

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

Prepared by: P212 Modification Group

For attention of: BSC Parties and other interested parties
Responses due: 17: 00 on 29 August 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 a percentage [X%] when the system is short, or the market price decreased by a percentage [Y%] when the system is long.

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

As the parameters X and Y were not specified in the Modification Proposal the Modification Group (the 'Group') undertook to set these criteria. The Group has provided three options on which consultation views are requested. These options are for a fixed percentage, a variable percentage, or a dynamic percentage determined ex-post. The Group does not currently have a preferred option and is seeking industry views on each option.

Additionally the Group has discussed a number of broader concepts and principles under P212 and seeks the views of industry on these.

PURPOSE OF CONSULTATION

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

- What do you believe is the aim of imbalance prices under the BSC?
- What should be the success criteria for assessing each of the Options identified under P212?
- Do you have a view of the extent/impact of the perceived defect identified under P212 (and any link to the defect under P211)?
- What are your views on 'simplicity' versus 'cost-reflectivity' in the calculation of the main imbalance price?
- Whether the fixed percentage (Proposed Option 1) would better facilitate the achievement of the Applicable BSC Objectives² when compared to the current Code baseline;
- Whether the variable percentage (Proposed Option 2) would better facilitate the achievement of the Applicable BSC Objectives when compared to the Proposed Modification;
- Whether the dynamic percentage determined ex-post (Proposed Option 3) would better facilitate

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

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

the achievement of the Applicable BSC Objectives when compared to the Proposed Modification;

- What is your order of preference of Options 1, 2 and 3 for forming the Proposed Modification Solution?
- Do you have any views on the influence on market participants' behaviours of these solutions?
- Do you have a view on the impact of the three identified Proposed Options with regards to whether these will lead to an increase or decrease in the System Operator (SO) costs of balancing the system?
- Do you agree with the Group's view that the pricing value/methodology should only be changed by a modification? (Section 2.3 final paragraph);
- Whether there are any alternative solutions that the Modification Group has not identified and that should be considered; and
- Whether there are any substantive issues not considered by the Modification Group which should be brought to the Group's attention for inclusion in its assessment of P212.

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 **17:00** on **29 August 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.

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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	H <input type="checkbox"/>	Core Industry Documents
Data Aggregators <input type="checkbox"/>	I <input type="checkbox"/>	Ancillary Services Agreement <input type="checkbox"/>
Data Collectors <input type="checkbox"/>	J <input type="checkbox"/>	British Grid Systems Agreement <input type="checkbox"/>
Meter Administrators <input type="checkbox"/>	K <input type="checkbox"/>	Data Transfer Services Agreement <input type="checkbox"/>
Meter Operator Agents <input type="checkbox"/>	L <input type="checkbox"/>	Distribution Code <input type="checkbox"/>
ECVNA <input type="checkbox"/>	M <input type="checkbox"/>	Distribution Connection and Use of System Agreement <input type="checkbox"/>
MVRNA <input type="checkbox"/>	N <input type="checkbox"/>	Grid Code <input type="checkbox"/>
BSC Agents	O <input type="checkbox"/>	Master Registration Agreement <input type="checkbox"/>
SAA <input checked="" type="checkbox"/>	P <input type="checkbox"/>	Supplemental Agreements <input type="checkbox"/>
FAA <input type="checkbox"/>	Q <input type="checkbox"/>	Use of Interconnector Agreement <input type="checkbox"/>
BMRA <input checked="" type="checkbox"/>	R <input type="checkbox"/>	BSCCo
ECVAA <input type="checkbox"/>	S <input type="checkbox"/>	Internal Working Procedures <input checked="" type="checkbox"/>
CDCA <input type="checkbox"/>	T <input checked="" type="checkbox"/>	BSC Panel/Panel Committees
TAA <input type="checkbox"/>	U <input type="checkbox"/>	Working Practices <input type="checkbox"/>
CRA <input type="checkbox"/>	V <input checked="" type="checkbox"/>	Other
SVAA <input type="checkbox"/>	W <input type="checkbox"/>	Market Index Data Provider <input type="checkbox"/>
Teleswitch Agent <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Market Index Definition Statement <input type="checkbox"/>
BSC Auditor <input type="checkbox"/>		System Operator-Transmission Owner Code <input type="checkbox"/>
Profile Administrator <input type="checkbox"/>		Transmission Licence <input type="checkbox"/>
Certification Agent <input type="checkbox"/>		
Other Agents		
Supplier Meter Registration Agent <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:

- **DEVELOPED** three potential solutions for the Proposed Modification (Proposed Options 1 to 3). The Groups discussions on each option are contained in Sections 2 to 4. The Group have not identified a preferred option at this stage;
- **UNDERTOOK** analysis to discharge the P212 Terms of Reference;
- **REQUESTED** a BSC Agent and Transmission Company impact assessment for Proposed Option 1;
- **RECALCULATED** Energy Imbalance Prices for Proposed Option 1;
- **AGREED BY MAJORITY** an initial view that the disadvantages of all three Proposed Options outweigh the advantages;
- **CONSIDERED** a potential alternative solution whereby the main Energy Imbalance Prices are determined using the price of un-matched bids/offers on the power exchange to resolve the Net Imbalance Volume (NIV) but **AGREED** not to develop this further;
- **NOTED** that the implementation costs for the Proposed Modification (Proposed Option 1) were estimated to be £259,000; and
- **AGREED** that implementation costs for the other options will be sought if required.

A description of the three Proposed Options for 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 three options can be found in Section 3.8. 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 three options that could form the Proposed Modification and potentially also an Alternative Modification.

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'. 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 predominate and the system is 'short' when the volume of Offers and / or Relevant Balancing Services predominate.

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.

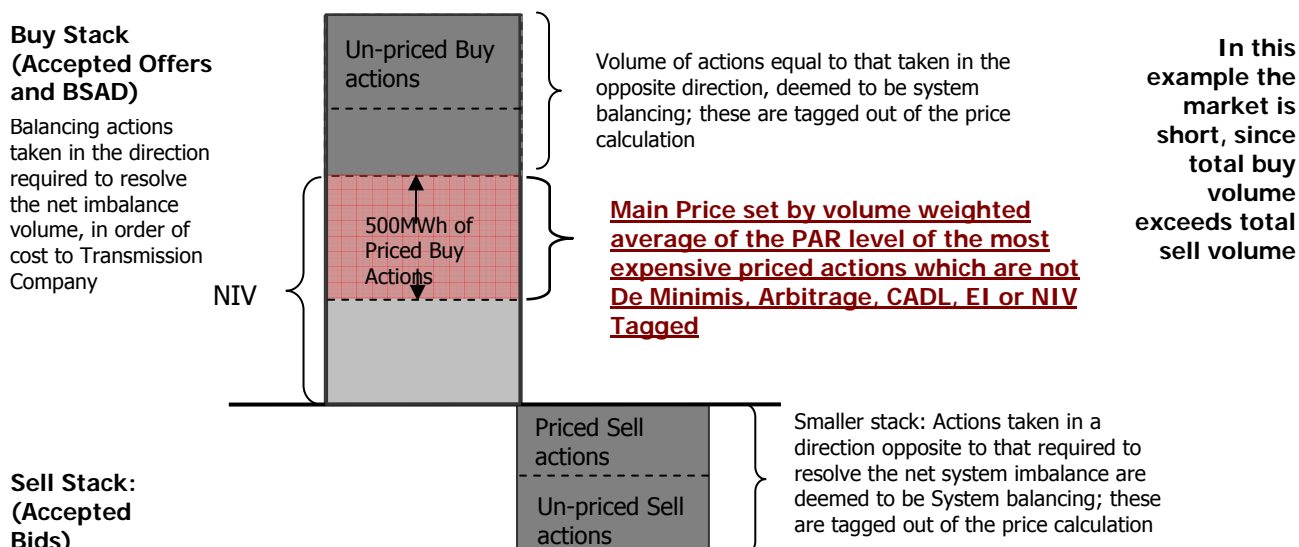
In addition, trades undertaken on power exchanges feed into market prices provided by Market Index Data Providers (or a single provider, as it currently stands). The reverse Energy Imbalance Price (i.e. the price applied to imbalances in the opposite direction to the system) is based on the market price derived from data submitted by Market Index Data Providers.

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).

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 believes 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);
- Constraint activities (including resolving locational issues).

⁶ Available from Ofgem’s website at:

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

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 believes that P212 will 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 will be less inclined towards “fear of cash-out”, and they will 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 will 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 will 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.

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) as this was left to the expertise of the Modification Group. This has led to the Group identifying the three proposed options which are:

1. Ex-ante Fixed Percentage;
2. Ex Ante Profiled Percentage; and
3. Dynamic Percentage Determined Ex-Post.

2.3 Common features for all P212 solution options

This 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 criteria applied to the Market Index Price⁸ in each Settlement Period. Note that this also excludes the actions taken by the SO outside of the Balancing Mechanism such as BSAD;
- The calculation of the Market Index Price as defined in the MIDS will not change (although the Group agree that this would benefit from review outside this Modification);
- 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 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 Specification for Proposed Option 1⁹;

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.

⁹ This can be found at:

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

- The Reverse Price is to be the Market Index Price as is the case in the current 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 Reverse Price.

The Group discussed the various approaches that could be used to alter the percentage values/methodologies used in each of the three options described above. The approaches discussed were that the percentage value is:

1. Written into the BSC and therefore the values/methodologies can only be changed by a modification; or
2. Set by the Panel from time to time based on a review and approved by the Authority; or
3. Described in a separate Methodology Statement document and approved by the Authority.

The Groups initial conclusion is that approach 1 should be used, that the percentage values/methodology should be written into the BSC and only changed via a Modification to the BSC. The Group felt that for approach 2, Parties would require the same consultation/process timescales as is the case with a Modification therefore there was no benefit for approach 2. The Group also considered they could not establish a methodology for setting a percentage or reviewing them so felt that approach 3 should not be used.

2.4 Proposed Option 1: Ex ante Fixed Percentage

The information that contributes to the calculation of the main Energy Imbalance Price for Proposed Option 1 will be:

- A fixed percentage premium applied to the Market Index Price in each Settlement Period when the system is short.
- A fixed percentage discount (equivalent to the premium) applied to the Market Index Price in each Settlement Period when the system is long.

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 are:

- 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;

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.

- b) Referencing other electricity markets (for example the French Market (see Attachment 2 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 do 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 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 considered various historic analysis, 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 believe that this Proposed Option 1 should use the initial percentage suggested by the Proposer of 5%. For that reason the Group suggests that Proposed Option 1 be:

- When the system is short ($NIV > 0$), the main Energy Imbalance Price is the Market Index Price increased by 5%; and
- When the system is long ($NIV < 0$), the main Energy Imbalance Price is the Market Index Price decreased by 5%.

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.

2.5 Proposed Option 2: Ex-ante profiled Percentage

Proposed Option 2 intends to increase the level of granularity of Proposed Option 1 such that more than one fixed premium/discount is applied. The information that contributes to the calculation of the main Energy Imbalance Price for Option 2 will be variable criteria applied to the Market Index Price in each Settlement Period. This variable criteria might include:

- A different percentage value applied to different Settlement Periods. For example, peak versus off-peak Settlement Periods, business versus non-business days and/or during different seasons etc; and/or
- A different level of premium to SBP than that applied as a discount to SSP.

The approaches for setting a granulated percentage value identified by the Group were:

1. Using historical analysis of previous imbalance prices. For example, it could be set at the various average % spreads between market price and main imbalance price for the BSC Year 2006/7 split by day/night, week day/weekend, season, etc; and
2. Using historical analysis of Residual Cashflow Reallocation Cashflow (RCRC) and trying to match the average monthly RCRC value produced by an assumption of what a 'pure' energy price might be with that RCRC discovered by various permutations of premia/discounts split by day/night, etc.

The Group concerns identified in Proposed Option 1 above also apply to the two approaches identified here. Additionally, some Members of the Group believe that RCRC is a side effect of the Settlement calculations. Therefore basing Energy Imbalance Prices on a view of the specific¹¹ level of RCRC would also be arbitrary.

One Group Member provided analysis of the second historical analysis approach above using RCRC. The Group Member's presentation is included as Attachment 3. This methodology involved the following:

- Use recalculated prices for November 2006 provided by National Grid Electricity Transmission plc (NGET) that were the basis for their presentation to the March 2006 Cashout Review¹². These prices were on average 9% lower than SBP and on average 7% above SSP under the current arrangements;
- Recalculate RCRC for November using the National Grid recalculated prices;
- Extrapolate the relationship between the RCRC of National Grid's recalculated prices and the actual RCRC from the current arrangements from November to the whole 2006/07 BSC year;
- Using an iterative approach to discover those fixed percentage values which would most closely match the RCRC of National Grid's recalculated prices (extrapolated for the whole 2006/07 year);
- Continue the iterative approach to also reflect asymmetry between the Premium and Discount and also to reflect granularity between night and day.

As a result of applying this methodology, the Group Member suggested the following criteria:

- A fixed percentage premium of 50% applied to the Market Index Price in each Settlement Period when the system is short between the hours of 7am and 7pm.
- A fixed percentage premium of 30% applied to the Market Index Price in each Settlement Period when the system is short between the hours of 7pm and 7am.
- A fixed percentage discount of 0% applied to the Market Index Price in each Settlement Period when the system is long between the hours of 7am and 7pm.
- A fixed percentage discount of 30% applied to the Market Index Price in each Settlement Period when the system is long between the hours of 7pm and 7am.

¹¹ That is, based on a historic relationship between RCRC and Imbalance Prices.

¹² Note that National Grid expressed in the presentation that they had no view as to whether there was a correct methodology for constructing an idealised price stack but for the purposes of providing analysis to the cash out review they assumed that:

- Services procured through forward options are included in stack from which a price is calculated;
- A snap shot of perfect SO foresight of 89 minutes ahead (Gate Closure) is used;
- All BMU's with NDZ greater 89 minutes are excluded
- Accessible Bids and Offers are based on MEL at Real Time
- All the prices are net of the Buy Price Adjustment (BPA) and Sell price Adjustment (SPA) component.

Some Group members noted a different iterative approach could have led to a different set of percentages. That is, there could be many sets of four percentage figures (in comparison to the 50%, 30%, 0%, 30% discovered above) to apply when long/short and during night and day that would also have resulted in the specific level of RCRC discovered in the above methodology.

2.6 Proposed Option 3: Dynamic Percentage Determined Ex-Post

Proposed Option 3 seeks to create a dynamic percentage value for the premium or discount set ex-post. This dynamic percentage could also differ for when the system is short (the premium) and when the system is long (the discount).

The dynamic percentage could vary in accordance with:

- Actual outturn NIV in each Settlement Period. For example:
 - Have a ratio rule where every 10MWh of NIV correlates to 1% of premium when the system is short (or when the system is long, -10MWh of NIV correlates to a 1% discount); or
 - Certain tiers of either market price or bands of MWh. For example, for a NIV between (-500) – 0 MWh = 10% discount, 0-500MWh = 10% premium, 500.01 -1000 MW = 15% premium etc.
- System stress in each Settlement Period. For example:
 - Outturn System Operator Balancing Mechanism Cashflow (CSOBM)¹³ with either the above ratio or tiers rule applied; or
 - The difference between metered demand volumes and total Maximum Export Limit (MEL).

The initial figures for the percentage tiers or ratio of percentage to NIV could be based on historical analysis. The same concerns expressed by the Group under Proposed Option 1 would apply to using this historical analysis and no historical analysis had been undertaken for this Proposed Option 3 at this stage.

Additionally, the Group noted that NIV is not necessarily related to system stress and therefore high prices may not correlate with high costs for the SO to balance the system. Additionally, CSOBM is not available in prompt time scales and whilst the difference between demand and MEL may be more likely to be available in prompt time scales, some members believed that this was not a good indicator of system stress¹⁴.

One Group member proposed a mechanism in which the percentage premium or discount is determined by dividing NIV (as currently calculated) by demand for that Settlement Period and then multiplying this by a factor of 10. Full details of this option are contained in the member's note to the Group found in Attachment 4. The member notes that this ratio of NIV to demand is usually between 0 and 5% and on two thirds of occasions is under 1%. Hence the factor of 10 is suggested to be applied.

Some Group members believe that, for the same level of NIV, this will lead to a reduced uplift or discount in peak periods (that are more likely to be periods of system stress) given demand is higher in these periods and this increases the denominator of the equation. Additionally, the Group noted that a definition of demand would be required to ensure that prices can be published in prompt timescales.

2.7 Initial Modification Group Discussion

The Group has had substantial discussion on the criteria at each of its eight meetings to date. After the first few meetings the Group asked the Proposer to suggest a rationale for the initial 5% value and also to confirm what P212 was trying to achieve (e.g. to provide incentives to balance or to reflect the costs of the SO balancing the market).

¹³ The System Operator BM Cashflow is the net amount paid to or from the System Operator in each Settlement Period in relation to the operation of the Balancing Mechanism.

¹⁴ Primarily because it does not take into account the volumes brought to the market by the System Operator.

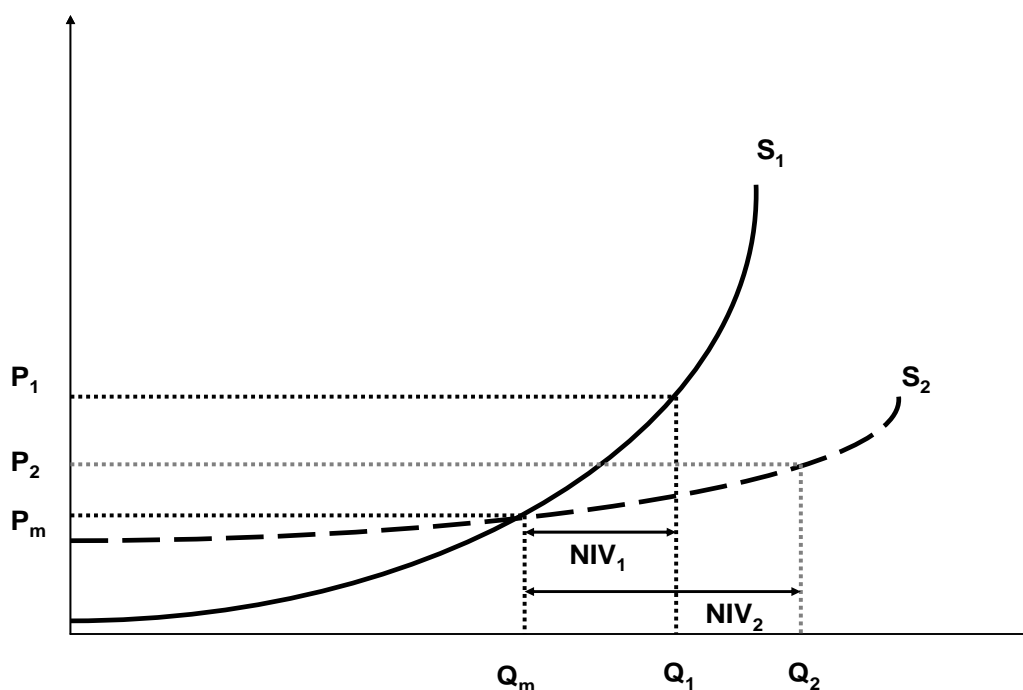
At the fourth meeting, the Proposer provided a paper which stated "The differential in the proposal is intended basically to act as a proxy for the increased costs that could be said to be incurred by the SO relative to market discovery, reflecting the fact the SO has no choice but to purchase and will 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 has considered analysis and looked at other markets. However, despite the substantial effort deployed by the Group, it has not yet been able to establish a criteria for which it believes would provide a good proxy for the costs of the SO balancing the system. 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 will 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 concern.

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 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 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 relevant Group members believe that this lack of cost reflectivity means that Parties in imbalance will 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 this modification 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.

3 AREAS RAISED BY THE TERMS OF REFERENCE

This section outlines the initial conclusions of the Group regarding the areas set out in the P212 Terms of Reference.

3.1 Determination of System Length – All Proposed Options

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. For the first two Proposed Options, 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.

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 all of the Proposed Options.

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 is 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, for all the Proposed Options, De-Minimis tagging would be removed from the current determination of NIV to increase the simplicity of the calculation.

3.2 Determination of Default Rules – All Proposed Options

The Proposer suggests that there will need to be a default price for the main Energy Imbalance Price to replace the current methodology for any circumstances where the Market Index Definition Statement (MIDS) volume thresholds are 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 20MW 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 due to the arbitrary nature of an administered price that this disadvantage would make this option 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 options for 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.

3.3 The Value of the Percentage Premium Discount

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 the Group discussion surrounding the value of the percentage premium and discount which is captured in, and has resulted in, the Proposed Options in Section 2.

One member suggested an Alternative to address the same defect. The suggested Alternative is 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 believe that it involves 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.

3.4 Impact on Energy Imbalance Prices

3.4.1 Evaluating the Defect – All Proposed Options

It is suggested by the Proposer that the Energy Imbalance Prices under the current arrangements are impacted to a high level of imperfections in the tagging mechanism (further details are contained in Attachment 7 – P212 Proposal). 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 domain¹⁵. 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 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 tagging mechanism).

3.4.2 Recalculated Energy imbalance prices - Proposed Option 1

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

- When comparing the P212 Option 1 Proposed prices with the current live prices it should be noted that on 2 November 2006 PAR500 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:

¹⁵ See Section 2.6 for information available.

- 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%) lower than the current arrangements (with a maximum increase of £134/MWh);
 - There were 936 out of 19,005 Settlement Periods in which either Proposed Option 1 SBP was greater than the current arrangements or Proposed Option1 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)¹⁶ and indicative of system stress, the Proposed Option 1 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 Proposed Option 1 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 Proposed Option 1. 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 Proposed Option 1 solution was a better estimate of the true energy costs of the SO balancing the system than the current arrangements.

3.5 Cashflow Analysis – Proposed Option 1 Only

For otherwise identical conditions, P212 Proposed Option 1 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 documented¹⁷. 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.

3.6 Incentives – All Proposed Options

The Proposer believes 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 believes 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

¹⁶ 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.

¹⁷ 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

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 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.

The Group 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% for example (Proposed Option 1) 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 is also in Parties' interests to seek to influence the market price (within the rules) to their advantage. Thus under all the P212 options, 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. The potential for this is greater under Proposed Options 1 and 2 where an accurate expectation of the Energy Imbalance Price can be formed whilst still trading on the power exchange. Under option 3, with prices set ex-post, Energy Imbalance Price uncertainty will still exist beyond Gate Closure, hence the perceived incentives not to trade will be reduced.

A number of Group members believe that the Proposed Options 1 and 2 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. One variant of Proposed Option 3 does attempt to capture these costs by basing the premium on actual NIV, which will include any post gate changes to a Party's position.

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.

3.6.2 Analysis of Rational Behaviour – Proposed Options 1 and 2

The Group 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 chose 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;
- At any point in time when E(MIP) is calculated, a Party would have the expectation that there are no future trades.

Thus under Proposed Options 1 and 2, expected rational behaviour would result in:

- A Party will only purchase a contract if the price less than $E(MIP) + X\%$
- A Party will only offer to sell a contract at a price within $Y\%$ of $E(MIP)$

Where $X\%$ and $Y\%$ are the fixed or profiled criteria.

The Group wished to caveat this analysis with the following observation:

- 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 in detailed in Section 6 of Attachment 1.

The Group noted that it was often the case that with a fixed percentage of 5% (Proposed Option 1) 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.

3.7 Impact on Settlement – Proposed Option 1 Only

The results of the BSC Agent and Transmission Company impact assessments indicated that the P212 Proposed Option 1 Solution would not have any detrimental impact on prompt prices.

Impact Assessments for Proposed Options 2 and 3 have not been obtained.

3.8 Implementation Approach and Costs – Proposed Option 1 Only

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

Proposed Option (1) PROPOSED MODIFICATION IMPLEMENTATION COSTS¹⁸

		Stand Alone Cost	Tolerance
Service Provider ¹⁹ Cost			
	Change Specific Cost	£ 68,350	+/- 0%
	Release Cost	£ 49,650	+/- 0%

¹⁸ 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

¹⁹ 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 ²⁰	£ 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 Option 1 it is recommended that P212 Proposed Option 1 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 Option 1 (although there may be cost benefits for the other items included).

Costs for Proposed Options 2 and 3 have not been obtained.

4 ASSESSMENT OF PROPOSED OPTIONS AGAINST APPLICABLE BSC OBJECTIVES

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

²⁰ 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.

4.1 Option 1: Fixed Percentage

The advantages and disadvantages of Proposed Option 1 identified by the Group are described in Table 1 below. The majority of the Group's initial conclusion is that although Proposed Option 1 is simple, the disadvantages outweighed the perceived benefits.

Table 1: Proposed Option 1 - Fixed		
	Advantages	Disadvantages
1.	Simple/transparent calculation	Arbitrary %, as no value can be justified
2.	Certainty in price	Trading can take place that influences the imbalance price up or down
3.	Function of energy trade price and therefore less polluted than current imbalance price	Not reflective of the costs incurred by the SO to balance the system, and therefore energy price not influenced by SO costs
4.	Gives an incentive to balance/contract forward in the energy market, with size of incentive dependent of % value, i.e. 1000% gives a very large cost to someone who is out of balance	Incentive not to balance as it is not reflective of the system needs increasing the SO costs of balancing the system
5.	-	Will increase the SO costs of balancing the system if more Parties are out of balance and this cost would be socialised across all Parties.

4.2 Option 2: Variable Percentage

The advantages and disadvantages of Proposed Option 2 identified by the Group are described in Table 2 below. The majority of the Group's initial conclusion is that although Proposed Option 2 is simple, the disadvantages outweighed the perceived benefits especially as the Group could not determine a methodology to set the variable percentage value that it did not believe to be arbitrary.

Table 2: Proposed Option 2 - Variable		
	Advantages As per Proposed Option 1 plus	Disadvantages As per Proposed Option 1 plus
1.	Attempts to follow more closely the current dynamics of imbalance prices, e.g. more expensive during the day than at night	More complex than option 1
2.	-	Methodology to calculate the different %'s is difficult to determine

4.3 Option 3: Dynamic Percentage Determined Ex-Post

The advantages and disadvantages of Proposed Option 3 identified by the Group are described in Table 3 below. The majority of the Group's initial conclusion is that although Proposed Option 3 is less open to gaming than either of Proposed Options 1 or 2, and it attempts to include some price elasticity into the

calculation, the disadvantages outweighed the perceived benefits, especially as the Group could not determine a methodology to set the initial percentage values.

Table 3: Proposed Option 3 - Dynamic, ex-post

	Advantages	Disadvantages
1.	Simple/transparent calculation	As per all disadvantages in Proposed Option 1 but less so
2.	Function of energy trade price and therefore less polluted than current imbalance price	
3.	Ex-post so reduces the possibility of any 'gameable' behaviour	
4.	Stronger signal to balance/contract forward than Proposed Options 1 or 2	More complex than Proposed Options 1 and 2
5.	Self regulating as linked to NIV or system stress	Methodology to calculate the initial percentage values and any tiers of MW or market price is difficult to determine

4.4 Initial Group Views

The initial **MAJORITY** view of the Modification Group was that the Proposed Modification (all options) **WOULD NOT** better facilitate the achievement of Applicable BSC Objectives (b), (c) or (d) when compared to the current baseline.

For each Applicable BSC Objective a minority view was put forward that the Proposed Modification would better facilitate the achievement of Applicable BSC Objectives when compared to the current baseline.

The Groups' majority and minority views were as follows:

Applicable BSC Objective (b) – Majority View

- A disconnect between the costs incurred by the SO and the Energy Imbalance Price will occur. As the manner in which Parties will choose to balance will not correlate with the SO costs then the SO is likely to have to purchase extra reserve to cover and expected increase in the level of imbalance. There will be an increase in the costs incurred by the SO to be able to cover extra reserve. This is an extra cost to the industry;
- There is a risk that a reduced incentive to trade close to real time will occur as Parties make rational decisions based on their expectations of the Energy Imbalance Prices. A Party will only trade in the forward market if that price is better than what they expect they will face in imbalance. As this is not linked to the costs that the SO actually faces in balancing the system, Parties will be taking imbalance positions based on incorrect incentives. This is likely to increase the level of imbalance and increase the costs to the SO;
- NETA²¹ was built upon the premise that it is more efficient for Parties to balance than the SO, this solution potentially leads to increased SO actions; and
- The solution does not provide the correct incentives to balance.

²¹ New Electricity Trading Arrangements introduced on 27 March 2001.

Applicable BSC Objective (b) – Minority View

- The solution introduces a much simpler mechanism;
- Are not convinced it will lead to increased SO actions;
- Current prices are subject to volatility, therefore predictability of the price should result in less levels of imbalance and reduce SO costs;
- Removes distortions because the current formulation of the imbalance price, and the tagging rules are not cost reflective; and
- The solution should prevent Parties going 'long' and therefore it reduces pressure (and costs) of the SO.

Applicable BSC Objective (c) – Majority View

- Five percent value is not reflective of cost of imbalance;
- Cannot agree with any arguments on how it is better;
- Believe that complexity is not a barrier to entry if the mechanism used in setting the price is an appropriate one;
- The current arrangements reflect the costs of SO balancing actions and these are targeted onto the Parties contributing to the imbalance. The P212 solution removes the link to the costs incurred by the SO reflection and will result in these costs being socialised. Appropriately targeting costs on those that cause them is a fundamental component of facilitating competition. The P212 solution would create cross subsidy that benefits those who are more often in imbalance; and
- There is no evidence of the materiality in which transmission constraints of other imperfections in the current tagging mechanism affect Energy Imbalance Prices.

Applicable BSC Objective (c) – Minority View

- Removes volatility and uncertainty of price which encourages new entrants;
- Simpler price mechanism to understand which encourages new entrants; and
- Removes current distortions in the market arising from the tagging mechanism producing a price that is not reflective of the energy cost of balancing the system.

Applicable BSC Objective (d) – Majority View

- It is not cost effective to change the current systems and there is no evidence that it will be cheaper to operate on an ongoing basis (given that the processes are automated);
- The arbitrary nature of the criteria requires substantial costs for a justification for the figure and in order to review its appropriateness;
- A new methodology and system to try to calculate the 'true' costs of balancing would be required.

One member felt it is not relevant to compare the current and P212 solutions under Applicable objective (d) and was therefore neutral on objective (d).

Applicable BSC Objective d – Minority View

- The solution is much simpler and more transparent.

The initial **MAJORITY** view of the Modification Group was that the Proposed Modification (all options) was **NEUTRAL** against Applicable BSC Objective (a) when compared to the current baseline. However a minority

view was that the solution would not better facilitate the achievement of this Objective for the following reasons:

- There is less incentive on Parties to provide their own reserve which is one of the premises that NETA was based on when it was introduced (that it is more efficient for Parties to provide their own reserve). Therefore system security issues may arise as the SO may find it more difficult to resolve shortfalls. Additionally there is a reduced long term incentive to invest in new plant or plant reliability as the forward price curve will not reflect the costs of balancing the system.

The following views were made in relation to benefits of Proposed Options 1, 2 or 3 when compared to each other against the Applicable BSC Objectives:

- One member ranked their preferred options as Proposed Option 3, then 2, then 1 as this reflected their ability to be cost reflective. However the member re-iterated that he did not believe that any of the options were as cost reflective as the current arrangements;
- Some members felt the Ex Ante nature of Proposed Options 1 and 2 opened up a greater potential for gaming; and
- One member felt that Proposed Options 2 and 3 were better than 1 as they could arguably be constructed to produce prices that reflect system stress.

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.
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.

6 DOCUMENT CONTROL

6.1 Authorities

Version	Date	Author	Reviewer	Reason for Review
0.1	02/08/07	Chris Stewart	David Jones	For technical review
0.2	6/08/07	Chris Stewart	Modification Group	For Modification Group meeting
0.3	9/08/07	Chris Stewart	Modification Group	For Modification Group review
1.0	15/08/07	P212 Modification Group		For industry consultation

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

ESTIMATED COSTS OF PROGRESSING MODIFICATION PROPOSAL²²

Meeting Cost	£ 2,750
Legal/Expert Cost	£ 5,000
Impact Assessment Cost	£ 10,000
ELEXON Resource	100 man days £ 32,500

Note that the number of ELEXON man days (and cost) will need to be updated to represent additional analysis requested by the Group. Further to this, as the Assessment Procedure for P212 has been extended by two months, this will require further ELEXON resource.

MODIFICATION GROUP MEMBERSHIP

Member	Organisation	15/05	22/05	06/06	13/06	04/07	18/07	24/07	08/08
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 Prestwich	Smartest Energy	√	√	√	√	√	√		
Paul Jones	E.ON UK	√	√	√		√	√	√	
Paul Dawson	Barclays Capital		√						

²² 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.

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
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						√		

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 5.

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 6.

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'	BCSP18 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.