaker and less accurate signals would be provided to Parties to balance (particularly in system stress); and
 - The removal of the feedback loop between the forward market and Balancing Mechanism leads to inappropriate incentives;
- Costs of energy balancing borne by the SO and cross subsidised through BSUoS;
- P212 changes from ex-post to ex-ante Energy imbalance Prices and this may not reflect the characteristics of the system in real time;
- Change in behaviours and trading strategy is likely to occur and may result in perverse outcomes;

- 5% has no greater or less validity than any other arbitrary figure;
- Volatility:
 - Increase bad volatility that is at odds with market characteristics; and
 - Reduce good volatility that is reflective of market conditions
- There have been no arguments as to why fundamental change to NETA (cost reflectivity) needs to change.
- There are costs to implement with no benefit from doing so.

A minority of respondents stated that the Proposed Modification did better facilitate the Applicable BSC Objectives for the following reasons:

- The defect of system actions entering Energy Imbalance Prices would be removed;
- Current competitive distortions will be reduced;
- Price differential over market guaranteed and thus provides an incentive to trade;
- Prices will be less punitive than the current arrangements;
- The arrangements will be simpler to understand and to implement and operate;
- May increase market entry due to the arrangements being more easily understood; and
- Can better and more reliably forecast potential cash out prices as the P212 methodology is simpler.

5 TERMS USED IN THIS DOCUMENT

Other acronyms and defined terms take the meanings defined in Section X of the Code.

Acronym/Term	Definition
BMRA	Balancing Mechanism Reporting Agent
BSAD	Balancing Services Adjustment Data
Energy balancing actions	Balancing actions taken purely to increase or decrease the level of generation or demand on the Transmission System.
FPN	The Final Physical Notification is the level of generation or demand that the BMU expects to generate or consume. Submitted as a ramped profile to National Grid prior to Gate Closure.
Main Energy Imbalance Price	The Energy Imbalance Price applied to imbalances in the same direction as the system.
MEL	Maximum Export Limit
NIV	Net Imbalance Volume
PAR Tagging	The process of removing Acceptance Volumes from the calculation of Energy Imbalance Prices
PAR Volume	Price Average Reference Volume, the volume of actions that are used to set the Main Energy Imbalance Price
RCRC	Residual Cashflow Reallocation Cashflow
Reverse Price	The price applied to imbalances in the opposite direction to the system. This is based on the market reference price derived from data submitted by Market Index Data Providers.
SAA	Settlement Administration Agent

SBP	System Buy Price
SO	System Operator
SSP	System Sell Price
System balancing actions	Balancing actions which are not taken purely to increase or decrease the level of generation or demand on the Transmission System. For example to resolve a constraint on the physical flow of electricity caused by the finite capacity of the Transmission System.
TQEI	The Total System Energy Imbalance Volume is the sum over all Energy Accounts of the Account Energy Imbalance Volume.
TRC	Total System Residual Cashflow. For all Settlement Periods, the Total Residual Cashflow (TRC) is calculated as being the sum of all energy imbalance charges across all parties and accounts. This value represents the total amount of money to be redistributed (or collected) via the Residual Cashflow Reallocation Cashflow (RCRC).

6 DOCUMENT CONTROL

6.1 Authorities

Version	Date	Author	Reviewer	Reason for Review
0.1	2/10/07	Chris Stewart	Justin Andrews/ David Jones	For technical and quality review
0.2	3/10/07	Chris Stewart	Modification Group	For Modification Group review
1.0	4/10/07	P212 Modification Group		For industry consultation
1.0	4/10/07	P212 Modification Group		For Party impact assessment

6.2 References

Ref.	Document Title	Owner	Issue Date
1	Ofgem's Cash Out Review – Independent Consultants' Reports http://www.ofgem.gov.uk/MARKETS/WHLMKTS/COMPANDEFF/CASHOUTREV/Pages/CashoutRev.aspx	Ofgem	22/03/2007
2	P205 'Increase in PAR volume from 100MWh to 500MWh' - Decision Letter http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=86&refer=Markets/WhlMkts/CompanDEff/CashoutRev	Ofgem	22/03/2007
3	P211 'Main Energy Imbalance Price Based on Ex-post Unconstrained Schedule' http://www.elexon.co.uk/ChangeImplementation/modificationprocess/modificationdocumentation/modProposalView.aspx?propID=231	P211 Modification Group	Ongoing

APPENDIX 1: APPLICABLE BSC OBJECTIVES

For reference the Applicable BSC Objectives, as contained in the Transmission Licence, are:

- (a) The efficient discharge by the licensee [i.e. the Transmission Company] of the obligations imposed upon it by this licence [i.e. the Transmission Licence];
- (b) The efficient, economic and co-ordinated operation of the GB 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.

APPENDIX 2: PROCESS FOLLOWED

Copies of all documents referred to in the table below can be found on the BSC Website at: <http://www.elexon.co.uk/ChangeImplementation/modificationprocess/modificationdocumentation/modProposalView.aspx?propID=232>

Date	Event
29/04/07	Modification Proposal raised by Bizz Energy
10/05/07	IWA presented to the Panel
15/05/07	First Assessment Procedure Modification Group meeting held
22/05/07	Second Assessment Procedure Modification Group meeting held
6/06/07	Third Assessment Procedure Modification Group meeting held
13/06/07	Fourth Assessment Procedure Modification Group meeting held
4/07/07	Fifth Assessment Procedure Modification Group meeting held
5/07/07	Requirements Specification issued for BSC Agent impact assessment based on Option 1
5/07/07	Request for Transmission Company analysis issued based on Option 1
17/07/07	BSC Agent impact assessment response based on Option 1 returned
17/07/07	Transmission Company analysis based on Option 1 returned
18/07/07	Sixth Assessment Procedure Modification Group meeting held
24/07/07	Seventh Assessment Procedure Modification Group meeting held
8/08/07	Eighth Assessment Procedure Modification Group meeting held
15/08/07	Initial industry consultation issued
29/08/07	Initial industry consultation received
30/08/07	Ninth Assessment Procedure Modification Group meeting held
19/09/07	Tenth Assessment Procedure Modification Group meeting held
02/10/07	Eleventh Assessment Procedure Modification Group meeting held

ESTIMATED COSTS OF PROGRESSING MODIFICATION PROPOSAL²⁷

Meeting Cost	£ 2,750
Legal/Expert Cost	£ 5,000
Impact Assessment Cost	£ 10,000
ELEXON Resource	135 man days £ 44,260

Note that the number of ELEXON man days (and cost) has been updated to represent the extended timetable and the additional analysis undertaken by the Group.

MODIFICATION GROUP MEMBERSHIP

Member	Organisation	15/05	22/05	06/06	13/06	04/07	18/07	24/07	08/08	30/08	19/09	2/10
David Jones	BSCCo (Chairman meetings 3 to 8)			√	√	√	√	√	√	√	√	√
Justin Andrews	BSCCo (Chairman meetings 1 and 2)	√	√		√	√	√	√		√	√	√
Chris Stewart	BSCCo (Lead Analyst)	√	√	√	√	√	√		√	√	√	√
Keith Munday	P212 Proposer (Bizz Energy)		√	√	√	√	√	√	√	√		
Alison Hughes	Bizz Energy	√	√									
Rob Smith	National Grid	√	√	√	√	√	√	√	√	√	√	
Lisa Waters	WatersWye	√	√	√	√							
Bill Reed	RWE Trading	√	√	√	√		√	√		√	√	√
David Lewis	EDF Energy	√	√	√	√	√	√		√	√	√	√
Libby Glazebrook	First Hydro Company		√	√	√	√	√	√	√		√	√
Man Kwong Liu	Saic (on behalf of Scottish Power)	√	√	√	√		√	√	√	√	√	√
Ian Moss	APX Group	√	√	√		√	√	√	√	√		√
Colin	Smartest Energy	√	√	√	√	√	√		√		√	√

²⁷ Clarification of the meanings of the cost terms in this appendix can be found on the BSC Website at the following link: http://www.elexon.co.uk/documents/Change_and_Implementation/Modifications_Process_-_Related_Documents/Clarification_of_Costs_in_Modification_Procedure_Reports.pdf.

Prestwich												
Paul Jones	E.ON UK	√	√	√		√	√	√	√		√	√
Paul Dawson	Barclays Capital		√									
David Wilkerson	Centrica	√	√	√		√	√		√	√	√	√
Andrew Colley	Scottish and Southern	√	√	√	√	√		√	√	√	√	√
Martin Mate	British Energy	√	√	√	√		√	√	√	√	√	√
Bob Brown	Cornwall Energy Associates	√	√	√	√		√		√		√	√
Attendee	Organisation	15/05	22/05	06/06	13/06	04/07	18/07	24/07	08/08	30/08	19/09	2/10
Natasha Hall	BSCCo (Lawyer)	√			√	√	√					
Shantok Karavadra	BSCCo (Lawyer)	√	√	√	√		√					
Kevin Swinton	BSCCo	√	√	√	√							
John Guest	Logica	√	√	√		√	√	√		√		
Mark Gribble	Logica		√	√	√	√	√					
Ben Woodside	Ofgem	√	√	√			√	√	√	√		√
Duncan Mills	Ofgem			√	√	√	√			√		
Duncan Sinclair	Ofgem				√					√	√	
Richard Jones	npower	√		√	√	√	√	√	√			
Kate Boon	First Hydro Company	√								√		
Alexandra Campbell	E.ON UK	√										
John Sykes	Panel	√	√				√					
Ben Sheehy	E.ON UK				√							
Rob Rome	British Energy					√						
Nigel Cornwall	Panel					√						
Jessie He	RWE Trading						√					
Sebastian Eyre	EDF Energy								√		√	

Rekha Patel	WatersWye								√	√		
Steve Carter	EDF Energy										√	

In addition, two P212 Modification Subgroups were also held to build the scenario analysis referred to in Section 3.6. These were held on 12 and 26 September 2007.

Modification Group Terms of Reference

Terms of Reference (Version 1.0)

Annex for Modification Proposal P212

Modification Proposal P212 will be considered by a new Modification Group, the P212 Modification Group, comprised of members of the Pricing Standing Modification Group (PSMG), and members of other Modification Standing Groups with the relevant expertise in the areas of Cash-out, Energy Imbalance Pricing, energy and system balancing, tagging and default price rules.

P212 – Main Imbalance Price based on Market Reference Price

1. ASSESSMENT PROCEDURE

1.1 The Modification Group will consider Modification Proposal P212 pursuant to section F2.6 of the Balancing and Settlement Code.

1.2 The Modification Group will produce an Assessment Report for consideration at the BSC Panel Meeting on 13 September 2007.

1.3 **The Modification Group shall consider and/or include in the Assessment Report as appropriate:**

- **Definition of System Length**

How system length shall be defined including:

- Whether a methodology for using notified contract volumes and metered volumes be used to determine system length;
- Whether the current determination of system length can be simplified;
- Whether there is any other method for defining system length;
- A comparison of Settlement Periods to identify any inconsistencies between the direction of the system (long or short) of the P212 methodology, once defined, and the current methodology; and
- Whether there is any impact on the prompt publication of imbalance prices.

- **Definition of Default Rules**

How default rules will be defined including:

- What is the appropriate level of Market Index Definition liquidity volume thresholds;
- Whether using the price discovered in the previous Settlement Period provides an acceptable solution;
- Whether an administered (e.g. floor price) provides an acceptable solution;
- Whether there is any other appropriate construction of default prices;

- A comparison between the potential options for default rules; and
- An assessment of any impact on the Market Index Data Provider.

- **The Value of the Percentage Premium / Discount**

Developing criteria for selecting the value of the percentage premium to SBP when the system is short and discount to SSP when the system is long. The Proposer has suggested a level of 5% however this figure is not a fixed part of the solution. The Modification Group should consider whether:

- There is a more appropriate percentage to use;
- A value of 0% could form part of the solution;
- Different percentage values can be applied to different Settlement Periods, on business (versus non-business) days and / or during different seasons;
- A different percentage might be applied to different levels of system imbalance;
- The percentage is fixed within the BSC or can be subject to change; and
- There should be a different level of premium to SBP than there is discount to SSP.

- **Impact on Prices**

- The degree to which system balancing actions enter Energy Imbalance Prices under the existing Energy Imbalance Price calculation;
- Using historic data, the calculation of the Energy Imbalance Prices that would have been generated had the P212 mechanism been applied for certain historic Settlement Days including those in which it has been identified that system balancing actions have entered the Energy Imbalance Price; and
- The Energy Imbalance Prices generated for historic Settlement Days by both the current mechanism and that proposed by P212 in the context of the prevailing market conditions. This will also support the assessment of whether the proposed mechanism provides more cost reflective prices than the current baseline.

- **Cashflow Analysis**

The impact on Residual Cashflow Reallocation Cashflow (RCRC) including any distributional impacts identified.

- **Incentives**

- A qualitative assessment of the degree to which there are incentives to take an unbalanced position into cash-out;
- A qualitative assessment of the potential for Market Participants to manipulate the market price and if there are any ways to address this;
- Identifying any ways in which any potential for manipulation identified can be mitigated; and
- A qualitative view of the degree to which liquidity might be impacted and the incentive to enter forward contracts.

- **Impact on Settlement**

The impact of P212 on the Settlement calculation and the publication of prompt prices. This will be informed by the BSC Agent impact assessments and information provided by the Transmission Company and may also be dependent on how system length is defined. The Modification Group should identify if there is any difference in prompt prices between P212 and the current arrangements and establish a view on the materiality of any disparity in the timeliness of calculating this data.

- **Implementation**

Any alternative routes for implementation and the impact this has on implementation costs and timescales.

- **New Providers of Market Information**

Whether there will be any impact from potential changes to the providers of market information (new and existing).

APPENDIX 3: RESULTS OF IMPACT ASSESSMENT

a) Impact on BSC Systems and Processes

System / Process	Impact of Proposed/Alternative Modification
Settlement	The amendment of the Energy Imbalance Price calculation impacts the derivation of the Energy Imbalance Prices. The BMRA and SAA systems and processes will be impacted.
Reporting	It is envisaged that the revised Energy Imbalance Prices will be reported within the current interface structure. It will be necessary to amend the Settlement Report (SAA-I014) to reflect the new price derivation. There will be no requirement to report in the SAA-I014 or on BMRA those areas of the NIV calculation that have been removed.

A copy of the full BSC Agent impact assessment is attached as a separate document, Attachment 4.

b) Impact on BSC Agent Contractual Arrangements

BSC Agent Contract	Impact of Proposed/Alternative Modification
LogicaCMG	The SAA and BMRA System will be impacted. SAA reporting is affected. The SAA and BMRA Service Descriptions will also be impacted.

c) Impact on BSC Parties and Party Agents

As this modification is a change to the Energy Imbalance Calculation, this is a significant change to one of the main tenets of the BSC Arrangements that will impact Settlement for all BSC Parties. Parties will be impacted by the change to sub-flow 1 of the Settlement Report (SAA-I014).

d) Impact on Transmission Company

A copy of the full Transmission Company impact assessment is attached as a separate document, Attachment 5.

e) Impact on BSCCo

Area of Business	Impact of Proposed/Alternative Modification
BSCCo Systems	<p>The Trading Operations Monitoring and Analysis System (TOMAS) would be impacted.</p> <p>Any change to the structure of SAA-I014 will impact ELEXON's Gatekeeper software.</p>
Other (e.g. costs, staffing, etc.)	<ul style="list-style-type: none"> • Industry guidance notes may require revision to reflect changes to the approach to calculation of Energy Imbalance Prices. • The Change Implementation Team will be required to manage implementation of P212. • Corporate Assurance will be required to support the implementation project. • The Design Authority team will provide Technical Assurance during the implementation project. • Service Delivery will no longer be required to liaise with the SAA to agree revised Energy Imbalance Prices following an Emergency Instruction • BSCP18 would require review as this includes a section (3.3.12 – 3.3.18) on the recalculation of Energy Imbalance Prices following an Emergency Instruction which would no longer be necessary. The SAA interfaces I038, I039 and I040, which were introduced for this process, would also be redundant.

f) Impact on Code

Code Section	Impact of Proposed/Alternative Modification
Section Q 'Balancing Mechanism Activities'	Section Q may require amendment if there are changes to the BM data provided by National Grid Electricity Transmission plc (NGET).
Section T 'Settlement and Trading Charges'	Section T would require amendment to detail the changes to the Energy Imbalance Price calculation.
Section V 'Reporting'	Section V would require amendment to detail the reporting changes.
Annex X	Annex X would require amendment to introduce new, and remove any redundant, definitions.

g) Impact on Code Subsidiary Documents

Document	Impact of Proposed/Alternative Modification
SAA SD	The SAA Service Description will be impacted.
BMRA SD	The BMRA Service Description will be impacted.
BSCP18 'Corrections to Bid-Offer Acceptance Related Data'	BSCP18 would be impacted as this includes a section (3.3.12 – 3.3.18) on the recalculation of Energy Imbalance Prices following an Emergency Instruction which would no longer be necessary. The SAA interfaces I038, I039 and I040, which were introduced for this

Document	Impact of Proposed/Alternative Modification
	process, would also be redundant.

h) Impact on Core Industry Documents/System Operator-Transmission Owner Code

No impact.

i) Impact on Other Configurable Items

Document	Impact of Proposed/Alternative Modification
SAA User Requirements Specification (and system documentation)	SAA documentation would require amendment to detail the amendments to the Energy Imbalance Price calculation.
BMRA User Requirements Specification (and system documentation)	BMRA documentation would require amendment to detail the amendments to the Energy Imbalance Price calculation.
BSC Business Process Model	The ELEXON BPM would require amendment to reflect the amendments to the Settlement calculations.
Market Index Data Providers	The Modification Group may recommend that the Panel should review the Market Index Definition Statement.
Logica Interface Definition and Design Parts 1 and 2	Any change to the SAA-I014 will impact the Logica IDD Parts 1 and 2.

j) Impact on BSCCo Memorandum and Articles of Association

No impact.

k) Impact on Governance and Regulatory Framework

No impact.

APPENDIX 4: INITIAL P212 ASSESSMENT PROCEDURE CONSULTATION RESPONSES

The consultation responses to the initial P212 Assessment Procedure consultation can be found in Attachment 6.