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

Prepared by: P212 Modification Group

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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.

No Alternative Modification has been developed.

MODIFICATION GROUP'S RECOMMENDATIONS

The P212 Modification Group invites the Panel to:

- **AGREE a provisional recommendation that Proposed Modification P212 should not be made;**
- **AGREE a provisional Implementation Date for Proposed Modification P212 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;**
- **AGREE the draft legal text for Proposed Modification P212;**
- **AGREE that Modification Proposal P212 be submitted to the Report Phase;**
- **AGREE that the P212 draft Modification Report be issued for consultation and submitted to the Panel for consideration at its meeting of 13 December 2007; and**
- **AGREE to seek views on Party costs from respondents to the Report Phase consultation (due to the clarification of the impact of P212 on the Settlement Report SAA-I014).**

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

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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 contained in Appendix 4.

Parties	
Distribution System Operators	☐
Generators	☒
Interconnectors	☒
Licence Exemptable Generators	☒
Non-Physical Traders	☒
Suppliers	☒
Transmission Company	☒
Party Agents	
Data Aggregators	☐
Data Collectors	☐
Meter Administrators	☐
Meter Operator Agents	☐
ECVNA	☐
MVRNA	☐
BSC Agents	
SAA	☒
FAA	☐
BMRA	☒
ECVAA	☐
CDCA	☐
TAA	☐
CRA	☐
SVAA	☐
Teleswitch Agent	☐
BSC Auditor	☐
Profile Administrator	☐
Certification Agent	☐
Other Agents	
Supplier Meter Registration Agent	☐
Unmetered Supplies Operator	☐
Data Transfer Service Provider	☐

Sections of the BSC	
A	☐
B	☐
C	☐
D	☐
E	☐
F	☐
G	☐
H	☐
I	☐
J	☐
K	☐
L	☐
M	☐
N	☐
O	☐
P	☐
Q	☒
R	☐
S	☐
T	☒
U	☐
V	☐
W	☐
X	☒

Code Subsidiary Documents	
BSC Procedures	☒
Codes of Practice	☐
BSC Service Descriptions	☒
Party Service Lines	☐
Data Catalogues	☒
Communication Requirements Documents	☐
Reporting Catalogue	☒
Core Industry Documents	
Ancillary Services Agreement	☐
British Grid Systems Agreement	☐
Data Transfer Services Agreement	☐
Distribution Code	☐
Distribution Connection and Use of System Agreement	☐
Grid Code	☐
Master Registration Agreement	☐
Supplemental Agreements	☐
Use of Interconnector Agreement	☐
BSCCo	
Internal Working Procedures	☒
BSC Panel/Panel Committees	
Working Practices	☐
Other	
Market Index Data Provider	☐
Market Index Definition Statement	☐
System Operator-Transmission Owner Code	☐
Transmission Licence	☐

1 EXECUTIVE SUMMARY

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

The Group:

- **AGREED** that the Proposed Modification would not better facilitate the achievement of Applicable BSC Objectives (b), (c), and (d)[2].
- **DEVELOPED** a number of potential 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;

  however **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;
- **AGREED** that NIV should be used to determine the length of the system and whether System Buy Price (SBP) or System Sell Price (SSP) will be the main Energy imbalance Price;
- **AGREED** that Default Prices should be determined using the Market Index Price from the most recent Settlement Period in which the liquidity threshold has been met;
- **AGREED** that using historical analysis (particularly recalculating Energy Imbalance Prices based on historic Market Index Prices) is of limited value in the assessment of P212;
- **AGREED** that the scenario analysis, undertaken to establish potential Party behaviour under P212, supports the view that P212 would not better facilitate the achievement of the Applicable BSC Objectives with the key conclusions being:
    1. P212 creates incentives for Parties to trade to influence price, rather than trading that represents market fundamentals;
    2. Large Parties would gain advantage due to the size of their portfolios, which would allow them greater ability to impact price with their trades;
    3. The price of the first trade determines the scope and extent of trading in any one Settlement Period and is a critical driver of trading strategy for all Parties;
    4. Prices, in which trades occur, may become volatile and oscillate between very high prices and very low prices as Parties attempt to exert influence on Energy Imbalance Prices; and
    5. Post APX market closure activity could be detrimentally impacted, with parties potentially incentivised to either spill more or withhold generation.
- **NOTED** that the scenario analysis undertaken was based on a simplified model and set of assumptions of the market. Even though simplified, this model was difficult and complex to construct. A full economic model, potentially with multiple layers of game theory that would be tested in various simulations, would have allowed for more comprehensive scenarios. However, this would have required significant and/or specialist resource and incurred increased costs and time;

[2] (b) The efficient, economic and coordinated 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; and
(d) Promoting efficiency in the implementation and administration of the balancing and settlement arrangements.

- **NOTED** that the implementation costs for the Proposed Modification were estimated to be £259,000 for BSCCo and BSC Central Systems and approximately £80,000 for the Transmission Company;
- **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; and
- **AGREED** that the draft legal text delivers the intended solution for the Proposed Modification.

A description of the P212 solution is provided in Section 2. Further information regarding the Group's discussions of the areas set out in the P212 Terms of Reference is contained in Section 3, including details of the Group's recommended implementation approach and the implementation costs of P212.

A summary of the Group's views regarding the merits of the Proposed Modification can be found in Section 4. A copy of the Group's full Terms of Reference can be found in Appendix 2, whilst a summary of the responses to the Assessment Procedure consultation and impact assessment can be found in Appendices 3 and 4 respectively.

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 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 500MWh[3] of priced balancing actions (accepted Offers and BSAD) remaining, following the application of the following rules:

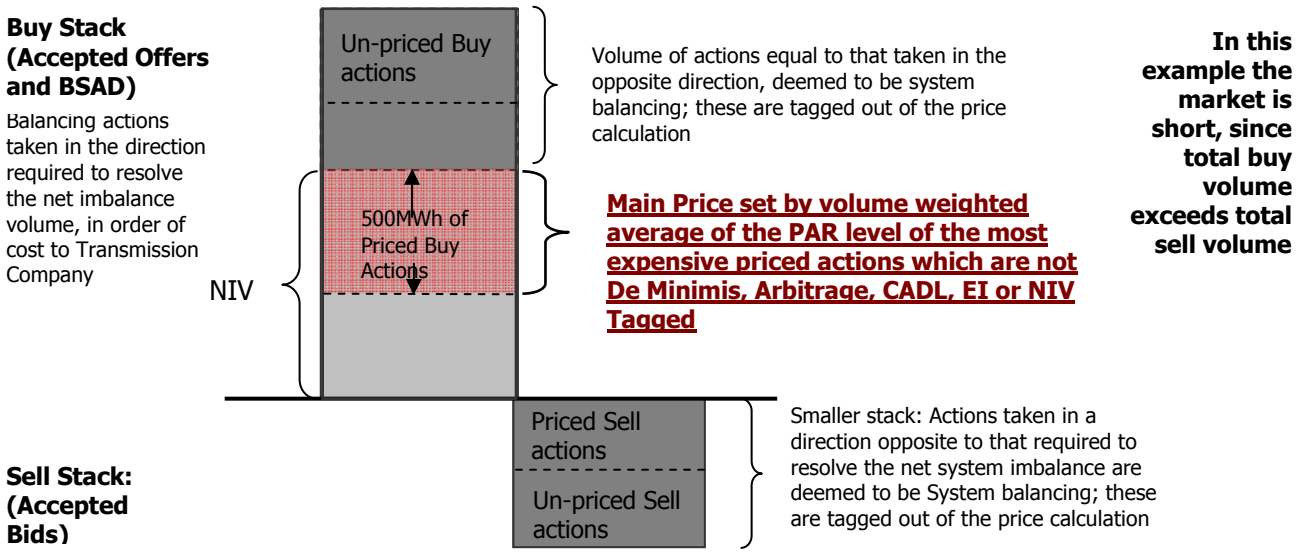
[3] This is known as the Price Average Reference (PAR) volume. PAR is currently 500MWh. When the system has excess energy (said to be 'long') then the main price (SSP) will be based on the volume weighted average of the most expensive 500MWh of priced balancing actions (accepted Bids and Energy BSAD)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

- **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-priced[4] in the price calculation;
- **BSAD:** The SO determines whether Relevant Balancing Services will be treated as priced or un-priced. BSAD is calculated net[5] 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.

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



[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).

2.2 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 Price[6] 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 in Energy Imbalance Prices;

  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 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[7] 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

[6] 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.
[7] This can be found at:
http://www.elexon.co.uk/ChangeImplementation/modificationprocess/modificationdocumentation/modProposalView.aspx?propID=232

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 used[8]; and

- When NIV is equal to zero the main Energy Imbalance Price will revert to the Reverse Price.

2.3 Background to Proposal

P212 was raised subsequent to the Ofgem-led Cash out Review that was re-established during winter 2006/2007. The Proposal suggests 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 Proposal states 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 letter[9] and from within the Ofgem-led Cash out Review[10]. It should be noted that some Modification Group members believed that a sufficient level of materiality of this defect has not 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); and
- Constraint activities (including resolving locational issues).

The Proposal suggests 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 Proposal suggests 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. The Proposal suggests 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".

[8] 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.

[9] Available from Ofgem's website at:
http://www.ofgem.gov.uk/Pages/MoreInformation.aspx?docid=86&refer=Markets/WhlMkts/CompandEff/CashoutRev

[10] 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

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

The Proposal also suggests 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.

2.3.1 Options considered for the Proposed Modification

The Proposal 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 Proposal stated that 'the size of the increment or decrement to the market price to determine the main price and whether it should be fixed' warrants consideration by the Modification Group. Additionally, 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 for the criteria. These were:

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 (potentially one Option could have formed the solution for an Alternative Modification). The majority did not believe that any would constitute a methodology that can be quantitatively supported. Additionally, the majority of the Group did not believe that Option 3 was a fully defined option (as it only provided the principles of what the solutions should look like).

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 Panel requested additional analysis. The Group also believed that a further extension to the timetable would not have been forthcoming due to the view that the 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. Therefore, Option 3 was not assessed any further.

3 AREAS RAISED BY THE TERMS OF REFERENCE

This section outlines the conclusions of the Modification Group regarding the areas set out in the P212 Terms of Reference. This covers the following areas:

- Determination of System Length;
- Determination of 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
- Implementation Approach and Costs.

3.1 Determination of System Length

3.1.1 Modification Group's Initial Discussions

The Proposal 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.

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, NIV 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 NIV calculation 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[7]. 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 Assessment Procedure Consultations

There were no comments from respondents to the first or second consultation in relation to the determination of system length.

3.1.3 Modification Group's Conclusions

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 the initial discussions.

3.2 Determination of Default Rules

3.2.1 Modification Group's Initial Discussions

The Proposal 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 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[11]. 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 considered using an administered price and agreed that the arbitrary nature of an administered price would make it inferior to using the market price in the previous Settlement Period. The market price in the previous Settlement Period is more likely to provide a sensible price. 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 no impact on Market Index Data Providers.

3.2.2 Views of Respondents to the First Assessment Procedure Consultation

There were no comments from respondents to the first or second consultation in relation to the determination of default rules.

3.2.3 Modification Group's Conclusions

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 Proposal did not specify the actual criteria for which the premium or discount on the market price would be selected, this was left for consideration by the Group.

The Group discussed the value of the percentage premium and discount which resulted in the Options described in Section 2.

[11] A full list of Attachments can be found in Appendix 5.

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 could be used to form a price curve from which a price for resolving NIV (as currently determined) would 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 felt 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 P212. However, the Group did believe that such a concept would benefit from further consideration outside of P212, potentially a matter for the Ofgem-led Cash-Out review.

The Group discussed at length on what basis the fixed premium or discount could be set (i.e. the solution chosen for the P212 Proposed Modification). The Proposer initially suggested that a fixed figure of 5% should be used. 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 were justifiable criteria to be able to determine a particular fixed percentage figure. The Group subsequently had substantial discussion on these criteria.

Whilst the three methods below were identified by the Group for setting the fixed premium/discount value, 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 fixed 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 fixed 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% in market price to SSP when the system was long;

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 did not alleviate perceived concerns about the arbitrary nature of the percentage. Some members had the following comments:

- The fixed premium/discount solution would not provide any allowance for potentially significant changes in market participant behaviour under the P212 arrangements and the current baseline;
- It should be noted that there are 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.

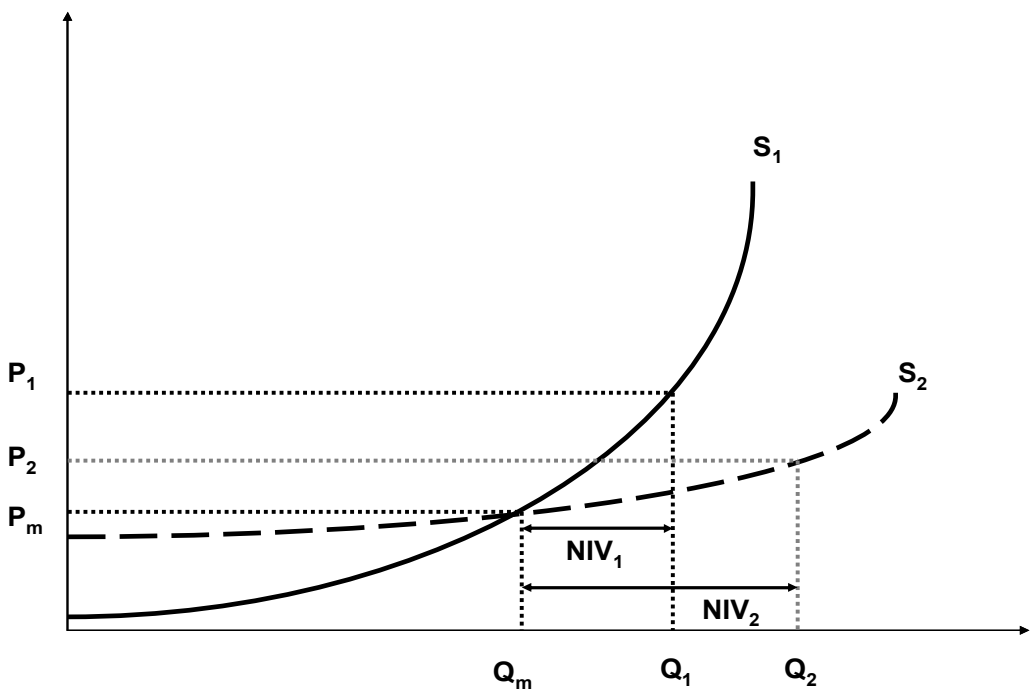
The Proposer indicated that the percentage differential in the proposal is intended to act as a proxy for the increased costs that could be said to be incurred by the SO relative to market discovery, reflecting the fact the SO has no choice but to purchase and would do so inefficiently relative to the market. Thus P212 should retain some element of cost reflectivity.

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 believed would provide a good proxy for the costs of the SO balancing the system was not achievable. Additionally, the Group argued that if the aim of P212 is also to incentivise Parties to balance or to contract then any arbitrary percentage would 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. Additional analysis has been completed on these areas and is discussed in Section 3.6 below.

A number of members of the Group believed that the concept of P212 was 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 P212 Proposed of rejected Option 2 (Fixed or Variable Percentage) were to be adopted the Energy Imbalance Price would be identical under both scenarios, set as a fixed percentage uplift on P_m. Under 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[12].

The same Group members believed that this lack of cost reflectivity would mean 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 initially agreed that the premium and discount for the Proposed Modification be fixed at 5%.

3.3.2 Views of Respondents to the First Assessment Procedure Consultation

Some respondents noted that a 5% value had 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. Furthermore, they believed that this arbitrary nature did not reflect balancing costs either 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 Proposed Modification (Option 1 in the first consultation) better facilitates the Applicable BSC objectives are captured in Section 4 below.

Prior to agreeing that the P212 solution would be a fixed percentage premium or discount of 5%, the Group asked for an indication of industry preference for the three Options that were being considered at the time (see Section 2 above).

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 determining the fixed percentage premium or discount that would not be arbitrary, the Group agreed that the initial percentage suggested by the Proposer of 5% should be used.

[12] Whilst Option 3 was not defined and agreed by the Group, one potential option was to link the premium or discount to the level of NIV in the Settlement Period.

3.3.4 Views of Respondents to Second Assessment Procedure Consultation

A small number of respondents noted that Option 3 was not pursued, as either the P212 Proposed solution or as an Alternative. These respondents believed that Option 3 was a better and more valid solution than P212 Proposed as it addressed areas (such as ex-ante prices) that were seen as defects with P212. The respondent's expressed disappointment that further analysis and further assessment of Option 3 had not been pursued. However, when asked which Option 3 should have been pursued (i.e. using some link to NIV or a measure of system stress), most of these respondents did not offer a view. Once respondent indicated that NIV should be used.

3.3.5 Modification Group's Conclusions

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.

With regard to the discontinuation of the progression (definition and analysis) of Option 3, the Group noted the respondents' comments. The Group were satisfied that correct process had been followed to assess P212 fully, address its terms of reference and ensure a comprehensive Assessment Report for P212. This is discussed further in Section 5.

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 by imperfections 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 domain[13]. Further evidence had also been provided under P211 "Main Imbalance Price Based on Ex-post Unconstrained Schedule". The Proposer noted that it was 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 been required for both energy and system 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 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

[13] See Section 2.3 for available information.

likely to incur very significant costs. Thus given the SO performs 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 was 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, a 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 due to either; the removal of the application of the default rule in which the current reverse price is capped by the main price; or, that the current arrangements may not always have had a spread of larger than 5%; and
- On 14 March 2006, which was the day following a Gas Balancing Alert (GBA)[14] and was 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 demand periods, 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.

3.4.2 Views of Respondents to the First 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

[14] A GBA can occur under the Uniform Network Code (Great Britain's gas market code) 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.

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 in itself, 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 did not change from those initially expressed. The Proposer noted that whilst the materiality of the defect may not be considered by all to have been demonstrated, 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, and where necessary, the materiality.

3.4.3.2 Recalculated Energy imbalance prices

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

3.4.4 Views of Respondents to Second Assessment Procedure Consultation

3.4.4.1 Evaluating the Defect

One respondent noted that recent Energy Imbalance Prices, in excess of £200/MWh, had occurred in September/October 2007, which were the result of Scottish transmission constraints. The respondent noted that this example of pollution would not have occurred if either P212 or P211 had been implemented.

3.4.5 Modification Group's Conclusions

The Group noted that the existence of the recent Scottish transmission constraints and how these were likely to have led to the high Energy Imbalance Prices. Given the last example of such easily identifiable constraint activity was in 2005, shortly after the British Electricity Trading and Transmission Arrangements (BETTA) were introduced, it might have been useful if this recent example had been included in the analysis for P212 (or indeed P211). It was, however, noted that the recent events did not change the views of the majority of the Group with regards to the extent and materiality of the defect. The Group also noted that there are other initiatives outside the BSC which may be looking at this issue, including work under the Connection and Use of System Code (CUSC), Ofgem's Transmission Access Review[15], and by the SO regarding the SO incentive scheme.

3.5 Cashflow Analysis

3.5.1 Modification Group's Initial Discussions

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

[15] See http://www.ofgem.gov.uk/Networks/Trans/ElecTransPolicy/tar/Pages/Traccrw.aspx

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 documented[16]. 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.

3.5.2 Views of Respondents to Assessment Procedure Consultations

There were no comments from respondents of either the first or second Assessment Procedure consultations in relation to the cashflow analysis.

3.5.3 Modification Group's Further Conclusions

The Group did not discuss the cashflow analysis further, however they did 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's initial view was that under P212 some Parties would not be subject to the same volatility of prices (especially SBP) and they would 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 believed that the P212 solution would lead to a change in behaviour of Parties when facing imbalance. Modelling behaviour is however a subjective exercise and as such the Group initially felt that an economic qualitative assessment of the likely change in behaviour that would materialise as a consequence of the Proposed options was 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 of the Group 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 Parties 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 the incentive to balance depends entirely on the criteria chosen for the solution. Under P212, Parties would make rational decisions to balance based on their expectation of the market price and how the criteria determines the Energy Imbalance Price. The P212 solution of a fixed percentage premium/discount of 5% provides a much weaker incentive to balance than the current arrangements. However, had a fixed percentage of say 1,000% been chosen, then this would lead to much greater incentives to balance.

[16] 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

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 would have the ability to make trades that would consequently impact the Energy Imbalance Price. Furthermore, one member noted that employing rational expectations, there would be the potential for Parties to withdraw from trading on the power exchange and therefore impact the Energy Imbalance Prices. Parties 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. This is an area further focused on in the additional analysis undertaken and discussed in 3.6.3.2 below.

A number of Group members stated that P212 would not reflect any costs of oost Gate Closure plant loss and the Energy Imbalance Price would be related only to pre Gate Closure trades. These Group members believed that this would decrease the long term incentive on Parties to maintain their plant to ensure an efficient level of plant reliability.

Additionally, some Group members believed that the P212 solution would 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 would increase the SO costs which, where the P212 price does not reflect the SO costs, would not be targeted on those with imbalances.

Further assessment of market behaviour initially discussed by the Group is contained in a paper provided by a Modification Group member. This paper is included as Attachment 3 and concludes that:

- Any fixed ex ante Energy Imbalance Price could have significant implications for the behaviour of market participants both in terms of the incentive to balance and the incentive to trade forwards;
- There are risks that perceptions of the Energy Imbalance Price would constrain liquidity and would potentially reduce incentives to trade;
- There would be clear risks associated with price setting behaviour in the forward market that could result in cash out prices that do not reflect the fundamental operation of the electricity market; and
- A price based on available Offers or Bids in the forward market carries the risks associated with gaming and clearly would not take into account the actual incentives required for the post Gate Closure period.

3.6.1.2 Initial 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. E(MIP) 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 where those trades are 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 is than E(MIP) + 5%; and
- A Party only offering to sell a contract at a price within 5% of E(MIP)

The Group caveated 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 premium/discount 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. This is because it is only rational to enter a trade if the price of that trade is better than the price expected in imbalance. As an expectation of the market price becomes clearer, and it is known under P212 that the Energy Imbalance Price will be plus or minus 5% of that market price, then it is not rational to trade outside that 5% range. It can be seen in Section 6 of Attachment 1 that, under the current arrangements, trades can occur at prices over 100% different from the expected market price. Under otherwise identical conditions this may be indicative of P212 resulting in a reduced incentive to trade.

3.6.2 Views of Respondents to the First 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 Energy Imbalance Prices which are likely to be more benign and 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. A large number of respondents believed 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 Balancing Services Use of System (BSUoS) and therefore would be socialised.

Some respondents believed 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 Initial 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 Party behaviour as a result of the modelling exercise described in 3.6.3.2 below.

3.6.3.2 Analysis of Rational Behaviour

The Group was tasked by the Panel (when a 2 month extension was given to the timetable) to provide further analysis on the expected Party behaviour that would occur under P212. The Group therefore developed a simplified market model to attempt to establish what behaviours might rationally occur. Whilst

this is a simplified model, the Group noted that the development, running and interpretation of the model results was a significant exercise to undertake. The details of the model, results and conclusions are contained in Attachment 4. A summary of this analysis is provided below.

The model was developed with five Party 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, different percentage premiums and discounts, and the impact of including or excluding RCRC. Two trades occur in each scenario. The first trade was used to represent the start of trading in the market and a second and final trade that confirms what SBP and SSP would outturn as[17]. 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 4), 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 objective[18].

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

a) The price of the initial trade (considered critical, as this is the price that subsequent trading would revolve around);

b) The default price, which would occur if there were not any trades, would 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:
   - (a), (b) and (c) above;
   - Expectation of system length;
   - The impact of any potential trade once entered into; and
   - Other Parties' behaviours.

Trading would occur between two Parties in the model when it is beneficial in terms of total cash flows for both Parties to do so. The model identifies that there are two states in which trading can be shown to 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

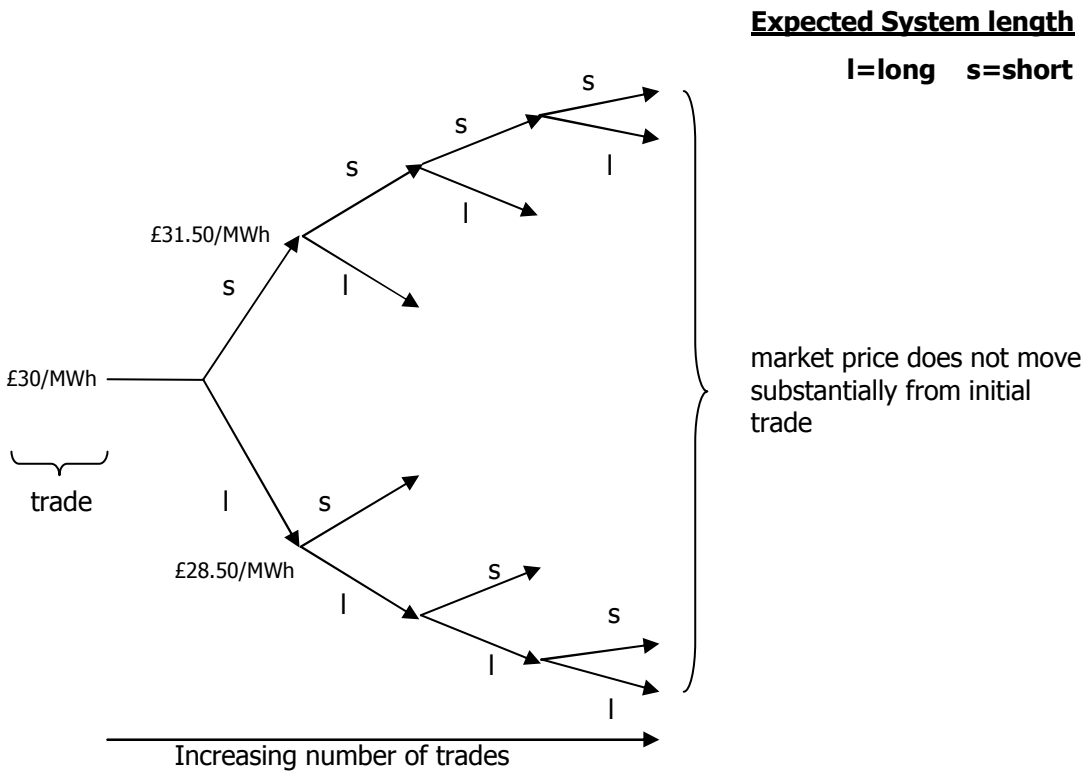
- A **non-restricted state** where trades may occur outside the 5% range set by the premium and discount. Rational trades either occur between two long Parties or two short Parties resulting in one of these Parties going further into imbalance[19]. The trades are shown in the model to be rational because of the degree in which market price and therefore Imbalance Prices can be influenced and would result in better total cash flows for both Parties involved in the trade.

Restricted state

[17] 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.
[18] Note that under the current arrangements, these arguably have a greater correlation.
[19] Unless they can trade out this imbalance in the Over the Counter market (OTC) or the trade is between two Parties with the same parent company.

The restricted state creates an 'envelope'[20] 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 market price 'envelope': Trades and the affect on market price (Restricted state)



The results of the model indicate that the range of prices that two counter parties would be willing to trade is in fact less than the envelope of potential trades. This is because of the impact the trade has on both Parties cashflows via, trade cost/revenue, imbalance cost/revenue and RCRC. The model showed that trades would occur in a narrow price range that was within 1/5th of the original envelope[21].

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.

Non-restricted state

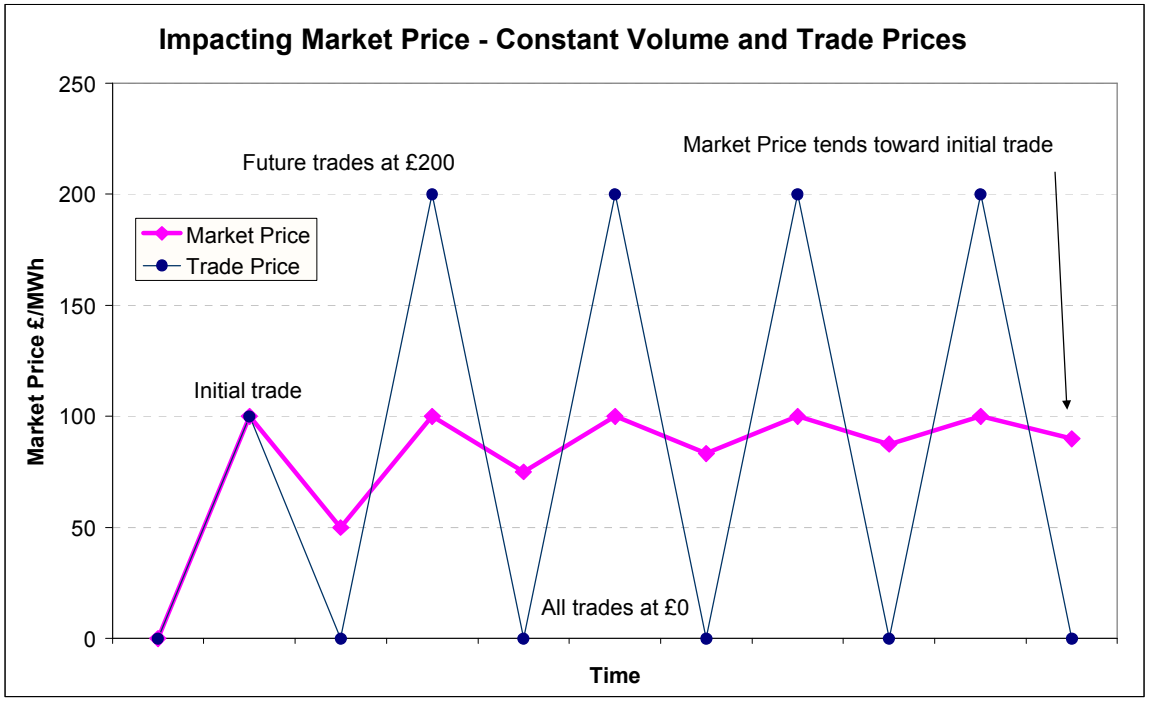
Under a non-restricted state Parties would be trading to impact price and hence increase their revenue. Scenario 3 in Attachment 4 shows that the simplified behaviour described in Figures 4 and 5 below could rationally occur, because there could be situations in which there are two long, or two short Parties that are willing to trade at very high, or very low prices despite how this impacts their imbalance position. Note that the examples used in the analysis are extremes to highlight the incentives that P212 could create. In reality

[20] See Section 6 of Attachment 4. 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 £30/MWh then the outer bounds of the envelope where trading between a long and short Party will occur is £28.50 and £31.50 (± 5% of £30/MWh). This is the beginning of the envelope and it continues outwards as further trades are made.

[21] Note that with different model parameters the 1/5th figure may change. However, the conclusion that the range of prices that Parties would be willing to trade is somewhat narrower than the initial envelope holds.

such extreme prices may not be reached, due to regulatory or market monitoring pressures. However, such behaviour could exist in a 'grey area' of acceptable trading behaviour where it is difficult to regulate or detect such types of behaviour.

Figure 4. Non-restricted state where a Party is seeking to set Market price at £100/MWh. Constant Trade prices



Figures 4 shows a simple scenario where Parties are trading to influence price. The graph shows the prices that Parties trade at and the subsequent impact that trade would have on the market price. For simplicity, it is assumed that all trades are of equivalent volume. In Figure 4, there is a long Party who is seeking to set a high market price of £100/MWh. There is also a short Party that has opposite incentive for market price to be as low as possible. If the long Party makes an initial trade at £100/MWh then they could subsequently trade at prices of £200/MWh such that the market price tends toward £100/MWh. This is because a short Party cannot trade at a level below £0/MWh[22]. The long Party is proactively trying to set a high market price and the short Party is reacting to this by making low price trades to reduce this high market price. In this example, it is assumed there are Parties who are willing to trade with the long and short Parties at the high or low price of their trades.

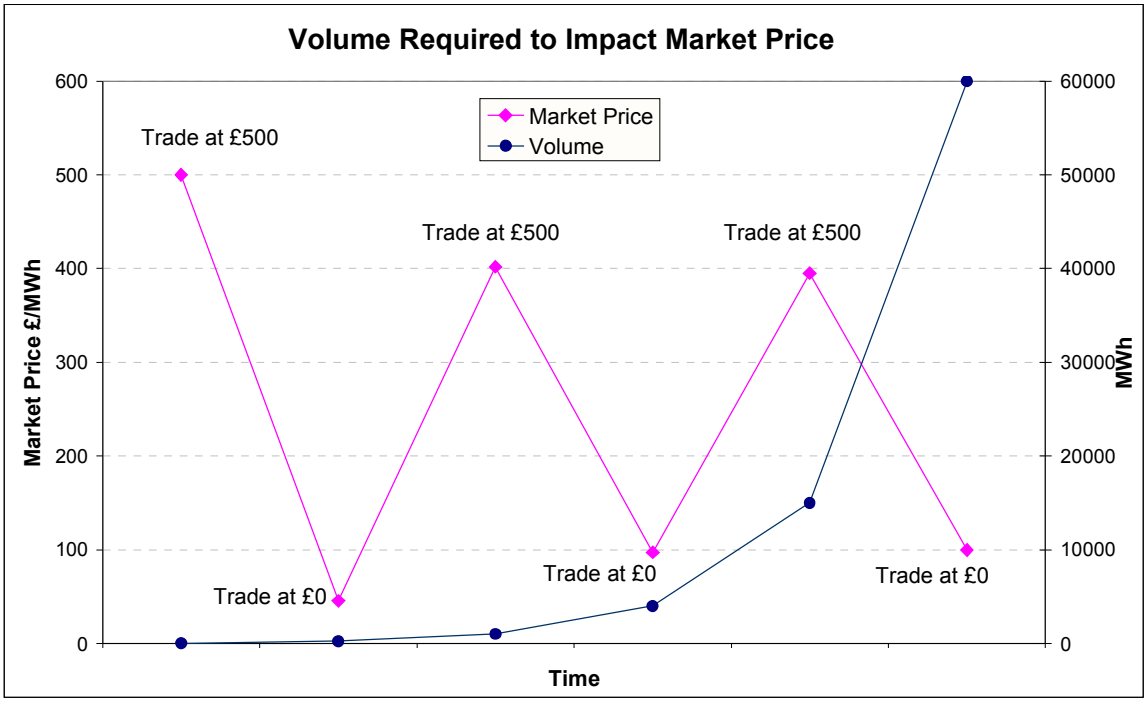
A short Party would be able to influence market price by increasing the volume in each trade. This is shown in Figure 5 below. However, because the market price is a volume weighted average price, the MWh volumes required in a single trade to impact price increases substantially. Whilst the initial trade at £500/MWh is only 25MWh is takes 250MWh at £0/MWh to reduce this price to £45/MWh with the second trade. The volume of the trade then increases substantially to be able to create such large swings in market price. In this extreme example, to ensure market price is no greater than £100/MWh after 5 trades, a short Party would need to trade a volume of 60,000MWh.

Note that this is an extreme example based on trading at a prices of £500/MWh for a long Party and £0/MWh for a short Party and the desire of each Party to substantially increase or decrease market price with each trade. This highlights the extremes of potential rational behaviour in a non-restricted state. The scenario analysis in Attachment 4 shows examples of where such behaviour could be seen as rational. Such behaviour would be more likely to happen on a smaller scale in the actual market were P212 to be

[22] Note that liquidity is assumed here such that any trade would be matched by another Party that would be better off trading at this price.

implemented. However, it does highlight the potential incentive for Parties to trade to influence market price and hence imbalance prices rather than for balancing reasons. As a result, Parties might be incentivised to go further into imbalance to be able to influence price, due to the fact that it can be shown to be rational for short Parties to trade with short Parties and long Parties to trade with long Parties.

Figure 5. Impact of the size of traded volume to influence market price



3.6.3.3 Group's conclusion regarding the analysis of rational behaviour

The Group has been able to draw number of conclusions from the restricted and non-restricted state scenarios. These key conclusions were (see Section 8 of Attachment 4 for full details):

1. P212 would create incentives to trade to influence price rather than trading that represents market fundamentals (such as fuel price, energy scarcity or to maintain a balanced position). Trading to influence price would be to the detriment of Parties efficiently trading off between balancing themselves, and the System Operator (SO) balancing on their behalf. This incentive is shown to exist in a non-restricted state by the use of extreme examples that may not occur in reality due to regulatory oversight and market monitoring. However, such activity could still occur in a 'grey' area in which such behaviour would be more difficult to detect;

2. Large Parties would gain an advantage due to the size of their portfolios, allowing them greater ability to impact market price with their trades (as market price is a volume weighted average). There is also a potential advantage to long Parties, due to the fact that negative trade prices are not currently allowed for trades on the APX Exchange. There could be situations where it is beneficial for Parties to go ever more into imbalance to make financial gains in the imbalance market. This is likely to result in increasingly higher imbalance volumes and such a strategy favours large players as they have greater portfolios to enable such risks to be taken. Risk increases (via greater imbalance position and potential cash flow exposure) with the number of trades. Parties not participating in this risky trading strategy are heavily affected by extreme trades that are made purely to influence price. Both counterparties to such trades could have the same parent company although this strategy might be less common in a regulated market;

3. The price of the initial MIDS qualifying trade would be a critical driver in determining a Party's trading strategy. An initial trade sets the price 'envelope' of the remaining trades for the Settlement

Period in a restricted state (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 price of the initial trade in both a restricted and non-restricted state, due to the shape of the envelope and the ability to impact price in each state respectively;

4. Prices at which trades may occur could become volatile and oscillate between very high prices and very low prices as Parties attempt to influence the resultant market and hence 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; and

5. Post market closure activity could be detrimentally impacted. The exchange market closes 1.5 hours before the start of a Settlement Period and a FPN needs to be declared to the SO at Gate Closure (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 that would be 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. Parties might therefore be able to maximise their profits or minimise costs by adjusting their FPNs. If price is high then a Party might have incentive to spill (and is allowed to do so, by increasing their FPN to a level they consider optimal). A high price also presents a strong incentive to replace tripped plant. Conversely, if a price is low (for example below marginal cost) then a Party might not wish to generate and instead save on its fuel costs (and can do so by decreasing their FPN to an optimal level). The Party would also have less incentive to replace tripped plant. In a situation where a Party reduces its FPN, it could also increase Bid/Offer prices in the Balancing Mechanism. The SO would then have to accept many of these balancing actions to ensure that demand is met. The incentive to spill or withdraw generation could lead to system security issues and lead to greater NIV magnitude and volatility and therefore potential costs to the SO that are socialised through BSUoS[23].

The Group have drawn these conclusions based on the model they developed. In the time available in the Assessment Procedure, this model provides the best quantification of the behaviours that the Group believe might occur. Whilst the Group believed that the results and conclusions drawn appear to be intuitive, the Group noted that, to be able to model accurately the potential behaviours that might occur, a full economic model, potentially with multiple layers of game theory, could be developed and then tested in various simulations. This would be a substantial exercise that requires expertise outside of the Group and would incur costs and require time that was not available in the Assessment of P212.

3.6.4 Views of Respondents to Second Assessment Procedure Consultation

The majority of respondents supported the analysis undertaken and the conclusions drawn by the Group. One respondent commented that the additional analysis further demonstrated the P212 shortcomings that were suggested in the qualitative analysis initially carried out by the Group (see Section 3.6.1.1). One respondent believed that there should be more weight applied to the non-restricted state than the restricted state, as it was their belief that this would be a more likely outcome under the P212 arrangements.

A minority of respondents noted that the scenario analysis was limited and this meant it was premature to draw conclusions based on the analysis. The real world would be likely to result in different outcomes given its complexity compared to the simplifying assumptions required by the model. The conclusion that Parties would only trade in the envelope may not hold, as a Party would expect there to be subsequent trades and

[23] As this type of strategy is likely to lead to greater SO costs, then a Party may wish to take into account any effect on BSUoS (as they pay a proportion of this cost based on metered output) before adopting this strategy.

therefore an expectation that price may change outside this could be reasonable. Another respondent noted that BSUoS should have been taken into account as this is another cashflow that might impact on Parties' decision making processes.

It was also noted by a respondent that a comprehensive game theory model would have been ideal, but it was appreciated that this would require substantial resource and time.

Some respondents commented on the impact on NIV, with the most common view that NIV would become less predictable and more volatile due to the post Gate Closure activity that could potentially occur. However, one respondent believed that there was no evidence that NIV would become more volatile and that by reducing incentives to over contract, NIV could become more stable.

Some respondents noted that the analysis highlighted the importance of the initial trade to determine how market behaviour would be impacted for any Settlement Period. Some respondents felt that at times there would be no, or reduced incentives to balance, whilst others believed that removing the link to the costs of the SO balancing the system would significantly change the incentives to balance. However, this could not necessarily be determined, because it was not clear to what level market price would change due to the incentives to trade being divorced from market fundamentals.

One respondent noted that disorderly trading (where trading to impact price becomes more common and extreme in price) may be encouraged on the APX and this might impact APX's regulatory requirement to maintain an orderly market.

Another respondent noted, that whilst analysis had been done on how trading might occur under P212 to influence price, no comparative analysis had been done on the existing arrangements. This made it difficult to determine whether P212 would be considered more gameable.

A non-vertically integrated respondent commented that P212 would create incentives for Parties to vertically integrate due to the desire to reduce or remove exposure to the traded price. This would make it more difficult for independent generators or suppliers to exist. The respondent also believed that Parties would invest in mechanisms to predict RCRC and system length instead of reducing their imbalance positions.

The majority of respondents, who commented on liquidity, believed that this is likely to decrease or at least have periods in which this is very low primarily due to Parties only trading rationally within the confines of the envelope. Two respondents noted that the impact on liquidity was not clear as the incentive to trade to influence price might also result in higher degrees of liquidity at certain times. One of those respondents commented that this would not be 'desirable' liquidity.

3.6.5 Modification Group's Conclusions

The Group did not change their view of how behaviour would be impacted after considering the second Assessment Procedure consultation responses. Again, the Group acknowledged that more complex game theory modelling, where it would simulate the current arrangements and compare that to a simulation of P212, might provide further insights. However, the Group recognised the cost/time implications of undertaking more complex modelling.

With regard to the ability to game under the current arrangements, the Group noted that there were simulations conducted before the introduction of the New Electricity Trading Arrangements (NETA) to detect what behaviours might occur under an imbalance market. Furthermore, since the introduction of NETA in March 2001, there had not been a competition investigation into the trading arrangements.

The Group supported the view that Parties would adapt to the arrangements to maximise their profits. This may theoretically mean that Parties would wish to invest more in predicting RCRC and system length although some members of the Group were unsure how this would be done practically.

With regard to liquidity, the Group agreed with the view of the respondents who stated that there could be the potential that the level of liquidity would become more volatile. There could be periods in which there is

low liquidity due to Parties being happy to accept the market price (and therefore the Energy Imbalance Price for their imbalances) and therefore will only trade at prices within a very narrow range close to the initial trade. Furthermore, there could be periods in which there is high liquidity where Parties are trading in order to move the price to a level in which is beneficial to them.

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 determine a way to quantify this. The Group noted that in order to quantify the impact on NIV, it would require taking a view of the impact of all of the potential Party behaviours, including those identified within the simplified model described in Section 3.6 above. This would be a difficult and time consuming exercise that 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 specific cost estimate. Therefore, the SO provided a paper that provided the expected costs to the SO if the assumption was made that the average magnitude of NIV will not change, but the standard deviation would increase by 10%. The SO's initial estimate is that a 10% increase in the standard deviation of NIV would impose extra costs of approximately £16m. These costs would be fed through in the BSUoS charge. The £16m was made up of the cost of meeting the extra reserve requirements and the extra cost of resolving energy imbalance.

The Group noted that these costs are only an indication of the extra costs if the standard deviation of NIV were to increase by 10%. The increased £16m cost for market participants only provides a benchmark for potential costs. Full details of the SO impact are detailed in the SO Costs Assessment paper, which is contained in Attachment 5.

3.7.1 Views of Respondents to the First Assessment Procedure Consultation

It should be noted that the SO cost assessment paper was produced following the extension to the Assessment Procedure, so was not available during the first Assessment Procedure consultation. However, views were requested and responses received as to what the impact of P212 would be on the SO costs of balancing the system.

The majority view of respondents was that the SO is likely to face increased costs to balance the system, as they would have to take more actions due to Parties not facing the correct incentives to balance. One respondent noted that Parties may adjust their positions post market closure and this would make it more difficult for the SO to predict NIV. Some respondents indicated that the impact on the SO would be dependent on the level of the premium or discount. At 5% this would probably not create enough incentive for Parties to balance. However, one respondent indicated that the SO costs could reduce if there is sufficient incentive to balance whilst another believed there would be minimal changes to SO costs. Furthermore, another respondent noted that the SO costs could be greater, however that there could be lower costs to the industry as a whole, due to it being more efficient for the SO to take on those costs.

3.7.2 Views of Respondents to Second Assessment Procedure Consultation

A minority of respondents commented on the costs of the SO. Of those that did, they believed that the SO costs would increase.

One respondent noted that the £16m figure in the SO paper, based on a 10% increase in volatility (noting that this was an arbitrary increase chosen by the SO for illustrative purposes only) was low in materiality when compared to overall SO costs of approximately £650m.

3.7.3 Modification Group's Conclusions

The Group noted that the SO cost assessment paper had been produced during the second Assessment consultation and therefore they had not had the opportunity to comment on the SO paper prior to consultation. The Group agreed with the view of the SO that it was an extremely difficult exercise to be able to identify the change in SO costs that would occur as a result of P212. This is because the impact on NIV was extremely difficult to ascertain. The Group noted that the 10% increase in volatility chosen by the SO for illustration, was an arbitrary figure. However, the majority view of the Group remained the same that under P212, on average, the volatility of NIV would increase.

The majority of the Group also agreed that a £16m increase would be a material change in SO costs.

3.8 Implementation Approach and Costs

3.8.1 Modification Group's Initial Discussions

The Modification Group has identified indicative costs and implementation lead times for P212 Proposed.

3.8.2 Results of Proposed Modification Impact Assessment

Proposed Option (1) PROPOSED MODIFICATION IMPLEMENTATION COSTS[24]

		Stand Alone Cost	Tolerance
Service Provider[25] Cost			
	Change Specific Cost	£ 68,350	+/- 0%
	Release Cost	£ 49,650	+/- 0%
	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

[24] 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

[25] BSC Agent and non-BSC Agent Service Provider and software costs.

Service Provider Cost	Port and Migrate[26]	£ 38,000	+/- 0%

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).

a) BSC Agent Impact

Work required includes:

- Creating two new dated system parameters: The P212 Premium and Discount Values;
- Modifying the F009 functionality to include P212 functionality for P212 effective Settlement Dates; and
- Modifying the SAA-I014 report module.

For SAA reporting, a new DTC version of the SAA-I014 flow will be defined. The SAA-I014 module will be modified to remove those data items currently reported that are not relevant for P212 effective dates. Note that P212 will not require any new reported data.

The lead time is 18 weeks and all prices assume a November 2008 target release.

b) BSC Party and Party Agent Impact

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). See Section 3.8.4 below for additional details.

c) Transmission Company Impact

The Transmission Company will be required to modify systems receiving SAA data and business processes to cope with the new SAA-I014 variables. The initial cost estimate for implementing this P212 Proposed is approximately £80K with a lead time of approximately 7 months.

d) BSCCo Impact

ELEXON acceptance testing (4 weeks), new service provider acceptance testing (4 weeks) and go-live decision and deployment (2 weeks) will take a total of 10 weeks from the conclusion of the changes to the BSC Central Systems identified above (18 weeks). It is therefore proposed that the Implementation Date for Proposed Modification P211 should be 6 November 2008 if an Authority decision is received on or before 28

[26] 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.

February 2008, or 25 June 2009 if the Authority decision is received after 28 February 2008 but on or before 16 October 2008.

3.8.3 Views of Respondents to Assessment Procedure Consultation

One respondent indicated that they had a preference for a longer implementation in order for the impact of such a fundamental change to the arrangements on existing contracts to be reduced. It was the respondents' view that changing the pricing arrangements to such an extent would undermine the value of existing contracts. However, the respondent could not suggest what an appropriate time would be and therefore supported the Implementation approach.

There were four responses to the Party Impact Assessment. One Party indicated that due to the changes to the SAA-I014 they would require a lead time of 6 months to implement P212. The Party asked the Group to confirm the impact to SAA-I014.

3.8.4 Modification Group's Conclusions

The Group noted the comment from the respondent who desired longer implementation timescales. It was the Group's view that increased implementation timescales were usually based on required changes to information systems and not based on commercial exposure. It was also felt that the current lead time of approximately eight months was sufficient to prepare for the impact any change in arrangements would have on contracts existing at the time.

The Modification Group therefore agreed the following recommended implementation approach for P212:

- An Implementation Date for the Proposed Modification 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

With regard to the changes to the SAA-I014 Settlement Report the Group believed that it should be clear what the changes to this will be to be able to inform Parties who had not replied to the Party impact Assessment. This is provided here:

> P212 requires changes to the SAA-I014 report. Some examples of the changes are listed below:
>
> - Removal of CADL item from SPI (Settlement Period Information) Group;
> - Possible removal of DMAT item from SPI (Settlement Period Information) Group; and
> - Removal of various P78 (NIV tagging) reporting fields in SSD (System Period Data) Group - e.g. 'NIV Tagged SBVA'.
>
> When referring to the 'removal' of items, it is that these items would become optional in the new DTC version of the report, such that they will be included for pre-P212 reporting but not for post-P212 reporting.
>
> Note that this is not a full list of changes. The example fields can be seen in the IDD part 2 spreadsheet under the SO tab and in the SPI and SSD groups, although there are three SAA-I014 sub-flows in total all of which must be changed. This can be found here: http://www.elexon.co.uk/bscrelateddocs/URSIDD/default.aspx

The Group recommends that, as part of the Report Phase consultation, the Panel seeks views from respondents in relation to any change in implementation costs due to the above proposed changes to the SAA-I014 report. This would allow any respondent who has not already provided any costs information, or wishes to update their costs based on the above description, to provide a view.

3.9 Legal Text

The Modification Group has reviewed the text and agreed that it delivers the solution developed by the Group.

The legal text will modify:

- Section Q:
  - Removing provisions for Unpriced Emergency Acceptances;
- Section T:
  - Removing CADL tagging and De Minimis tagging, Arbitrage tagging, NIV tagging and PAR tagging;
  - Simplifying the NIV calculation;
  - Amends the main Energy Imbalance Price calculation and default rules; and
- Section X:
  - Required changes to Glossary, Table X-2, Table X-3.

A copy of the draft legal text can be found in Appendix 1.

4 ASSESSMENT OF MODIFICATION AGAINST APPLICABLE BSC OBJECTIVES

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

4.1.1 Views of Respondents to the First Assessment Procedure Consultation

When compared to the current Code baseline the majority of the respondents to the first 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:

Applicable BSC Objective (b)

- 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:
  - There would be weaker, and less accurate, signals provided to Parties to balance (particularly in system stress); and
  - The removal of the feedback loop between the forward market and Balancing Mechanism would lead to inappropriate incentives;

  Inappropriate incentives or reduced incentives to balance would result in increased actions by the SO to balance the system and therefore increased SO costs;
- P212 changes the pricing mechanism from having ex-post to ex-ante Energy imbalance Prices and this may not reflect the characteristics of the system in real time;
- Volatility:
  - Increased 'bad' volatility that is at odds with market characteristics; and
  - Reduced 'good' volatility that is reflective of market conditions.

A minority of respondents stated that the Proposed Modification would better facilitate Applicable BSC Objective (b) for the following reason:

- The defect of system actions entering Energy Imbalance Prices would be removed resulting in Parties being less likely to go long and thereby reducing the balancing actions that need to be taken by the SO[28].

Applicable BSC Objective (c)

- Energy Imbalance Prices would be dampened making them benign and less cost reflective (and inaccurate). Due to the decreased incentives to balance, the costs of energy balancing would be disproportionately borne by the SO and this would represent a cross subsidy through BSUoS;
- The arbitrary nature of 5% premium/discount; and
- The change in Party behaviour and trading strategy that would be likely to occur may result in perverse outcomes. This is where Parties trade to influence price or in a manner than maximises profits that is not aligned with a more efficient overall market.

A minority of respondents stated that the Proposed Modification did better facilitate Applicable BSC Objective (c) for the following reasons:

- A Party would be able to better and more reliably forecast potential Energy Imbalance Prices as the P212 methodology is simpler and more easily understood. This would increase the level of competition as more potential entrants would enter the market;
- Current competitive distortions would be reduced. This is because currently intra half hour demand fluctuations for balanced Parties have a cost that can feed into Imbalance prices. These costs are therefore unfairly targeted on those who are less able to balance over the half hour; and
- Price differential over market would be guaranteed and thus would provide an incentive to trade, yet prices would be less punitive than the current arrangements facilitating entry.

Applicable BSC Objective (d)

- There are costs to implement with no benefit from doing so and no arguments as to why such a fundamental change to NETA (cost reflectivity) should occur.

A minority of respondents stated that the Proposed Modification did better facilitate Applicable BSC Objective (d) for the following reason:

- The arrangements would be simpler to understand, implement and operate.

4.1.2 Views of Respondents to Second Assessment Procedure Consultation

When compared to the current Code baseline the majority[27] of the respondents to the second 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:

Applicable BSC Objective (b)

- By its very nature P212 would not result in cost reflective Energy Imbalance Prices and therefore there would be reduced or incorrect incentives to balance. This would result in increased costs to the SO, as more actions would need to be taken to balance the system;
- There is likely to be less incentive to invest in plant reliability because there would be a reduced penalty for imbalance, due to Energy imbalance Prices not taking into account any post-Gate closure activity. This would have implications for both long term and short term security of supply; and

[27] No respondents to the second Assessment Procedure consultation believed that P212 better facilitated the Applicable BSC objectives, although two were neutral.

- The ex-ante prices would give a perverse incentive to spill or withdraw generation after market closure, but before Gate Closure when the known Energy Imbalance Price is favourable to do so. This might on occasion lead to reduced predictability and increased volatility of NIV.

A minority of respondents stated that the Proposed Modification did better facilitate Applicable BSC Objective (b) for the following reasons:

- There would be less incentive to take a long position into imbalance thus reducing the costs of the SO to balance the system[28]; and
- It would guarantee an Energy Imbalance Price that is less beneficial than the market price, which would reflect the short term costs of energy.

Applicable BSC Objective (c)

- Energy Imbalance Prices would be less cost reflective. Due to the decreased incentives to balance, the costs of energy balancing would be disproportionately borne by the SO and this would represent a cross subsidy through BSUoS. Costs would not be appropriately targeted onto those that cause them;
- If a charge is levied on imbalances then it should relate to the costs that imbalance causes, otherwise it is a penalty;
- The arbitrary nature of the 5% premium/discount;
- Energy Imbalance Prices could be easily influenced by Parties' trading strategies and P212 would create incentives to trade to influence price. Parties would be incentivised to trade as if they were in a 'self contained commercial game' regardless of the consequences of these actions;
- Investment in plant reliability and demand forecasting would be stifled; and
- There is likely to be advantage to larger players that have greater ability to influence price.

A minority of respondents stated that the Proposed Modification did better facilitate Applicable BSC Objective (c) for the following reasons:

- A Party would be able to better and more reliably forecast potential Energy Imbalance Prices as the P212 methodology is simpler and more easily understood. This would increase the level of competition as more potential entrants would enter the market;
- Current competitive distortions would be reduced. This should reduce a barrier to entry and increase liquidity. Currently intra half hour demand fluctuations for balanced Parties have a cost that can feed into Energy Imbalance Prices and are therefore unfairly targeted on those who are less able to balance over the half hour. The polluter pays principle is therefore not currently holding true and P212 should address this; and
- Price differential over market would be guaranteed and thus would provide an incentive to trade, yet prices would be less punitive than the current arrangements facilitating entry.

Applicable BSC Objective (d)

- There would be costs to implement with no benefit from doing so and no arguments as to why such a fundamental change to NETA (cost reflectivity) should occur;
- The P212 arrangements are not simple in concept as they move away from cost reflectivity and it is not easily understood what concept P212 is aiming to achieve;

[28] Note that the SO has indicated as part of its Report Phase consultation response for P211 that:

If NIV tended to be less long than at present then we would expect the implementation of the modification to lead to an increase in BSUoS costs, due to:

- A reduction in Bid receipts as a less long average NIV would mean the SO accepting less Bids on average.
- An increase in Reserve costs, as a result of the reduction in NIV length available to the SO to use a reserve.

- A high level of regulatory oversight might be required to ensure that behaviour is not anti-competitive and this would increase costs; and
- There may be further modifications that are raised to change the P212 arrangements.

A minority of respondents stated that the Proposed Modification did better facilitate Applicable BSC Objective (d) for the following reason:

- The arrangements would be simpler to understand, implement and operate.

A minority of respondents (generally smaller or independent Parties) indicated that they supported the principle of P212, as it should be able to produce a more reliable and consistent proxy for the cost of balancing in half hour blocks. However, they did not support the fixed percentage premium/ discount which was the option for the solution for P212 and felt that an approach of linking it to system stress/NIV (Option 3, see section 2.3.1) was more appropriate.

4.1.3 Modification Group's Assessment

The unanimous view of the Modification Group was that the Proposed Modification would not better facilitate the achievement of **Applicable BSC Objectives (b), (c), and (d)** when compared to the current Code baseline, for the following reasons:

Applicable BSC Objective (b)

- Energy Imbalance Prices would 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% premium/discount was too low to create the correct incentives;
- SO costs[29] should be appropriately targeted on those who are out of balance. As P212 would reduce the degree to which the SO's costs are reflected in Energy Imbalance Prices, it follows that these costs would not be appropriately targeted and the incentives for Parties to balance would decrease. This in turn would increase the actions required to be taken by the SO and increase 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 would be stifled if the SO costs are 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 have less incentive 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 accounted for by the Proposed Modification. This would result in the potential for increased future plant loss which would increase costs to the SO, as they would have to procure more reserve to cover for this possibility; and
- The potential for Parties to rationally change their physical positions 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 had initially stated that they could not evaluate P212 against Applicable BSC Objective (b) without observing the estimated cost change to the SO. Once they had reviewed the paper

[29] This refers to the SO costs to balance the system.

by the SO, on likely change in SO costs (based on arbitrary change in volatility in NIV), the member believed that P212 would not better facilitate objective (b).

Applicable BSC Objective (c)

- All Parties contribute proportionately to the costs of balancing via the BSUoS charge and those that are out of balance via SBP and SSP. P212 would not reflect the costs incurred by the SO to resolve the net imbalance on the system. This would result in a greater cost 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 would 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 would be 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 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 would be 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, the detrimental effects of P212 to competition noted above, would mean that P212 would not better facilitate Applicable BSC Objective (c), when compared to the current baseline.

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).

Note that these Group views represent both their initial and final views as these did not change as a result of considering the second Assessment Procedure consultation responses.

4.2 Final Recommendation to the Panel

On the basis of the above assessment, the Modification Group therefore agreed a **UNANIMOUS** recommendation to the Panel that the Proposed Modification **SHOULD NOT** be made.

Details of the Group's recommended Implementation Date and legal text can be found in Section 3.

5 GROUP DISCUSSION ON P212 PROCESS

The Group noted the concern from some respondents with regard to the process followed in assessing P212. The concern was primarily around how Option 3 (ex-post solution potentially linked to system stress/NIV) was not further developed. Some respondents felt that Option 3 potentially had more merit than P212 Proposed (fixed ex-ante percentage). Furthermore, this should have been analysed further and an extension to the timetable sought, if it was not believed this could have been done in the existing Assessment Procedure.

The Group were content that the appropriate process for assessing P212 had been followed.

Some members of the Group noted that at no stage was there a defined solution for Option 3 and that it was the Group's role in the Assessment Procedure to assess P212 rather than define it. The Group noted that the percentage premium/discount was in square brackets in the Proposal (e.g. 'T4.4.5(a) is the same as T4.4.5(b) but with the product increased by [5%]') and this could allow for many potential solutions. However, some members were of the view that this only allowed for the possibility for a different value for the percentage rather than replacing the value with a formula or methodology, but the Group noted that the options developed were all valid under the Assessment Procedure.

The Group noted that Option 3 was identified at a late stage in the original Assessment Procedure timetable and it was substantially different to P212 Proposed. Some members felt that this was a significant departure from the fixed 5% premium/discount suggested within the square brackets and that this constituted a different modification. The Group noted that such a modification could be raised at any time by a Party who wished for it to be fully assessed.

The Group noted the difficulty experienced in assessing P212 when they had to first determine the criteria for the premium or discount. This is an area that potentially could have benefited from being submitted to the Definition Procedure. To be able to assess a modification the Group believe that either a well defined solution is required and/or there is a very clearly stated end goal. This would make for a more effective assessment by the Group and for progress to occur in a more efficient manner.

6 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
BSUoS	Balancing Services Use of System
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).

7 DOCUMENT CONTROL

7.1 Authorities

Version	Date	Author	Reviewer	Reason for Review
0.1	23/10/07	Chris Stewart	David Jones	For peer review
0.2	24/10/07	Chris Stewart	Justin Andrews	For technical review
0.3	24/10/07	Chris Stewart	Modification Group	For Modification Group review
0.4	31/10/07	Chris Stewart	David Jones	For quality review
1.0	02/11/07	Change Delivery		For Panel decision

7.2 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' – Final Modification Report http://www.elexon.co.uk/ChangeImplementation/modificationprocess/modificationdocumentation/modProposalView.aspx?propID=231	BSC Panel	22/10/2007
4	P194 'Revised Derivation of the Energy Imbalance Price' – Decision Letter http://www.ofgem.gov.uk/Markets/WhlMkts/CompandEff/CashoutRev/Pages/CashoutRev.aspx	Ofgem	23/03/2006

APPENDIX 1: DRAFT LEGAL TEXT

Draft legal text for the Proposed Modification is attached as a separate document, Attachment 6.

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	First industry consultation issued
29/08/07	First industry consultation received
30/08/07	Ninth Assessment Procedure Modification Group meeting held
12/09/07	First modelling behaviour Modification Subgroup held
19/09/07	Tenth Assessment Procedure Modification Group meeting held
26/09/07	Second modelling behaviour Modification Subgroup held
02/10/07	Eleventh Assessment Procedure Modification Group meeting held
04/10/07	Second industry consultation issued
18/10/07	Second industry consultation received
19/10/07	Twelfth Assessment Procedure Modification Group meeting held
8/11/07	Assessment Report presented to the Panel

ESTIMATED COSTS OF PROGRESSING MODIFICATION PROPOSAL[30]

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

Note that the meeting cost and number of ELEXON man days (and ELEXON cost) has been updated. The updated values represent the extended timetable, additional meetings (Modification Group and Modification Sub-group) 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	19/10
David Jones	BSCCo (Chairman meetings 3 to 12)			√	√	√	√	√	√	√	√	√	√
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	√	√	√	√	√	√		√		√	√	

[30] 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

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**	**19/10**
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).

In addition to the original terms of reference, and after a presentation by Ofgem to the Panel, the Panel agreed at their meeting of 9 August 2007 that the Group should also consider:

- **Behavioural Analysis**

  Identify what behaviours might be exhibited under P212, potentially via a quantitative modelling exercise.

- **SO costs**

  Identify what the impact on SO costs would be under P212.

APPENDIX 3: RESULTS OF ASSESSMENT PROCEDURE CONSULTATIONS

First Assessment Procedure Consultation

21 responses (representing 75 Parties and 2 non-Parties) were received to the first P212 Assessment Procedure consultation.

A summary of the consultation responses is provided in the table below.

Q	Consultation question	Yes	No	Neutral
1.	What do you believe is the aim of imbalance prices under the BSC?	-	-	-
2.	How could you demonstrate a measure of success that a Modification has better achieved the aim you have identified in Question 1?	-	-	-
3.	Do you have a view of the extent/impact of the perceived defect identified under P212 (and any link to the defect under P211)?	19	1	1
4.	What are your views on 'simplicity' versus 'cost-reflectivity' on the calculation of the main imbalance price?	-	-	-
5.	Do you believe the fixed percentage (Proposed Option 1 - specifically a fixed percentage of 5%) would better facilitate the achievement of the Applicable BSC Objectives when compared to the current Code baseline?	6	14	1
6.	Do you believe the variable percentage (proposed option 2) would better facilitate the achievement of the Applicable BSC Objectives when compared to the current Code baseline?	1 (1 potential yes)	18	1
7.	Do you believe the dynamic percentage determined ex-post (proposed option 3) would better facilitate the achievement of the Applicable BSC Objectives when compared to the current Code baseline?	5 (1 Potentially Yes)	12	2 (1 unknown)
8.	What is your order of preference of Options 1, 2 and 3 for forming the Proposed Solution?	Option 1 (5 First Preference, 3 Second Preference, 3 Third Preference) Option 2 (2 First Preference, 3 Second Preference, 0 Third Preference) Option 3 (6 First Preference, 3 Second Preference, 4 Third Preference):		
		No Preference: 7		
9.	Do you have any views on how these solutions will influence market participants' balancing behaviours and any subsequent impact on the	20		1

Q	Consultation question	Yes	No	Neutral
	SO? Specifically, how would a fixed percentage of 5% affect behaviour?			
10.	Do you have any views on how market participants' balancing behaviours would adjust as the percentage increases from 5%?	18	2	1
11.	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 SO costs of balancing the system?	18	1	1
12.	Do you agree with the Groups view that the pricing value/methodology should only be changed by a modification?	14	5	2
13.	Do you believe there are any other solutions that the Modification Group has not identified and that should be considered?	9	11	1
14.	Are there any further comments on P212 that you wish to make?	13	7	1

Details of the arguments made by respondents can be found in Sections 3 and 4, along with the Modification Group's consideration of these arguments. Full copies of the first consultation responses are attached as a separate document, Attachment 7.

Arguments in relation to other questions from the first consultation not contained in Sections 3 and 4 are summarised in the P212 Interim Report. This can be found in Attachment 8.

Second Assessment Procedure Consultation

18 responses (representing 74 Parties and 4 non-Parties) were received to the second P212 Assessment Procedure consultation.

A summary of the consultation responses is provided in the table below.

Q	Consultation question	Yes	No	Neutral
1.	Do you believe Proposed Modification P212 would better facilitate the achievement of the Applicable BSC Objectives?	0	16	2
2.	In the context of the additional analysis provided by the Modification Group (See Sections 3.6.3.2 and 3.7 of the Consultation document), do you have any views or comments? Areas for consideration include: • Whether you support the conclusions reached by the Modification Group; • Impact on NIV; • Market Participant behaviour including incentives to balance; • The impact on different types of Party; • System Operator balancing costs; and • Market liquidity.	16	0	2
3.	Does P212 raise any issues that you believe have not been identified so far and that should be progressed as part of the Assessment Procedure?	4	12	2
4.	Do you support the implementation approach described in the consultation document?	14	0	4
5.	Are there any further comments on P212 that you wish to make?	9	9	

Details of the arguments made by respondents can be found in Sections 3 and 4, along with the Modification Group's consideration of these arguments. Full copies of the second consultation responses are attached as a separate document, Attachment 9.

There were also the following additional comments made:

- One respondent highlighted their preference for P211 over P212 although noted that both would have addressed the recent Scottish transmission constraint activity getting into Energy Imbalance Prices;
- There was concern that Option 3 was not considered and that the P212 Assessment Procedure was constrained to meet arbitrary timelines; and
- Other comments which reiterate points made either by the Group or within the first consultation.

The Group reiterated that they were confident that due process had been followed in assessing P212.

APPENDIX 4: RESULTS OF IMPACT ASSESSMENT

During the Assessment Procedure an impact assessment was undertaken in respect of all BSC systems, processes, documentation and parties. The following have been identified as impacted by P212.

For details of the costs associated with these impacts, please refer to Section 3.

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 10.

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).

A copy of the Party impact assessment results can be found in Attachment 11.

d) Impact on Transmission Company

A copy of the full Transmission Company impact assessment is attached as a separate document, Attachment 12.

e) Impact on BSCCo

Area of Business	Impact of Proposed/Alternative Modification
BSCCo Systems	The Trading Operations Monitoring and Analysis System (TOMAS) would be impacted. Any change to the structure of SAA-I014 will impact ELEXON's Gatekeeper software.
Other (e.g. costs, staffing, etc.)	• 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.

Area of Business	Impact of Proposed/Alternative Modification
	• 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 would require amendment due to the removal of Emergency Instructions.
Section T 'Settlement and Trading Charges'	Section T would require amendment to detail the changes to the Energy Imbalance Price calculation.
Section X	Section 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 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	BMRA documentation would require amendment to detail the

Document	Impact of Proposed/Alternative Modification
documentation)	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 5: LIST OF ATTACHMENTS

The full list of attachments to this Assessment Report are:

Attachment 1. Initial Analysis

Attachment 2. French Market

Attachment 3. Group Member Behaviour Paper

Attachment 4. Additional Analysis

Attachment 5. NG paper on System Operator costs

Attachment 6. Draft Legal Text

Attachment 7. First Assessment Procedure consultation responses

Attachment 8. P212 Interim Report

Attachment 9. Second Assessment Procedure consultation responses

Attachment 10. BSC Agent Impact Assessment

Attachment 11. BSC Party Impact Assessments

Attachment 12. Transmission Company Impact Assessment