

# DEFINITION CONSULTATION for Modification Proposal P217 'Revised Tagging Process and Calculation of Cash Out Prices'

Prepared by: P217 Modification Group

**For attention of:** BSC Parties and other interested parties  
**Responses due:** **12:00 noon on 10 January 2008**  
(to: [modification.consultations@elexon.co.uk](mailto:modification.consultations@elexon.co.uk))

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

P217 seeks to introduce a revised tagging process to the current main Energy Imbalance Price methodology. The main Energy Imbalance Price is that which is paid, or received, by Parties who are in imbalance in the same direction as the system. The proposed revised tagging process would enable Bid Offer Acceptances (BOAs) and forward trades to be tagged as 'system', 'energy plus system' or 'energy' actions, based on the primary reason for the action. 'System' actions would be included in the calculation of Energy Imbalance Prices as un-priced volumes, so as to remove 'system' actions from Energy Imbalance Prices, whilst 'energy' and 'energy plus system' actions would be included as priced volumes. No change is proposed to the reverse price which is based on the market price.

Rules for determining how each action is tagged would be contained within a new BSC 'Tagging Methodology Statement'.

## PURPOSE OF CONSULTATION

This consultation seeks respondents' views regarding P217 and, in particular:

- Whether respondents support the approach described in this document;
- Whether respondents believe that P217 has the potential to improve simplicity and transparency in the cash out arrangements;
- Whether respondents agree with the Modification Group's approach on tagging principles as set out in Section 4.1 of this document? Views would be welcome on Arbitrage, De Minimis, CADL, BSAD, constraints, ABSVD, Non-BM Volumes, Emergency Instructions and MaxGen;
- Whether respondents support the disaggregation of BSAD;
- Whether respondents believe BSAD should be included in the main Energy Imbalance Price calculation;
- Whether respondents believe that Option fees (via the BPA and SPA) should be included in the main Energy Imbalance Price calculation;
- Whether respondents agree with the Modification Group's view that the replacement price should be set using the 'chunky marginal' methodology;

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

- Whether respondents agree with the Modification Group's view that the main Energy Imbalance Price should be set using the 'chunky marginal' methodology;
- Whether respondents have a view as to when constraint information should be published;
- Whether respondents agree with the Modification Group's view that constraint information should be published ex-post; and
- Whether there are any areas not identified in this report that should be considered during the Assessment Procedure, should the Panel agree to submit P217 to the Assessment Procedure.

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

Please send responses, entitled 'P217 Definition Procedure Consultation', by **12:00 noon** on **10 January 2008** to the following e-mail address: [modification.consultations@elexon.co.uk](mailto:modification.consultations@elexon.co.uk).

Any queries on the content of the consultation pro-forma should be addressed to Andrew Wright (020 7380 4217), e-mail address [andrew.wright@elexon.co.uk](mailto:andrew.wright@elexon.co.uk).

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## SUMMARY OF IMPACTED PARTIES AND DOCUMENTS

As far as BSCCo has been able to assess, the following parties/documents would be impacted by P217.

Please note that this table represents a summary of the results of BSCCo’s initial assessment as contained in the P217 Initial Written Assessment (IWA).

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

## 1 EXECUTIVE SUMMARY

The key conclusions of the P217 Modification Group ('the Group') to date are outlined below.

The Group:

- **AGREED** the high level tagging principles as set out in Section 3.2.1;
- **AGREED** the Replacement Price Methodology should determine prices for unpriced volumes that appear in the Net Imbalance Volume (NIV) with a price based on a volume weighted average of the most expensive<sup>2</sup> 'X' MWh of non-NIV tagged 'energy' and 'energy plus system' acceptances<sup>3</sup>;
- **AGREED** the value of 'X' will be determined during the Assessment Procedure;
- **AGREED** the main Energy Imbalance Price should be based on the current concept of a Price Average Reference (PAR) volume<sup>4</sup> but the MWh volume should be reviewed during the Assessment Procedure. The value should be less than 500MWh but should not be so small as to be impacted by unreflective actions;
- **AGREED** the size of the main Energy Imbalance Price PAR to be determined during the Assessment Procedure;
- **AGREED** that, if BSAD is to be included in the main Energy Imbalance Price calculation, the BSAD volumes should be disaggregated. This would increase transparency and it would create a consistent approach to all trades (BOAs and forward trades);
- **WISHED TO CONSULT ON** whether to have the principle that:
  - BSAD should be included in the main Energy Imbalance Price calculation; or
  - BSAD should be excluded from the main Energy Imbalance Price calculation;
- **WISHED TO CONSULT ON** whether to have the principle that:
  - Option fees (via the BPA and SPA) should be included in the Energy Imbalance Price calculation; or
  - Option fees (via the BPA and SPA) should not be included in the Energy Imbalance Price calculation.
- **AGREED** Applicable Balancing Services Volume Data (ABSVD) and Non-Balancing Mechanism (Non-BM) Reserve should ideally be included as 'system' volumes in the calculation of the main Energy Imbalance Price. However, this can not practically occur under the current arrangements as the ex-post calculation of ABSVD and Non-BM Reserve volume would detrimentally impact prompt prices. Therefore the current treatment of these volumes should remain the same;
- **AGREED** the BSAD Methodology Statement was potentially impacted by P217; and
- **AGREED** the Balancing Principles Statement, National Grid's Transmission License conditions and the ABSVD Methodology Statement would not be impacted by P217;
- **AGREED** the required data analysis for the Assessment Procedure as detailed in Section 4.6; and

<sup>2</sup> It should be noted that 'most expensive' should, in this context, be considered in relation to the benefit of the System. Offers are bought by the System for an increase in energy, thus the 'most expensive' will be the highest priced Offer. Since Bids are paid to the System by Parties for a reduction in energy, the most expensive Bid will be the lowest priced Bid. A negative Bid price will be expensive to the System, as the System is paying (rather than being paid) to reduce energy. Similarly, when using the term 'least expensive', it should be considered in this context.

<sup>3</sup> Where 'X' is a fixed MWh volume (similar in concept to the current Price Average Reference (PAR) volume) to be confirmed during the P217 Assessment Procedure

<sup>4</sup> The PAR would also include those 'system' actions that have been reclassified as 'energy plus system' due to the replacement price methodology. See Sections 4.1.6 and 4.2 for further details.

- **AGREED** that the further areas as detailed in Section 4.7 should receive consideration as part of an Assessment Procedure.

A description of the Modification Proposal as developed by the Group is provided in Section 3. Further information regarding the Group's discussions of the areas set out in the P217 Terms of Reference relating to the Definition Procedure can be found in Section 4, along with the remaining areas recommended for consideration during the Assessment Procedure. A copy of the Group's full Terms of Reference is contained in Appendix 1.

## 2 BACKGROUND

### 2.1 Current Arrangements

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

The current methodology for determining system length (whether the system is 'long' or 'short') was introduced under Approved Modification P78 'Revised Definitions of System Buy Price and System Sell Price'. This was subsequently amended under Approved Modifications P194 'Revised Derivation of the Main Energy Imbalance Price' and P205 'Increase in PAR level from 100MWh to 500MWh' so that the main Energy Imbalance Price is based on the volume weighted average of the most expensive 500MWh of priced balancing actions. 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<sup>5</sup>:

- 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<sup>6</sup> of priced balancing actions (accepted Offers and BSAD) remaining, following the application of the following rules:

- **De Minimis:** Individual accepted Bid and Offer Volumes below a defined threshold (1 MWh) are excluded from the price calculation completely. This approach is intended to remove 'false' actions created due to the finite accuracy of the systems used to calculate Bid and Offer Volumes;
- **Arbitrage:** Accepted Bids and Offers where no net energy has been delivered to the system but which have provided an overall financial benefit to the system are excluded from the price calculation completely (i.e. where the price of an accepted Offer Volume is less than the price of an accepted Bid Volume);

<sup>5</sup> 'Energy Imbalance Price' is synonymous with 'Cash Out Price'. Whilst 'Cash Out Price' is used in the title of the modification, current convention for modifications is to use the term 'Energy Imbalance Price'

<sup>6</sup> 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.

- **CADL:** Acceptance Volumes associated with Acceptances of short duration (below the Continuous Acceptance Duration Limit (CADL) currently 15 minutes) are treated as un-priced<sup>7</sup> in the price calculation;
- **BSAD:** The SO determines whether Relevant Balancing Services will be treated as priced or un-priced. BSAD is calculated net<sup>8</sup> 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.

The main Energy Imbalance Price also incorporates a Transmission Loss Multiplier (TLM) and the price adjusters (Buy Price Adjuster or 'BPA' and Sell Price Adjuster 'SPA'). The TLM is a factor applied to Balancing Mechanism (BM) Units Bid Offer Acceptances (BOAs) in order to adjust for transmission losses. Further details of how the BPA and SPA, and how they are incorporated into the main Energy Imbalance Price is included in Attachment 1.

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<sup>9</sup> submitted by Market Index Data Providers.

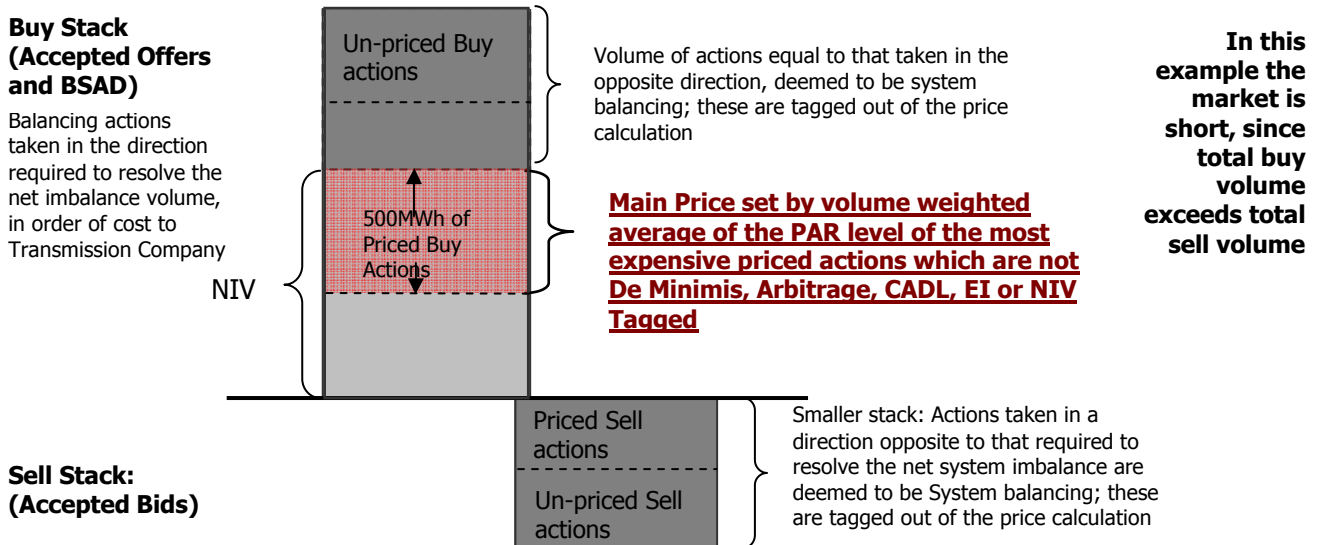
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<sup>7</sup> Un-priced volumes contribute to the determination of which actions set the main Energy Imbalance Price, however the costs of these actions are not included in the main Energy Imbalance Price.

<sup>8</sup> 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).

<sup>9</sup> The Market Index Data Statement (MIDS) defines which agents can submit the required data, the data that is to be submitted and parameters used to calculate the submitted data.

**Figure 1: Example of the Existing Arrangements main Energy Imbalance Price Calculation (Short System)**



## 2.2 Current open Modifications

There are currently two pending Modification Proposals that seek to amend the calculation of the main Energy Imbalance Prices, which are both with the Authority for determination. These are P211 'Main Imbalance Price based on Ex-Post Unconstrained Schedule' and P212 'Main Imbalance Price based on Market Reference Price'.

P211 was raised on 16 April 2007 by EDF Energy. P211 proposes to amend the calculation of the main Energy Imbalance Price such that when the market is short and System Buy Price (SBP) is the main Energy Imbalance Price, then this is to be based on the least expensive Offers that the System Operator (SO) could have utilised on an unconstrained system. Conversely, when the system is long and System Sell Price (SSP) is the main Energy Imbalance Price, then this is to be based on the least cost Bids that the SO could have utilised on an unconstrained system. This would be achieved by creating a new Ex-Post Unconstrained Schedule (EPUS). Price Average Reference (PAR) tagging would then be applied to the EPUS to ensure that only the most expensive 500MWh of Bids or Offers that the SO could have utilised to resolve the energy imbalance in an unconstrained system are used to set the main price. The 'reverse' price would remain unchanged. P211 was issued to the Authority for decision on 5 October 2007 with a Panel recommendation that the Proposed Modification should not be made (Reference 1).

P212 was raised on 27 April 2007 by BizzEnergy. P212 seeks to replace part of the current Energy Imbalance Price methodology with an alternative method for determining the main Energy Imbalance Price. P212 proposes that the main Energy Imbalance Price is the market price increased by a fixed percentage (5%) when the system is short, or the market price decreased by a fixed percentage (5%) when the system is long. No change is proposed to the reverse price which is based on the market price. P212 was issued to the Authority for decision on 17 December 2007 with a Panel recommendation that the Proposed Modification should not be made (Reference 2).



### 3 DESCRIPTION OF MODIFICATION

#### 3.1 Modification Proposal

P217 was raised on 19 October 2007 by RWE Npower ('the Proposer'). P217 seeks to introduce a revised tagging process to the current main Energy Imbalance Price methodology that would enable BOAs and forward trades to be tagged as a 'system', 'energy plus system' or 'energy' actions, based on the primary reason for the action. 'System' actions would be included in the calculation of the main Energy Imbalance Prices as un-priced volumes, whilst 'energy' and 'energy plus system' would be included as priced volumes. The main purpose of the new tagging process would be to remove the influence of 'system' related actions in the main Energy Imbalance Price. The details of tagging would be contained in a new BSC document the 'Tagging Methodology Statement'.

Along with the introduction of a BSC Tagging Methodology Statement, a new BSC Replacement Price Methodology Statement would also be introduced. A replacement price would be required on the occasions where actions tagged as 'system' (and therefore unpriced) entered into the calculation of the main Energy Imbalance Price. The Proposer suggests a number of ways that the Replacement Price could be derived, including:

- The market price (or current reverse price);
- The weighted average of other 'energy' actions; or
- The marginal (or chunky marginal) 'energy' actions.

Finally, the way that the main Energy Imbalance Price is calculated should be re-examined in light of the introduction of the BSC Tagging Methodology Statement and the BSC Replacement Price Methodology Statement. The Proposer suggests that it is for discussion by the Modification Group as to whether the main Energy Imbalance Price would be calculated from:

- Marginal 'energy' or 'energy plus system' actions;
- 'Chunky marginal' (e.g. PAR 500MWh) volume of 'energy' and 'energy plus system' actions; or
- Volume weighted average of all actions taken for 'energy' and 'energy plus system' purposes in the main stack.

#### 3.2 Proposed Modification – agreed principles

##### 3.2.1 Principles governing the Tagging Methodology Statement

The Group:

- **AGREED** using CADL (with current 15 minute duration) would be an appropriate means to identify and tag intra-half hour fast reserve actions and the concept should be retained in a P217 solution but modified such that the methodology should only exclude BOAs where these would not normally have been taken to resolve energy imbalances;
- **AGREED** De Minimis and Arbitrage tagging should be retained as currently occurs;
- **AGREED** subject to further development by the SO, constraints should be identified by an ex-ante methodology. This methodology should only exclude BOAs where these would not normally have been taken to resolve energy imbalances;
- **AGREED** where reserve (other than Fast Reserve) has been utilised, this should be included in the main Energy Imbalance Price calculation (i.e. considered as either 'energy' or 'energy plus system'). This includes option fees paid by the SO for reserve;

- **AGREED** Maxgen should be considered an 'energy action'; and
- **AGREED** that in situations where system tagged actions have a lower price than energy or energy plus system actions, those system actions should be reclassified as energy plus system and should remain as priced acceptances.

### 3.2.2 Principles governing the Replacement Price Methodology Statement

The Group:

- **AGREED** the Replacement Price Methodology should determine prices for unpriced volumes that appear in the NIV with a price based on a volume weighted average of the most expensive 'X' MWh of non-NIV tagged 'energy' and 'energy plus system' acceptances; and
- **AGREED** the value of 'X' will be determined during the Assessment Procedure.

### 3.2.3 Principles for the treatment of BSAD, ABSVD, demand side reserve actions and imbalance on the SO accounts

The Group:

- **AGREED** Applicable Balancing Services Volume Data (ABSVD) and Non-Balancing Mechanism (Non-BM) Reserve should ideally be included as 'system' volumes in the calculation of the main Energy Imbalance Price. However, this can not practically occur under the current arrangements as the ex-post calculation of ABSVD and Non-BM Reserve volume would detrimentally impact prompt prices. Therefore the current treatment of these volumes should remain the same;
- **AGREED** that, if BSAD is to be included in the main Energy Imbalance Price calculation, the BSAD volumes should be disaggregated. This would increase transparency and it would create a consistent approach to all trades (BOAs and forward trades);
- **WISHED TO CONSULT ON** whether to have the principle that:
  - BSAD should be included in the main Energy Imbalance Price calculation; or
  - BSAD should be excluded from the main Energy Imbalance Price calculation;
- **WISHED TO CONSULT ON** whether to have the principle that:
  - Option fees (via the BPA and SPA) should be included in the Energy Imbalance Price calculation; or
  - Option fees (via the BPA and SPA) should not be included in the Energy Imbalance Price calculation.

### 3.2.4 Interaction between P217 and other industry governance

- **AGREED** the BSAD Methodology Statement was potentially impacted by P217; and
- **AGREED** the Balancing Principles Statement, National Grid's Transmission License conditions and the ABSVD Methodology Statement would not be impacted by P217.

### 3.2.5 Principles for agreement of the calculation of the main Energy Imbalance Price

- **AGREED** the main Energy Imbalance Price should be based on the current concept of a Price Average Reference (PAR) volume<sup>4</sup>, but the MWh volume should be reviewed during the Assessment Procedure. The value should be less than 500MWh but should not be so small as to be impacted by unreflective actions.

### 3.2.6 Scope of the required data analysis for the Assessment Procedure

- **AGREED** that it would be desirable for a simulation of the SO's constraint tagging to be undertaken during the Assessment Procedure, with the understanding that such an exercise may have certain limitations in scope;
- **AGREED** historic data analysis should be conducted for the tagging principles, main Energy Imbalance Price and replacement price. This should include days of system stress;
- **AGREED** analysis into the impacts of P217 on cash-flows and the impacts on different classes of Parties should be conducted;
- **AGREED** analysis is required to determine the size of the 'chunk' for both the Replacement Price and the main Energy imbalance Price. This could be an updated set of analysis undertaken for determining the level of PAR under P194;
- **AGREED** analysis on BSAD may be required, including the impact of disaggregating BSAD; and
- **AGREED** behavioural analysis was not required for the Assessment Procedure.

## **4 AREAS RAISED BY THE TERMS OF REFERENCE**

This section outlines the conclusions of the Modification Group regarding those areas set out in the P217 Terms of Reference in respect of the Definition Procedure.

### **4.1 Principles governing the Tagging Methodology Statement**

This section captures the Groups discussions on what should be included in the BSC Tagging Methodology Statement. The Group initiated discussion by considering the current tagging rules (Section 4.1.1), then considered the balancing actions taken by the SO (Section 4.1.2). Subsequently, the Group agreed that tagging principles should be applied to intra half hour BOAs (Section 4.1.3), constraints (Section 4.1.5), and Reserve (Section 4.1.7). A summary of the agreed tagging principles is included in Section 3.2.1.

#### **4.1.1 Current Tagging rules**

The Group commenced discussion on the principles that would govern a Tagging Methodology Statement by considering the current tagging rules under the BSC. The Group first considered De Minimis, whereby accepted Bid/Offer volumes below 1MWh are removed from the price calculation. This rule had been put in place to address the finite accuracy of SO systems, the BSC systems and the interaction between them. One Group member suggested that the problem may now have been resolved, but to test the systems in order to prove the problem had been solved would be overly expensive and time consuming (this had been considered at ISG meeting 27 June 2006 (ISG 65/03)). Another Group member wondered how many De Minimis actions are currently tagged out by the CADL. It was noted by the Group that De Minimis tagging is a mechanistic rule.

The Group considered Arbitrage, where Bids and Offers in equal and opposite directions, where no net energy is delivered to the system and which provide a financial benefit, are excluded from the price calculation. It was questioned whether this rule would be appropriate under P217. The Group agreed that the decision about whether to keep Arbitrage as a tagged action should be made after the discussion on the nature of system and energy tagging. The Group noted that Arbitrage was a mechanistic rule.

The Group considered CADL, another mechanistic rule, where Acceptances of a duration less than 15 minutes are tagged as unpriced. The Group agreed it was worth discussing the relevance of a CADL tagging approach under P217 as a way of identifying energy/system actions (section 4.1.3).

The Group next discussed BSAD. It was noted that, unlike the previous mechanistic rule based tags, BSAD is tagged on the basis of SO discretion (based on the BSAD Methodology Statement). A Group member queried whether looking at historic BSAD analysis would assist the Group in considering tagging. The Group agreed that further consideration of BSAD would be required during the Definition Procedure. (section 4.3.1)

Regarding Emergency Instructions, a Group member asked whether they were also tagged in a discretionary manner by the SO. The Transmission Company representative answered that, although Emergency Instructions could be considered to be discretionary, once the conditions existed whereby an Emergency Instruction was needed then the SO applied mechanistic rules. Another Group member suggested that Emergency Instructions combined an initial discretionary decision with a mechanistic rules based approach. It was noted that Emergency Instructions are 'system' based actions, apart from MaxGen.

On the subject of NIV tagging the Group view was that there may be a change due to a reconsideration of the main Energy Imbalance Price as part of P217. It was also noted that NIV tagging was a mechanistic rule.

#### **4.1.2 Group discussion on classes of balancing service**

The Group then reviewed the different classes of balancing services (as set out in the Balancing Principles Statement and the Procurement Guidelines Report 1 April 2005 to 31 March 2006) with regards to whether a balancing service class could be tagged as 'system', 'energy plus system' or 'energy'. Table 1 summarises the

Group's conclusions on how balancing services should be classified with the discussion on each area captured below:

**Table 1: Classifying classes of balancing actions**

Energy	Energy plus System	System
		Reactive Power
←	Fast Reserve	→
← Reserve		→
BM Start-up-----	-----	→ (system security)
←	Fast start	→
		Frequency (ABSVD)
SO – SO trades		SO – SO trades
		Inter-tripping
Non-locational Forward Trades		Locational Forward Trades
Pre-Gate BMU Transactions (PGBTs)		Pre-Gate BMU Transactions (PGBTs)
Maximum Generation Service		All other Emergency Instructions

### Reactive Power

The Group agreed that Reactive Power was classed as a 'system' action, as a Reactive Power action would be taken in order to manage the system and ensure quality of supply. It was also suggested that a Trading Party would not purchase Reactive Power, only Active Power.

### Fast Reserve

Fast Reserve is a subset of regulating reserve and Short Term Operating Reserve (STOR), and is required for the maintenance of system frequency within operational limits. There was disagreement about whether Fast Reserve could be classed as a 'system' or an 'energy' action. A Group member commented that one of the problems with an action like Fast Reserve is that the market is set up to balance in Half Hour periods, where as the SO has to balance the system in real time. Fast Reserve takes place over a period that is shorter than 30 minutes. It was noted that if the current definition of CADL remained the same then a Fast Reserve action of less than 15 minutes would automatically be CADL tagged and would therefore be a system action. Another Group member noted that in principle they believed Fast Reserve was an 'energy' action, as it was an action taken to balance the energy on the system. But, as the market is measured in Half Hours and not real time, it should be pragmatically considered a 'system' action. However, if the market was based on 10 minute periods, for example, such a classification of Fast Reserve as 'system' might change. One member noted that it was possible for a Party to be in imbalance within the Half Hour period, but over the entire Half Hour they could be balanced. This would mean that, if fast reserve was required within a Settlement Period, such a Party would have contributed to this requirement but would not have those costs targeted on them. Another member commented that if it was difficult to measure the imbalance then the cost would be socialised through the Balancing Services Use of System (BSUoS) charge. Therefore, the Group initially

agreed that Fast Reserve could be considered as 'energy', 'energy plus system' or 'system' and that further discussion of the intra half hour period and CADL was required (section 4.1.3).

### Reserve

Reserve is used to cover longer term imbalance between supply and demand caused by demand forecast error, plant failure, and the uncertainty associated with periods of rapid demand change. Reserve comprises three sub categories (as set out in the Balancing Principles Statement): Contingency Reserve, Regulating Reserve and STOR (Fast Reserve has been considered separately). The Group considered all sub-categories of Reserve together. It was noted that Reserve response times were anything from 20 minutes to 2 hours. The Group then debated whether Reserve was a 'system' or an 'energy' action. One argument was that if the system was perfectly balanced then no Reserve would be needed, hence Reserve, when called upon, was required to increase energy on the system and so was an 'energy' action. However, the counterview was that a prudent SO would ensure Reserve as an 'insurance policy' against any unexpected loss of generation or an increase in demand. Hence, Reserve would be required for system balancing purposes. As with Fast Reserve the Group initially considered that Reserve could be classified as 'energy', 'energy plus system' or 'system' and that further discussion was required. However, upon further consideration, the Group concluded that all reserve activity other than Fast Reserve should be considered as 'energy' or 'energy plus system' and be included in the Energy Imbalance Price. (section 4.1.5).

### Frequency Response<sup>10</sup>

Frequency response is provided by sources that automatically react to frequency deviations and is required to manage instantaneous imbalances between generation and demand. A Group member suggested that in their view frequency response was an 'energy' action as it was dealing with changes in demand or generation. Another member noted that they believed it to be mostly a 'system' action due to its immediate short term effect. It was noted that frequency response was currently treated as part of ABSVD which was applied to each BM Unit separately and in total dealt with through the SO account. The majority of the Group agreed that frequency response should be considered a 'system' action.

### Fast Start

Fast Start is the ability of Open Cycle Gas Turbine (OCGT) plant to start rapidly from a standstill condition and to deliver its rated power output automatically within a defined time period. The Group considered Fast Start as similar to Fast Reserve.

### Black Start

The Group agreed Black Start should not be considered in this discussion as it was outside the modification. The provisions of Section G 'Contingencies' would come into effect in a Black Start situation.

### BM start-up

BM start-up was considered similar to Reserve, although one member suggested it might be classed more as an 'energy' action.

### SO to SO trades

It was noted that SO to System Operator Trades are treated through BSAD and therefore currently tagged at the discretion of the SO as either 'system' or 'energy'.

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<sup>10</sup> One Group member noted that it should be made clear what the difference between Fast Reserve and frequency keeping is given these were often used interchangeably during the discussions. Frequency keeping is where a plant is instructed by the SO to activate their plant to the mode of automatic frequency response. Having plant in this mode contributes to maintaining the frequency within the statutory limits on a moment to moment basis. Volumes attributable to automatic frequency response are then treated through the ABSVD, which is a process outside the BSC. Fast Reserve are actions taken by the SO to avoid a frequency excursion from occurring, and are used to cover events such as plant trip or TV pick up.

### Inter-tripping

The Group agreed that Inter-tripping was a 'system' action.

### Forward Trading

Forward trades were agreed to be either 'system' or 'energy', depending on whether they were locational ('system') or not locational ('energy').

### Emergency Instructions

Other than MaxGen (which is required to provide additional short term generation output during periods of system stress), which was agreed to be an 'energy' action, it was agreed that Emergency Instructions are 'system' actions.

#### **4.1.3 Intra Half Hour**

The Group believed that the area of intra half hour BOAs needed to be further explored. The Group considered the reasons for having CADL. BSCCo commented that the purpose of CADL, as set out in the most recent Panel Review of CADL (Panel 129/04), is 'to exclude system balancing actions from the Energy Imbalance Price Calculation'. The Review of CADL further notes that 'the mechanism that the Transmission Company used to distinguish between energy and system balancing activities was to associate system balancing actions with plant that have 'fast dynamics', and energy balancing with other types of plant. This description was further qualified for the 2004 review by the Transmission Company, by supplying a definition of 'fast dynamic instructions' as 'those Bids and Offers accepted on Hydro Electric BM Units', and 'non-fast dynamic instructions' as 'those Bids and Offers accepted on all other BM Units.' The decision was taken to strip out the unwanted acceptances by means of a time-driven parameter, rather than assigning 1 or zero weights to different BM Units'.

The Group considered Urgent Modification P144 'Removal of CADL from the BSC', and the reasons for the Authority's decision to reject the Modification. The Proposer of P144 wished to remove CADL to better reflect the cost of energy balancing in the main Energy Imbalance Price. The view of the Proposer was that the introduction of NIV tagging superseded the need to have CADL tagging, as this was an alternative method for removing the acceptances removed by CADL. In its decision letter the Authority stated its view was that CADL and NIV tagging are complementary, and both assist in distinguishing 'system' actions from 'energy' actions; of which only the latter should be included in the calculation of the main Energy Imbalance Price.

The Group discussed that CADL is a filter that removes BOAs taken for reasons such as Fast Reserve. Fast Reserve should be considered 'system' and be a cost that is socialised through BSUoS. It was the view of some member's that previous analysis (including the CADL review undertaken by the BSC Panel in 2007) has shown that the CADL filter does remove mainly the BOAs taken for fast reserve purposes.

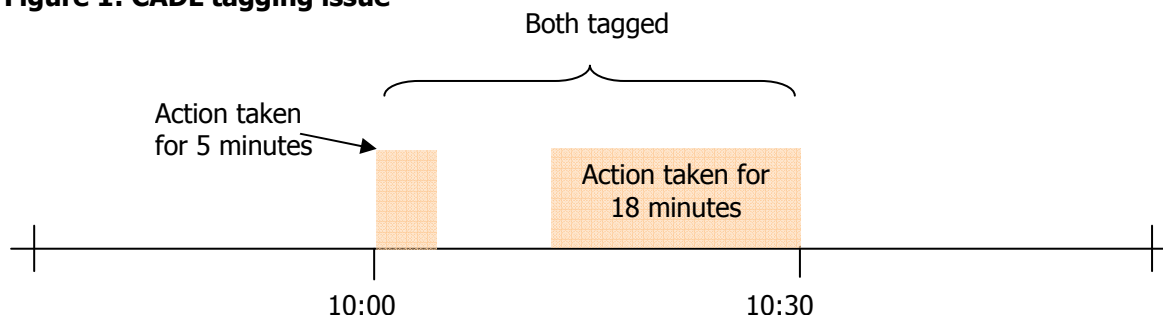
The Group agreed that CADL is a pragmatic tool to remove short duration acceptances, (such as those required immediately for TV pick-up and plant trips), from the main Energy Imbalance Price calculation. The Group also agreed that CADL assisted the Group in identifying whether a BOA was taken for Fast Reserve and therefore whether that BOA should be considered a 'system' or 'energy' action.

The Group considered whether there was any other way of removing actions which are short duration and therefore taken for system purposes. One suggested way forward was that, instead of using a time period for tagging out short period system actions, this be done by the SO analysing the energy spike or fall and tagging certain shapes or energy use as 'system' actions. However, this was discounted as being overly complex when compared to a specific time period. Another Group member suggested that all BOAs from particular types of generators (such as pumped storage facilities), which are almost always taken for system reasons, could be tagged. There was concern in the Group that such an approach maybe more open to gaming and may be less accurate at identifying Fast Reserve actions. The Transmission Company

representative suggested that, if the SO had to identify and label each action as being for Fast Reserve, the SO would be likely to use a mechanistic approach such as CADL.

One Group member commented with the current CADL tagging mechanism can potentially tag more than BOAs less than 15 minutes due to the mechanism removing all BOAs in a half hour when any one of these is less than 15 minutes. This situation is shown in Figure 1.

**Figure 1: CADL tagging issue**



Where there are multiple acceptances of a Bid or an Offer with gaps in the same half hour, if any one of them is less than or equal to 15 minutes then all are tagged. This occurs even if the total duration of the acceptance of the half an hour exceeds 15 minutes and one or all of the acceptances are for greater than 15 minutes. The Group noted that it may be useful to conduct data analysis on CADL during the Assessment Procedure in order to establish the number of occurrences of acceptances greater than 15 minutes which are CADL tagged.

#### **4.1.4 De Minimis and Arbitrage.**

The Group discussed whether De Minimis and Arbitrage should be retained under P217. The Group noted its previous discussion that De Minimis was introduced to address the finite accuracy of SO systems, the BSC systems and the interaction between them. On that basis De Minimis was still a relevant tagging rule and De Minimis volumes should continue to be dealt with as per the current arrangements.

The Group also agreed that Arbitrage, which is a tagging rule that is deemed to increase the economic efficiency of the system, was a rule that should be retained under P217.

#### **4.1.5 Constraints**

##### **4.1.5.1 Potential Constraint tagging options**

The Group noted that a constraint could be defined as 'any thermal, voltage or stability event that requires an action by the SO to resolve it'. A Group member noted that the action would also need to be locational. The Group agreed that constraint actions are always 'system' actions, although it was noted that there may be knock on effects to secondary balancing services which were 'energy' actions.

The Transmission Company representative provided the Group with an overview of how constraints are currently identified in relation to income adjusting events and also an overview of their initial thinking with regard to constraint tagging. The SO undertakes post event analysis in relation to significant constraints. This analysis incorporates pre-planner notes, control room notes, engineer judgements and is subject to rigorous review.

The Group considered the following wide spectrum of options to tag constraints:

1. As currently – use a mechanism similar to NIV; or
2. Ex-ante tagging – Identify constraints in planning timescales and tag out all BOAs on BM Units identified in the constraint area; or



3. Real time tagging - where additional control room SO resource would be required to identify constraints and tag accordingly; or
4. Ex-post Unconstrained Schedule (EPUS) scheduling approach – this might be similar to a mechanistic P211 ex-post unconstrained schedule solution but include a level of dynamics to improve accuracy; or
5. Ex-post full scheduling approach similar to 'super GOAL<sup>11</sup>' that was developed under the 'Pool' arrangements.

The Group believed that the current mechanism led to situations where constraints impact the main Energy Imbalance Price. Therefore, Option 1 was not preferred.

The Group were concerned that 'real time tagging' (Option 3) would be prohibitively expensive and may potentially impact prompt prices. It would be likely to require additional 24 hour resource in the SO control room as dispatchers will continue to concentrate only on their core activities and responsibilities. Furthermore, the level of discretion given to the SO would be likely to lead to the constraint tagging decisions being challenged and thus compromise the SO's position. Option 3 was therefore not preferred.

When considering Options 4 and 5 the Group noted that a significant amount of analysis had been conducted on the EPUS approach as part of the Assessment Procedure of Modification Proposal P211. This analysis had highlighted the type of difficulties that were associated with incorporating dynamics into an EPUS. Whilst a full scheduling model might prove beneficial to identifying constraints, the Group believed this was likely to be prohibitively expensive to develop. Options 4 and 5 were therefore not preferred.

The Group considered that ex-ante tagging (Option 2) was potentially a pragmatic approach to be able to identify constraints. The majority of discretion for the SO would be removed due to constraints being identified in accordance with their GB Security and Quality of Supply Standards (GB SQSS). It was noted that, depending on the timing of notification and/or publication of constraint information, ex-ante tagging could influence market behaviour with the risk that there may be perverse outcomes. However, ex-ante tagging was the preferred option to be further explored.

#### **4.1.5.2 Constraint Flagging principles**

The Transmission Company member outlined the high level principles of constraint flagging as currently being developed by the SO. The SO had originally considered a procedure whereby constraint areas would be identified as part of the SO's forward planning and all the BMUs in a constraint area would be tagged as 'system'. However, on further investigation this had the potential to lead to 'over-tagging' where BMUs that were not impacted by the constraint, and should therefore be tagged as 'energy' or 'energy plus system' actions, are tagged out as 'system' actions.

The SO therefore refined their proposal for identifying constraint actions. It would be a two stage process. The first stage would occur during the SO's forward planning process, approximately one day ahead. The SO would identify constraint areas and then identify which BMUs would be committed (for BM Start-up or other actions) in those areas in order to alleviate the constraints. At that stage those committed BMUs would be 'flagged' by the SO as being impacted by a constraint.

The second stage occurs between the first stage and Gate Closure. If the SO identifies a constraint which is about to bite, and they are unable to identify specific BMUs at this later stage, the SO would 'flag' all BMUs in the area. If the SO identifies a constraint which is about to bite, and they are able to identify specific BMUs at this later stage, the SO would 'flag' the specific affected BMUs.

At Gate Closure the SO would submit details to the BSC Systems of BMUs that had been 'flagged' as being impacted by a constraint. All BOAs for these BMUs would be initially classified as 'system' actions by the BSC

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<sup>11</sup> Generation Ordering and Loading software (GOAL). A scheduling programme used by the System Operator as a tool to facilitate economic scheduling of the available generation.

Systems. If however such 'system' actions were **less** expensive than an 'energy' or 'energy plus system' action (i.e. a Bid or Offer acceptance on a BMU that is not subject to a 'flag') then they would be classified as 'energy plus system' for the purpose of setting cash out prices. If such 'system' actions were **more** expensive than the highest priced 'energy' or 'energy plus system' action then they would be classified as 'system' action for the purpose of setting cash out prices (see section 4.1.6).

The process would be dynamic and would allow the SO the ability to continually refine their position up until Gate Closure.

The Group agreed that this approach was pragmatic and would be likely to accurately tag most BMUs impacted by a constraint. However, the Group highlighted that the refined ex-ante constraint tagging approach may still potentially 'over tag'. BOAs within a constraint area may not all be taken for 'system' reasons and some may be 'energy' or 'energy plus system' actions. Additionally, constraints identified by ex-ante tagging may become resolved in the interim period between identification and real time. The Group understood the potential for over-tagging implicit in a constraint flagging approach, but agreed that it was likely to offer the most pragmatic solution in terms of cost-benefit. The Group also recognised that there was also the potential for 'under-tagging' to occur in situations where a constraint materialises closer to real time and had not been identified in the planning stages.

#### **4.1.5.3 Publishing of constraint information**

The Group considered whether to publish details of where constraints would occur. The Group noted that publishing the details of the constraints could have two opposing impacts. A negative impact could be that publishing constraint information may potentially lead to 'keen pricing' of BM Units that interact with the constraint. It could also lead to changes in Physical Notifications (PNs) where a Party might be able to move volume within their portfolio so as to favourably impact the constraint, but not change their overall position. However, some Group members argued that Parties are generally aware of constraints under the current arrangements so this impact should not be overstated. A positive impact of publishing constraint information could be that transparency of constraints would make any perverse activity easier to detect. Furthermore, it may also trigger competition in the area impacted by the constraint (where this exists) which might contribute to relieving the constraint. Because of these concerns the Group developed three options for how constraint information could be published:

1. Publish the information once the SO forward planning has been concluded. This allows the most time for Parties to respond to the information (either positively or negatively). One member indicated that it should be noted what impact such notices would have on prices;
2. Publish the information at Gate Closure. This will mean that Parties cannot react to the first Settlement Period in which the constraint is active and reduces the potential for 'keen pricing' and advantageously changing PNs. However, as constraints are often active for many consecutive periods this still provides a signal to the market for future Settlement Periods in which they can react to (and potentially beneficially alter their bids or offers); or
3. Publish the information ex-post. As with Option 2 this would still provide a signal to the market for future Settlement Periods.

Of the three options the Group preferred that constraint information should be published ex-post as that would reduce the potential for 'keen pricing' in a constraint area as well as the potential for Parties to change their PNs to take advantage of the constraint.

#### **4.1.5.4 Agreed constraint tagging processes**

The Group agreed the following high level principles for tagging constraints:

1. The SO would identify constraint areas and 'flag' BMUs ex-ante – this would be a two stage process with the SO identifying individual BMUs which would need to be committed around one day ahead, then identifying BMUs in areas with a constraint in between the day ahead and Gate Closure;

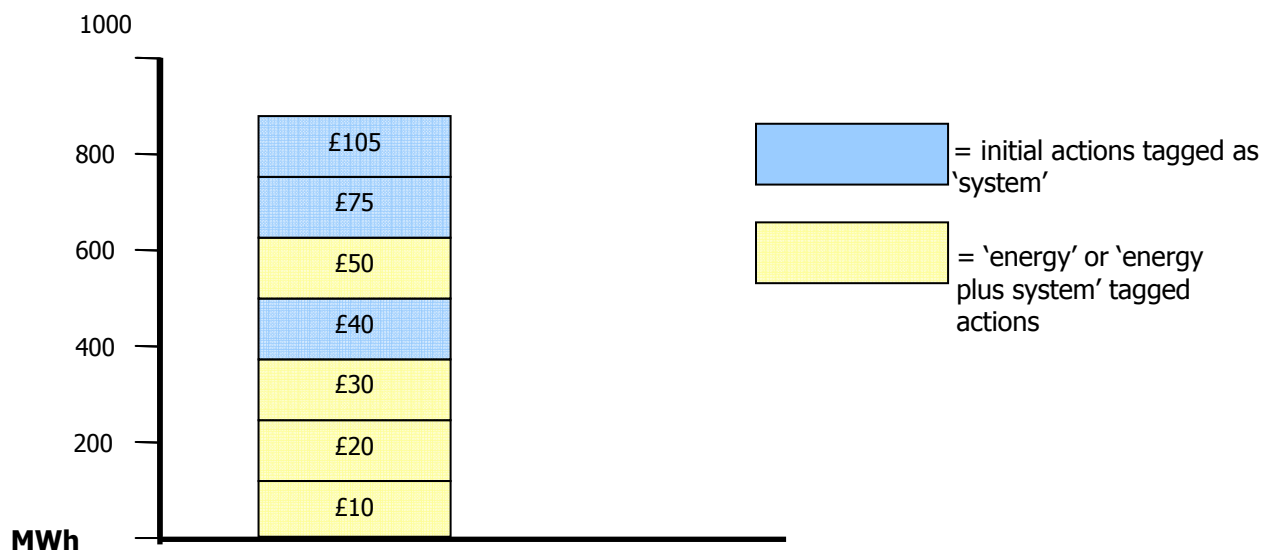
2. The SO would provide the BSC Systems with the details of those BMUs that have been flagged as impacted by a constraint at Gate Closure. All BMUs identified as constraint impacted would be initially tagged as 'system' actions by the BSC Systems; and
3. If constraint 'system' actions were **less** expensive than an 'energy' or 'energy plus system' action (i.e. a Bid or Offer acceptance on a BMU that is not subject to a 'flag') then they would be classified as 'energy plus system' for the purpose of setting cash out prices. If such 'system' actions were **more** expensive than the highest priced 'energy' or 'energy plus system' action then they would be classified as 'system' action for the purpose of setting cash out prices (see section 4.1.6);
4. Details of 'system' and 'energy plus system' actions published ex-post.

**4.1.6 Requirement for favourable system actions to be included in the NIV stack as priced**

The Group discussed the scenario where BOAs originally identified as 'system' (be that CADL, constraint flagged, etc) when stacked for NIV tagging, would be cheaper than the marginal priced action utilised to resolve NIV. The Group believed that an economic solution would be for those lower priced system actions to not be tagged as 'system' (and therefore appear as unpriced) as they theoretically would have also been taken for energy purposes (i.e. they were 'in merit'). Such actions should therefore be classed as 'energy plus system'.

The BOAs are stacked as shown in Figure 2<sup>12</sup>. The actions are stacked in price order. The £40, £75 and £105 BOAs have been identified as 'system' actions. The £50 BOA is area 'energy' or energy plus system' action and it is assumed that all other tagging has already taken place.

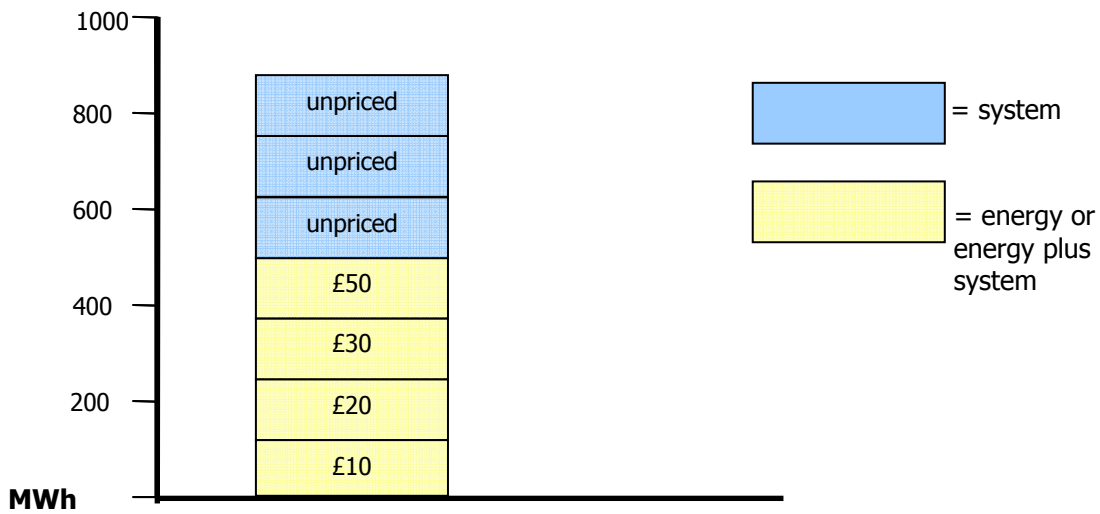
**Figure 2: NIV stack following the identification of 'system', 'energy' and 'energy plus system' actions**



If the £40 BOA were initially to be tagged as 'system' then this would be included as unpriced in the NIV stack. This can be seen in Figure 3a

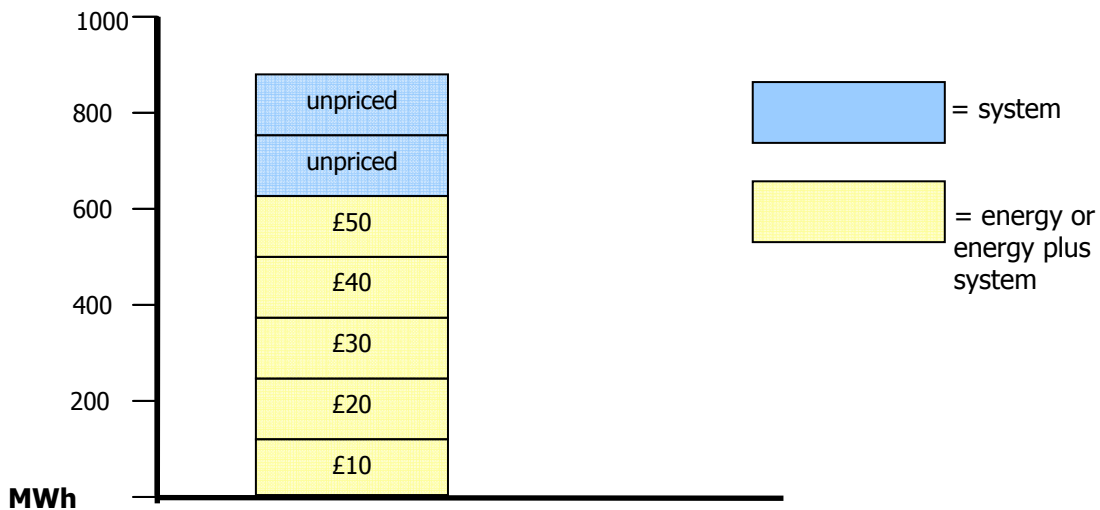
<sup>12</sup> BOAs are only shown in one direction for simplicity

**Figure 3a: NIV stack after application tagging rules whereby all 'system' actions are unpriced**



In this scenario the NIV would include the entire stack, and so (under P217) the unpriced actions would all require a replacement price (see Section 4.2). The Group viewed that the replacement price, in order to more accurately reflect the cost of balancing the system, would be potentially higher than the £40 system action which had been tagged out. Such tagging would not be reflective of the costs faced by the SO in balancing the system. The Group proposed that in such situations the £40 BOA should remain in the NIV stack as a priced action. This can be seen in Figure 3b

**Figure 3b: NIV stack where only BOAs that are more expensive than 'energy' or 'energy plus system' BOAs are considered 'system'**



The £40 BOA is classified as an 'energy plus system' and so remains priced. Therefore 'constraint flagging' should only result in tagging BOAs as 'system' when there is no higher priced BOA that has been defined as 'energy' or 'energy plus system'. This necessitates that 'constraint flagging' would be the final tagging process undertaken.

Therefore, the criteria for the action to be 'system' (and tagged as unpriced) would be that there is no priced 'energy' or 'energy plus system' action in the NIV stack (prior to NIV tagging) that is a higher price than the price of the BOA in question.

### 4.1.7 Reserve

The Group recognised that CADL only dealt with fast reserve and therefore considered how other forms of reserve should be treated.

One member considered that if reserve has been utilised (that is, where a BOA has been issued in relation to that reserve), that this should be treated as an 'energy' action as it was required to balance the energy requirements for the half hour. This is how the current arrangements treat reserve. This principle should also include option fees because the SO effectively acts on behalf of the market to make sure there is sufficient reserve available to manage Parties imbalance position in real time. Therefore, this cost should be targeted on those out of balance.

The Group considered Short Term Operating Reserve (STOR) and BM start up and how these manifest in the main Energy Imbalance Price through Balancing Services Adjustment Data (BSAD). STOR and BM start up are currently issued via BOAs and are effectively treated as 'energy' other than when this is removed by NIV tagging. However, there is some inconsistency in how each of these impacts the Buy Price Adjustment (BPA) and the Sell Price Adjustment (SPA). For further discussion on BSAD see Section 4.3.

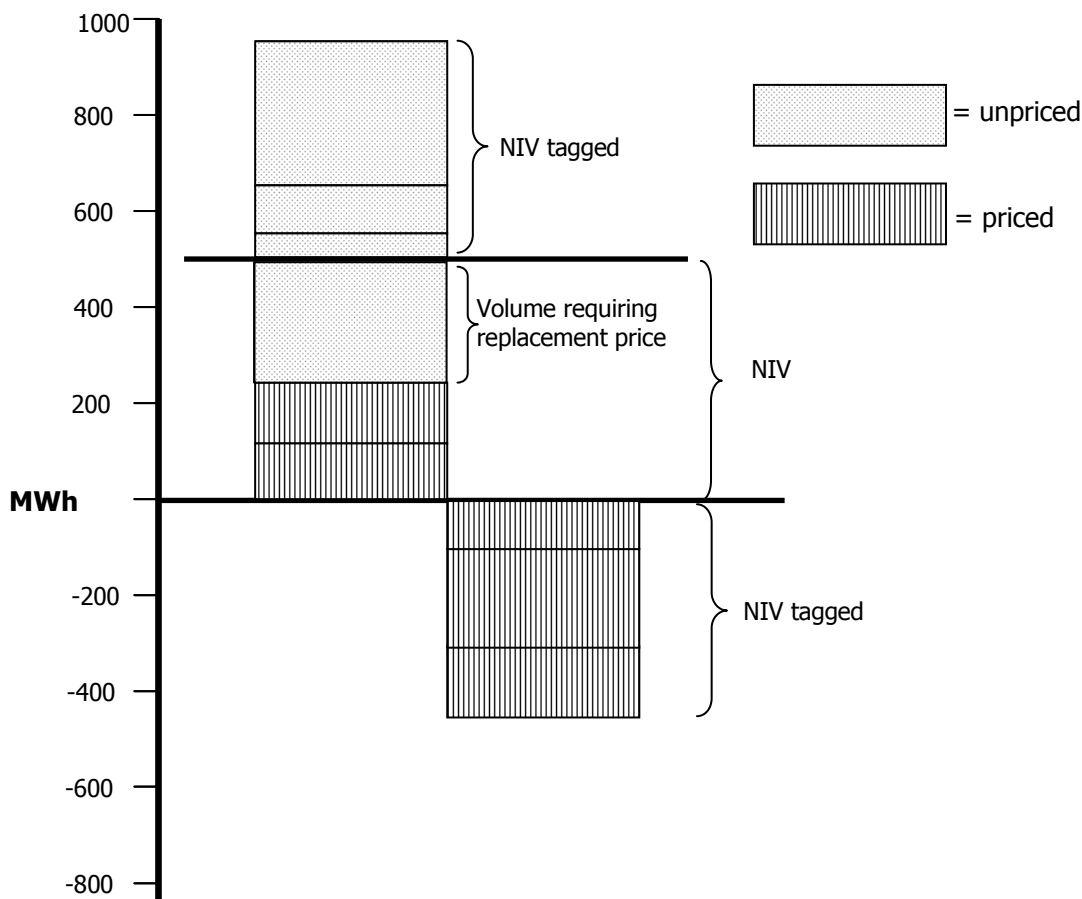
### 4.1.8 Agreed Tagging Principles

The agreed tagging principles are included in Section 3.2.1.

## 4.2 Principles governing the Replacement Price Methodology Statement

The Group discussed the reasons for needing a replacement price. A Group member explained that there may be situations where system actions (tagged as unpriced volumes by the Tagging Methodology) would be included in the main Energy Imbalance Price. An example is shown in Figure 4.

**Figure 4: Unpriced Volume appearing in NIV**



In the example 220MWh of unpriced volume has entered the NIV. P217 proposes that a replacement price be assigned to this volume as set out in the new BSC Replacement Price Methodology Statement.

The Group discussed the potential options for a replacement price. The initial options for the Replacement Price were:

1. Market Price (currently used as the reverse price); or
2. Volume weighted average of non-NIV tagged acceptances; or
3. 'Chunky' marginal price of non-NIV tagged acceptances (e.g. volume weighted average of the most expensive 'X' MWh e.g. 500MWh, 100MWh or 25MWh); or
4. Marginal Price (i.e. the most expensive 1MWh) of non-NIV tagged acceptances.

The Group did not believe a market price would be appropriate, as a market price would not take into account any of the specific conditions for BOAs which are required for system purposes. These specific conditions are likely to mean that 'system' tagged BOAs would have a premium associated with them over 'energy' or 'energy plus system' tagged BOAs. Therefore, the Group believed that a market price would, on average, be too benign.

Some members of the Group believed that a marginal approach would be appropriate because the SO would have had to purchase the unpriced volume (for energy purposes) at a price higher than those prices represented in the NIV stack. Thus the marginal price would be most reflective of the costs of the SO. However, one member noted that there would be a risk with a marginal approach that small, unrepresentative actions could therefore set the Replacement Price. It was also noted that Ofgem had previously indicated (in, for example, their P194 'Revised Derivation of the Energy Imbalance Price' Regulatory Impact Assessment and decision letter) concern that small unrepresentative volumes might set the main Energy Imbalance Price.

One member commented that they were not convinced that a marginal or 'chunky marginal' approach was appropriate for the replacement price. In their view no 'system' actions should enter the calculation of the main Energy Imbalance Price, and hence the replacement price was not required – the main Energy Imbalance Price should be calculated from 'energy' and 'energy plus system' actions alone. However, if a replacement price was sought then the member suggested that the replacement price should reflect the price of the BOA that the SO would have taken had the constraint not been in operation. This approach would require a BMU specific replacement price and there would need to be a moving or weighted average of historical Offers/Bids from that particular BMU in the corresponding market conditions. Another member commented that the BMU/condition specific solution would be very difficult to achieve practically. A third member suggested that one cannot assume that the price of a BOA in a constraint affected area would be different, when compared to a Bid or Offer in an unconstrained area.

Given that 'constraint flagging' might still result in under-tagging, and certain actions taken for 'system' reasons might enter the main Energy Imbalance Price, the Group agreed that it would be pragmatic to have a Replacement Price methodology that is calculated as a volume weighted average of the most expensive 'X' MWh of non-NIV tagged acceptances (a 'chunky marginal' approach). The Group agreed that the size of the 'chunk' should be determined using data analysis as part of the Assessment Procedure.

#### **4.2.1 Agreed Replacement Price Principles**

The agreed tagging principles are included in Section 3.2.1.

## **4.3 Principles for the treatment of BSAD, ABSVD, demand side reserve actions and imbalance on the SO accounts**

### **4.3.1 Treatment of BSAD**

Currently BSAD is a net 'energy' volume and a net 'system' volume that can enter the main Energy Imbalance Price calculation. The energy volume is priced and the system volume is unpriced. The determination of specific BSAD components as energy or system, and the price of the energy BSAD, is determined by the SO in accordance with the BSAD Methodology Statement<sup>13</sup>. A background to BSAD and how it is treated within the cash out arrangements is included in Attachment 1.

The Group considered how BSAD and the price adjusters (Buy Price Adjuster or 'BPA' and Sell Price Adjuster 'SPA') should be treated by the Tagging Methodology Statement. This Group's discussion was relatively in depth although the principle the Group were ultimately debating is whether BSAD and option fees should be included in the Energy Imbalance Price calculation.

One member of the Group highlighted that an understanding of the rationale for why BSAD is currently treated the way it is in the cash out arrangements is a key question that needs to be considered by the Group. Some members expressed the view that the general principle of reflecting BSAD into the cash out arrangements is to reflect the costs of the SO in balancing the system. The cost of forward trades and option fees should be targeted on those who are out of balance.

The member asserted that forward trades undertaken by the SO ahead of Gate Closure are done so because the SO economically and efficiently believes that this is a better price than can be expected in the BM. However, any forward trades undertaken by the SO will impact power exchange prices and therefore the market price (i.e. the reverse price). Therefore, there is already a route in which energy BSAD impacts Energy Imbalance Prices and reflecting BSAD into the main Energy Imbalance Price is not required. In the member's opinion, also including BSAD in the main Energy Imbalance Price calculation might be considered 'double counting'. The member pointed toward analysis done for the 2005 Ofgem led Cashout Review. (See Attachment 2: BSAD in BM Cashout). This showed that the SO traded significant quantities of Energy BSAD during 2003/04, and it was the member's view that the SO has the potential to distort the market through its trades and they often sell without regard to costs of production (which generators must take into account).

The Group considered whether, were BSAD to remain included in the Energy Imbalance Price calculation, there would be benefit from disaggregating BSAD. BSAD is currently included in the price calculation as a net energy and a net system volume. Therefore, the individual components of BSAD are averaged prior to entering the main Energy Imbalance Price so that they only enter once. Disaggregating BSAD would mean that every component of BSAD, with its associated price, would enter into the NIV stack at its original price and volume. The Group believed that disaggregating BSAD would increase transparency and provide a consistent approach to BOAs and forward trades. Therefore, if BSAD was to be included in the main Energy Imbalance Price calculation, the Group agreed that, in principle, this should be disaggregated.

It should be noted that if BSAD were to be disaggregated it could be subject to the 'constraint flagging' process identified in Section 4.1.5.

The Group considered the BPA. This is split into two parts, BM start up and STOR, which reflect SO option fees into the main Energy Imbalance Price. The Group noted that the methodologies for calculating these components of the BPA were probably not well understood and have provided a simplified overview in Attachment 1. One member highlighted that the methodology for calculating the STOR component of BSAD was not necessarily accurate because it relied on historic utilisation of STOR. Whilst the methodology did allow for seasonal and business/non-business day variations, there was still the ability for rogue historic

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<sup>13</sup> This can be found on National Grid's website here: <http://www.nationalgrid.com/NR/rdonlyres/F0122F70-41A3-449B-9322-047986A8C312/12144/BSADv33AppxCFinal.pdf>

utilisation patterns to influence current Energy Imbalance Prices. The Group were not convinced this was desirable, and could not provide the rationale for why the STOR component of BPA is reflected as it currently is. However, at this stage the Group does not have an alternative methodology for reflecting STOR in the BPA and therefore into the main Energy Imbalance Price calculation.

One member highlighted that there are potentially many cases when the BM start up component of BPA does not reflect the level to which the unit actually delivers (See Attachment 3 'BM Start Up BPA – Treatment in Cashout'). BM start up attempts to reflect the costs incurred by BM start up units in warming to come on for a set of required Settlement Periods. It is this 'window' of Settlement Periods in which the BM start up component of the BPA is targeted (and therefore provides an uplift to SBP if the system is short ( $NIV > 0$ )). Therefore, there is no link to what a BM-start up unit actually delivers in the requirement 'window' and this may not necessarily be cost reflective.

The majority of the Group believed that option fees should be retained in the calculation of the main Energy Imbalance Price as it is those who are out of balance that are the reason that the SO has to procure the levels of reserve that it does. However, the majority of the Group believed that there are potentially preferable ways for reflecting the option fees than the current calculation of BPA and SPA, although these were still to be explored. There was a counter view that, as reserve benefited the whole market, an element of these costs should be socialised and therefore not targeted on those out of balance.

The Group considered two strawmen for how treating reserve in the cashout arrangements could be modified. These are included in attachments 4 'Reflecting 'Reserve' costs at times of 'System Stress' and 5 'Allocation of reserve Option fees to Cashout'. These do not impact on the principle of whether or not BSAD and/or option fees should be included as part of P217.

#### **4.3.2 Treatment of ABSVD**

The Group discussed ABSVD volumes. These are MWh adjustments to BM Units that are instructed by the SO to provide automatic frequency response. These volumes are identified ex-post by the SO using a set of matrices of frequency response for each individual BM unit that provides the service. The volume calculated is removed from the Parties account and entered into the SO account. Therefore, this volume is currently socialised via the SO costs and the Group believe it should be represented in the calculation of Energy Imbalance Prices as 'system' (unpriced volume). Including ABSVD (as an unpriced volume) would ensure there is an accurate volume included in the NIV (system length) calculation.

The Group noted that whilst in principle it would be ideal to incorporate the ABSVD volume into the calculation of Energy Imbalance Prices, it is not currently practical to do so. This is because of the current ex-post process and therefore it not being available for prompt price reporting timescales.

One member noted that the ABSVD volume partially accounts for the differences between NIV and the Total System Energy Imbalance Volume (TQEI). The Group noted that comparing NIV and TQEI was assessed under P212 'Main Imbalance Price based on Market Reference Price'.

Another member queried whether estimating ABSVD in prompt time scales could occur. Given this is currently effectively a zero volume, would some estimate be systematically better or worse than the current zero value? The Group agreed that, if a way to estimate the value of ABSVD could occur in prompt timescales, then this should be compared to the current baseline.

#### **4.3.3 Treatment of demand side reserve (Non-BM reserve)**

The Group discussed non-BM reserve (such as demand side reserve). These volumes are not currently included in the calculation of Energy Imbalance Prices, due to the current ex-post process (similar to ABSVD) they cannot currently be calculated in real time and if included would therefore impact prompt prices.

The Group considered two potential ways in which to include Non-BM Reserve volumes, both of which have some disadvantages:



1. The demand side reserve provider would have to be assigned to a Supplier account so that they could be issued with a BOA (via the Supplier). This would require some form of tripartite agreement between the provider, Supplier and National Grid. It was thought this could make it unattractive for the provider to continue providing this service; or
2. Aggregate the applicable volume so that this can be included in the NIV. This would cause further discrepancy between NIV and TQEI as contract positions would not be adjusted for the non-BM reserve volume.

The Group agreed that, like ABSVD, it would be prohibitively expensive to calculate Non-BM reserve in real time. However, in principle the volumes should be included as 'system' in the Energy Imbalance Price calculation.

#### **4.3.4 Agreed principles for the treatment of BSAD, ABSVD, demand side reserve actions and imbalance on the SO accounts**

The agreed BSAD, ABSVD, demand side reserve actions and imbalance on the SO accounts principles are included in Section 3.2.3.

### **4.4 Interaction between P217 and other industry governance**

#### **4.4.1 Group discussion on the interaction between P217 and other industry governance**

Following agreement on the tagging principles the Group considered whether there would be any interaction between P217 and any non-BSC governance documents. The Group noted that the ABSVD Methodology Statement would not be impacted. The Group considered that in principle ABSVD should be a 'system' action, but in practice it was not possible to include it in the calculation of the main Energy Imbalance Price due to its ex-post nature, so the current treatment of ABSVD would remain the same. Hence the ABSVD Methodology Statement would not be impacted.

The Group considered that the BSAD Methodology Statement could be potentially impacted in two particular ways. If the Group's discussions led to a change in BSAD, such as disaggregated BSAD, the BSAD Methodology Statement may need to be changed. The other way relates to the SO's proposed constraint tagging approach. The Group discussed where the SO constraint tagging governance should sit. There was one view that it should be contained within the BSC. Another view was that it should be contained within non-BSC governance, such as an additional section to the BSAD Methodology Statement.

The Group noted that they did not believe the Balancing Principles Statement or National Grid's Transmission License conditions would be impacted by P217.

A Group member questioned how discussion on the Standing Issue 30 (Cash Out Issues) would interact with P217. ELEXON noted they would be progressed as independent areas of work and the meetings would be kept entirely separate, but it would be useful to flag any related issues in each Group's discussion. A Group member noted that the P217 Group should be mindful that P217 had its own timetable and the Group should stick to the timetable.

#### **4.4.2 Agreed principles for the interaction between P217 and other industry governance**

The agreed governance principles are included in Section 3.2.4.

## **4.5 Principles for agreement of the calculation of the main Energy Imbalance Price**

### **4.5.1 Group discussion of the principles for the calculation of the main Energy Imbalance Price**

The Group considered the methods by which a main Energy Imbalance Price might be set. The ways suggested by the Modification Proposal are:

- Marginal 'energy' or 'energy plus system' actions;
- 'Chunky marginal' (e.g. PAR 500MWh) volume of 'energy' and 'energy plus system' actions; or
- Volume weighted average of all actions taken for 'energy' and 'energy plus system' purposes in the main stack.

The Group noted that the current main Energy Imbalance Price is based on the volume weighted average of the most expensive 500MWh of priced balancing actions. This pricing structure was introduced by Modification Proposal P194, which introduced a PAR of 100MWh, and then further modified by Modification Proposal P205, which set the current PAR of 500MWh. A member questioned why the PAR had been changed from 100MWh to 500MWh. P205 had been raised as there was concern that under the PAR 100 methodology SO trades taken for system reasons, for example to resolve constraints, could pollute the main Energy Imbalance Price and increasing the PAR from 100MWh to 500MWh would reduce the impact of those system actions on the main Energy Imbalance Price.

The Group commented that under P217 such 'system' actions may be tagged out and therefore it was possible to consider a PAR of less than 500, as had been proposed by P194. The Group suggested that this 'chunk' could be less than the current PAR of 500 MWh as P217 would reduce the level of 'system' action pollution. One member noted that the chunk would also need a minimum size, so that unrepresentative actions do not pollute the main Energy Imbalance Price. The Group agreed that in principle the main Energy Imbalance Price should be a 'chunky marginal' price, with the 'chunk' determined using data analysis as part of the Assessment Procedure.

### **4.5.2 Agreed principles for the calculation of the main Energy Imbalance Price**

The agreed main Energy Imbalance Price principle is included in section 3.2.5.

## **4.6 Scope of the required data analysis**

### **4.6.1 Group discussion**

The Group considered what data analysis would be required for the Assessment Procedure of P217. BSCCo suggested there may be merit in conducting a near real time simulation of the SO's proposed solution to constraint tagging in order to establish how accurate the methodology was at removing system actions. Such a simulation would require the SO to attempt to tag constraints as proposed in Section 4.1.5 on selected days/Settlement Periods. Then, following the period the SO would investigate which BMUs were actually affected by constraints and compare how effectively the ex-ante tagging approach had worked. This would assist the Group in assessing the merits of a key part of the P217 solution. One member agreed that a simulation of constraint tagging would be useful, and that this would need to be done in near real time in order to be an accurate simulation of constraint tagging. It was also suggested that several Settlement Periods would be required, in particular Settlement Periods where a constraint was predicted to occur. Another member cautioned against making the scope of such a parallel run too broad as it may be potentially costly to undertake. The Group agreed that it would be desirable to have a simulation of the SO's constraint tagging during the Assessment Procedure, but noted that there may be difficulties with doing so. The Group accepted that such an exercise may have certain limitations in scope.

The Group suggested that historical data analysis would be required during the Assessment Procedure for a number of areas. Analysis would be required to assist the Group in deciding the size of the 'chunk' for the replacement price and the main Energy Imbalance Price. The Group also noted that analysis of the entire solution over a number of sample days would be required. This would allow the Group to compare the main Energy Imbalance Price as it would be under P217 to the current baseline. The Group agreed that historic analysis on the solution should be conducted.

The Group also considered whether it was worthwhile to undertake analysis into the impacts of P217 on cash-flows and the impacts on different classes of Parties. Whilst some member were still unsure of the benefit of undertaking this analysis, the Group agreed that analysis on cash-flows and a consideration of the impacts of P217 on different classes of Parties should be undertaken.

The Group suggested that it may be worthwhile to conduct analysis on the CADL issue identified in Section 4.1.3 to identify the degree of the issue.

The Group also believed that analysis on BSAD may be necessary, in particular the impact of disaggregated BSAD.

The Group considered whether any behavioural analysis was required. There were concerns that modelling a P217 world would be prohibitively difficult and expensive. The Ofgem representative commented that they did not believe that behavioural analysis was fundamental to assessing P217.

#### **4.6.2 Agreed the scope of data analysis for the Assessment Procedure**

The agreed areas of beneficial analysis to be undertaken as part of the Assessment Procedure are included in Section 3.2.6.

### **4.7 Terms of Reference for Assessment Procedure**

The following areas of the Modification Group's Terms of Reference remain to be considered during the Assessment Procedure:

- The detailed rules for the Tagging Methodology Statement and Replacement Price Methodology Statement;
- The required governance arrangements for the Tagging Methodology Statement and Replacement Price Methodology Statement and any interaction with BSAD Methodology Statements;
- Whether there would be any issues completing the proposed tagging process within the existing prompt price reporting timescales;
- The definition of NIV under the proposed arrangements;
- The detailed treatment of BSAD under the proposed arrangements;
- The required reporting under the P217 proposed arrangements;
- Detailed analysis of the impact on Energy Imbalance Prices; and
- The interaction of P217 with Ofgem's Cash-Out review, Issue 30 'Cash Out Issues, Issue 32 'Black Start' and pending Modification Proposals P211 and P212.

## 5 TERMS USED IN THIS DOCUMENT

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

Acronym/Term	Definition
ABSVD	Applicable Balancing Services Volume Data.
BMRA	Balancing Mechanism Reporting Agent.
BMRS	Balancing Mechanism Reporting Service
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.
Main Energy Imbalance Price	The Energy Imbalance Price applied to imbalances in the same direction as the system. Sometimes referred to as the main 'cash out price'.
MaxGen	The Maximum Generation Service allows access to capacity which is outside of the Generator's normal operating range in emergency circumstances. MaxGen will be initiated in specific circumstances by the issuing of an Emergency Instruction in accordance with the Grid Code BC2.9.2.
NIV	Net Imbalance Volume.
OCGT	Open Cycle Gas Turbine
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.
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.
SBP	System Buy Price.
SO	System Operator.
SQSS	Security and Quality of Supply Standards
SSP	System Sell Price.
STOE	Short Term Operating Reserve
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	Total System Energy Imbalance Volume

## 6 DOCUMENT CONTROL

### 6.1 Authorities

Version	Date	Author	Reviewer	Reason for Review
0.1	06/12/07	Andrew Wright	David Jones, Justin Andrews, Chris Stewart	For technical review
0.2	12/12/07	Andrew Wright	Modification Group	For Modification Group review
0.3	18/12/07	Andrew Wright	Modification Group	For Modification Group review following meeting 3
1.0	20/12/07	P217 Modification Group		For industry consultation

### 6.2 List of Attachments

Attachment 1 – Background to BSAD

Attachment 2 - BSAD in BM Cashout

Attachment 3 - BM Start Up BPA – Treatment in Cashout

Attachment 4 - Reflecting 'Reserve' costs at times of 'System Stress'

Attachment 5 - Allocation of reserve Option fees to Cashout

### 6.3 References

Ref.	Document Title	Owner	Issue Date	Version
1	<a href="#">P211 Final Modification Report</a>	BSC Panel	05/10/07	1.0
2	<a href="#">P212 Final Modification Report</a>	BSC Panel	17/12/07	1.0
3	<a href="#">P217 Initial Written Assessment</a>	BSCCo	02/11/07	1.0

## APPENDIX 1: PROCESS FOLLOWED

Copies of all documents referred to in the table below can be found on the BSC Website at: [insert hyperlink to website page containing all documents relating to the proposal]

Date	Event
19/10/2007	Modification Proposal P217 raised
09/11/2007	Initial Written Assessment (IWA) presented to the BSC Panel
12/11/2007	First Definition Modification Group Meeting
19/11/2007	Second Definition Modification Group Meeting
14/12/2007	Third Definition Modification Group Meeting
19/12/2007	Definition Consultation issued
10/01/2008	Definition Consultation Responses to be returned

### ESTIMATED COSTS OF PROGRESSING MODIFICATION PROPOSAL<sup>14</sup>

<b>Meeting Cost</b>	£2,500
<b>Legal/Expert Cost</b>	£0
<b>Impact Assessment Cost</b>	£0
<b>ELEXON Resource</b>	63 man days £17,435

The costs have not changes from those provided in the IWA and only include progressing P217 through the IWA and Definition Procedure.

<sup>14</sup> 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](http://www.elexon.co.uk/documents/Change_and_Implementation/Modifications_Process_-_Related_Documents/Clarification_of_Costs_in_Modification_Procedure_Reports.pdf)

**MODIFICATION GROUP MEMBERSHIP**

<b>Member</b>	<b>Organisation</b>	<b>12/11</b>	<b>19/11</b>	<b>14/12</b>
David Jones	ELEXON (Chairman)	<b>X</b>	✓	<b>X</b>
Andrew Wright	ELEXON (Lead Analyst)	✓	✓	✓
Bill Reed	RWE npower (Proposer)	✓	✓	✓
Rob Smith	National Grid	✓	✓	✓
Paul Mott	EDF Energy	✓	✓ (part)	<b>X</b>
Martin Mate	British Energy	<b>X</b>	✓	✓
Ian Moss	APX	✓	✓	✓
Ben Sheehy	E.ON	✓	✓	✓
Libby Glazebrook	First Hydro Company	<b>X</b>	✓	✓
Garth Graham	Scottish and Southern	✓	<b>X</b>	<b>X</b>
Man Kwong Liu	Scottish Power	✓	✓	✓
Bob Brown	Cornwall Energy	✓	✓	<b>X</b>
Dave Wilkerson	Centrica	✓	✓	<b>X</b>
<b>Attendee</b>	<b>Organisation</b>			
Justin Andrews	ELEXON	✓	✓	✓
Chris Stewart	ELEXON	<b>X</b>	✓	✓
Emrah Cevik	ELEXON	<b>X</b>	<b>X</b>	✓
Natasha Hall	ELEXON (Lawyer)	<b>X</b>	<b>X</b>	<b>X</b>
Rosalind Hartley	ELEXON	<b>X</b>	✓	✓
Ben Woodside	Ofgem	✓	✓ (part)	✓
Ben Smithers	Ofgem	✓	✓	<b>X</b>
Adrian Palmer	Ofgem	<b>X</b>	<b>X</b>	✓
Sebastian Eyre	EDF	✓	<b>X</b>	<b>X</b>
Andrew Colley	Scottish and Southern	<b>X</b>	✓	✓
Neil Rowley	National Grid	✓	✓	✓
Lisa Waters	Waters Wye	<b>X</b>	✓	✓
Stephen Carter	EDF Energy	✓	✓	✓
John Guest	LogicaCMG	✓	✓	✓
Mark Gribble	LogicaCMG	<b>X</b>	✓	✓

## **MODIFICATION GROUP TERMS OF REFERENCE**

**Modification Proposal P217 will be considered by a new Modification Group, the P217 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.**

### **1. DEFINITION PROCEDURE**

- 1.1 The Modification Group will carry out a Definition Procedure in respect of Modification Proposal P217 pursuant to section F2.5 of the Balancing and Settlement Code.
- 1.2 The Modification Group will produce a Definition Report for consideration at the BSC Panel Meeting on 14 February 2008.
- 1.3 The Modification Group shall consider and/or include in the Definition Report as appropriate:
  - Principles governing the Tagging Methodology Statement
  - Principles governing the Replacement Price Methodology Statement
  - Principles for the treatment of BSAD, ABSVD, demand side reserve actions and imbalance on the SO accounts
  - Interaction between P217 and other industry governance
  - Principles for agreement of the calculation of the main Energy Imbalance Price
  - Scope of the required data analysis

## **APPENDIX 2: RESULTS OF IMPACT ASSESSMENT**

No impact assessment has been commissioned during the Definition Procedure. BSCCo's initial assessment of the impacts of P217 can be found in the P217 IWA.