

**ASSESSMENT REPORT for Modification Proposal P136
Marginal Definition of the 'Main' Energy Imbalance
Price**

**ASSESSMENT REPORT for Modification Proposal P137
Revised Definition of the System Buy Price and System
Sell Price**

Prepared by: The Pricing Issues Standing Modification Group (PSMG)

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¹ The current version of the Balancing and Settlement Code (the 'Code') can be found at www.elexon.co.uk/ta/bsc/el_docs/bsc_code.html

RECOMMENDATIONS

The Pricing Issues Standing Modification Group invites the BSC Panel to:

P136

- **AGREE that Proposed Modification P136 should not be made;**
- **If the Authority determines that Proposed Modification P136 should be made, AGREE a provisional Implementation Date for Proposed Modification P136 of 3 November 2004, should an Authority determination be received before or on 31 January 2004. If an Authority determination is received after that date but prior to, or on 5 April 2004, the Implementation Date should be 22 February 2005;**
- **NOTE the development and implementation costs for P136, namely £1,562,000, including £890,000 BSC Central Service Agent development and Implementation costs, and excluding an annual maintenance cost of £120,000 p.a. This excludes ELEXON effort of 750 man days;**
- **AGREE that Modification Proposal P136 be submitted to the Report Phase; and**
- **AGREE that the draft Modification Report be issued for consultation and submitted to the Panel Meeting of 11 December 2003.**

P137

- **AGREE that Proposed Modification P137 should not be made;**
- **If the Authority determines that Proposed Modification P137 should be made, AGREE a provisional Implementation Date for Proposed Modification P137 of 3 November 2004, should an Authority determination be received before or on 5 January 2004. If an Authority determination is received after that date but prior to, or on 5 April 2004, the Implementation Date should be 22 February 2005;**
- **NOTE the development and implementation costs for P137, namely £2,051,040, including £1,220,000 BSC Central Service Agent development and Implementation costs, and excluding an annual maintenance cost of £170,500 p.a. This excludes ELEXON effort of 750 man days;**
- **AGREE that Modification Proposal P137 be submitted to the Report Phase; and**
- **AGREE that the draft Modification Report be issued for consultation and submitted to the Panel Meeting of 11 December 2003.**

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SUMMARY OF IMPACTED PARTIES AND DOCUMENTS

As far as BSCCo has been able to assess the following Parties/documents have been identified as being potentially impacted by Proposed Modifications P136 and P137 (the impacts are the same).

Parties	Sections of the BSC	Code Subsidiary Documents
Suppliers <input checked="" type="checkbox"/>	A <input type="checkbox"/>	BSC Procedures <input type="checkbox"/>
Generators <input checked="" type="checkbox"/>	B <input type="checkbox"/>	Codes of Practice <input type="checkbox"/>
Licence Exemptable Generators <input checked="" type="checkbox"/>	C <input type="checkbox"/>	BSC Service Descriptions <input checked="" type="checkbox"/>
Transmission Company <input checked="" type="checkbox"/>	D <input type="checkbox"/>	Service Lines <input type="checkbox"/>
Interconnector <input type="checkbox"/>	E <input type="checkbox"/>	Data Catalogues <input checked="" type="checkbox"/>
Distribution System Operators <input type="checkbox"/>	F <input type="checkbox"/>	Communication Requirements Documents <input type="checkbox"/>
Party Agents		
Data Aggregators <input type="checkbox"/>	G <input type="checkbox"/>	Reporting Catalogue <input checked="" type="checkbox"/>
Data Collectors <input type="checkbox"/>	H <input type="checkbox"/>	MIDS <input type="checkbox"/>
Meter Operator Agents <input type="checkbox"/>	J <input type="checkbox"/>	Core Industry Documents
ECVNA <input type="checkbox"/>	K <input type="checkbox"/>	Grid Code <input type="checkbox"/>
MVRNA <input type="checkbox"/>	L <input type="checkbox"/>	Supplemental Agreements <input checked="" type="checkbox"/>
BSC Agents		
SAA <input checked="" type="checkbox"/>	M <input type="checkbox"/>	Ancillary Services Agreements <input type="checkbox"/>
FAA <input type="checkbox"/>	N <input type="checkbox"/>	Master Registration Agreement <input type="checkbox"/>
BMRA <input checked="" type="checkbox"/>	O <input type="checkbox"/>	Data Transfer Services Agreement <input type="checkbox"/>
ECVAA <input type="checkbox"/>	P <input type="checkbox"/>	British Grid Systems Agreement <input type="checkbox"/>
CDCA <input type="checkbox"/>	Q <input checked="" type="checkbox"/>	Use of Interconnector Agreement <input type="checkbox"/>
TAA <input type="checkbox"/>	R <input type="checkbox"/>	Settlement Agreement for Scotland <input type="checkbox"/>
CRA <input type="checkbox"/>	S <input type="checkbox"/>	Distribution Codes <input type="checkbox"/>
Teleswitch Agent <input type="checkbox"/>	T <input checked="" type="checkbox"/>	Distribution Use of System Agreements <input type="checkbox"/>
SVAA <input type="checkbox"/>	U <input type="checkbox"/>	Distribution Connection Agreements <input type="checkbox"/>
BSC Auditor <input type="checkbox"/>	V <input type="checkbox"/>	BSCCo
Profile Administrator <input type="checkbox"/>	W <input type="checkbox"/>	Internal Working Procedures / systems <input checked="" type="checkbox"/>
Certification Agent <input type="checkbox"/>	X <input checked="" type="checkbox"/>	Other Documents
MIDP <input type="checkbox"/>		Transmission Licence <input type="checkbox"/>
TFLA <input type="checkbox"/>		
Other Agents		
SMRA <input type="checkbox"/>		
Data Transmission Provider <input type="checkbox"/>		

X = Identified in Report for last Procedure

Cost of implementing Proposed Modification P136:	
Change specific	£890,000
Operational/maintenance	£120,000
Total:	£1,562,000
	+ 750 ELEXON man days
Cost of implementing Proposed Modification P137:	
Change specific	£1,220,000
Operational/maintenance	£170,500
Total:	£2,051,040+
	750 ELEXON man days

1 DESCRIPTION OF PROPOSED MODIFICATION AND ASSESSMENT AGAINST THE APPLICABLE BSC OBJECTIVES

1.1 Modification Proposal

Modification Proposal P136 'Marginal Definition of the 'main' Energy Imbalance Price' (P136) was raised by National Grid Transco on 1 August 2003.

Modification Proposal P137 'Revised Definition of the System Buy Price and System Sell Price' (P137) was raised by Barclays Capital on 1 August 2003.

The Panel considered the Initial Written Assessments for both Modification Proposals at its meeting of 14 August 2003. The Panel agreed to submit both Proposals to a three month parallel Assessment Procedure, in recognition of the similarity of the issues each Modification Proposal seeks to address, with the assessment to be undertaken by the Pricing Issues Standing Modification Group (PSMG).

Both Modification Proposals seek to implement a marginal Energy Imbalance Price methodology in respect of the main Energy Imbalance Price (i.e. the Energy Imbalance Price applied to Party imbalances in the same direction as the system), where the marginal price is derived from the last energy balancing action remaining in the Net Imbalance Volume (NIV), i.e. the most expensive Offer Acceptance / energy BSAD buy when the system is short, and the least expensive Bid Acceptance / energy BSAD sell when the system is long.

Both Modifications propose amendments to the composition of the NIV derivation, to better reflect the balancing actions taken by the Transmission Company, namely rather than reflecting a net volume in respect of forward energy trades taken by the Transmission Company in the NIV, each individual trade will be represented in a disaggregated format. Also, non Balancing Mechanism delivered standing reserve (not currently captured and included in the NIV) is to be incorporated. Furthermore, the treatment of option fees for standing reserve contracts is to be amended to be targeted at the BM Units that have standing reserve called.

It should be noted that these changes in approach require amendment to the Balancing Services Adjustment Data (BSAD) and the associated Methodology Statement. It should be noted that the deliberations of the PSMG, and the views of respondents to the P136 and P137 consultations, in respect of the BSAD amendments for P136 and P137, informed the Transmission Company when compiling its consultation on the requisite BSAD amendments. Therefore, whilst recognising that BSAD does not fall under the vires of the Balancing and Settlement Code (the Code), it is appropriate that this document reflect the PSMG deliberations, and the consultation responses in respect of BSAD amendments for P136 and P137. It should be further noted that the Transmission Company is currently undertaking a consultation on the proposed amendments the BSAD Methodology Statement to support P136 and P137 (section 1.5).

The fundamental mechanism that both Modifications seek to implement is very similar, with P137 building on the mechanism proposed by P136 by undertaking two additional steps where offsetting actions on a single BM Unit are removed (referred to as BM Unit undo tagging), and energy BSAD trades on the smaller stack are netted off the main stack (referred to as BSAD offsetting tagging) prior to the Net Imbalance Volume derivation.

The mechanisms proposed for both P136 and P137 are explored in section 1.2 and 1.3, respectively, of this Assessment Report. It should be noted that no Alternative Modification is proposed for either of P136 and P137. Section 2.3 explores this aspect in further detail.

During the Assessment Procedure for P136 and P137, the PSMG met seven times, on 21 August 2003, 3, 12 and 23 September and 2 and 17 October 2003 and 4 November 2003. The PSMG have

undertaken two consultations and one impact assessment from the BSC Central Service Agent, BSCCo and the Transmission Company. The deliberations of the PSMG in respect of P136 and P137 are provided in section 2.

At its meeting of 4 November 2003, the PSMG considered the consultation responses in respect of the definition and assessment of P136 and P137, and finalised the solutions and the recommendations in respect of each Modification Proposal. It should be noted that the issues raised by both P136 and P137 are very similar, and thus consideration of the two Modifications has been conducted in parallel. Due to the similarity of the issues involved and for efficiency, one Assessment Report was produced covering the Assessment Procedure for both Modifications (ensuring that there is a clear delineation between the two). The Assessment Report for P136 and P137 was then drafted to reflect the deliberations of the PSMG and was agreed by the PSMG by correspondence.

The Panel considered the Assessment Report and the PSMG recommendations in respect of P136 and P137 at its meeting of 13 November 2003 and ...

1.2 Proposed Modification P136

There are repeated references to system and electricity / energy balancing throughout this Assessment Report, and therefore the PSMG believe it to be appropriate to define what is meant (in the context of this document) when referring to system and electricity / energy balancing.

Electricity, or sometimes referred to as energy, balancing is considered to be the balancing actions taken by the Transmission Company for the purposes of matching generation to demand to address the imbalances of Parties. Therefore electricity balancing actions are those appropriate to include in the Energy Imbalance Price, in order to target the costs of electricity balancing to those in imbalance.

System balancing is considered to be the balancing actions taken by the Transmission Company for other reasons, for example frequency control, creation of reserve, and alleviation of system constraints. System balancing actions are those that are not taken for the purposes of managing the imbalances of Parties and therefore it is not deemed to be appropriate to include them in the Energy Imbalance Price calculation.

It is widely acknowledged that differentiating between system and electricity balancing for the purposes of excluding system balancing actions from the Energy Imbalance Price calculation is difficult and inexact. Currently the Energy Imbalance Price derivation includes two mechanistic ways of performing this differentiation:

1. Continuous Acceptance Duration Limit (CADL) Tagging: This is based on the principle that certain system balancing actions are more likely to have been of short duration, and therefore seeks to identify and remove system balancing actions that fall below a specified duration, currently 15 minutes; and
2. Net Imbalance Volume (NIV) Tagging: This mechanism is based on the principle that certain system balancing actions have an equal and opposite compensatory action, and therefore seeks to identify and remove such system balancing actions with an equal and opposite action.

The PSMG note that these mechanisms are a proxy for identifying, and removing system balancing actions from the Energy Imbalance Price, and recognise that, inevitably, such proxies will not remove all system balancing actions and leave only and all electricity balancing actions.

However, the goal is to have a system – electricity balancing differentiation that is as effective as possible, and which thus results in an Energy Imbalance Price that is as cost reflective of the costs of electricity / energy balancing actions as possible.

1.2.1 Overview

In summary the P136 mechanism is:

- Continuous Acceptance Duration Limit (CADL)² and De Minimis Tagging is undertaken, as currently defined;
- All balancing actions – Bid – Offer Acceptances, disaggregated Energy BSAD buys and sells, and net aggregated System BSAD are stacked in price order, least expensive first;
- Arbitrage Tagging is performed, which removes an equal and opposite volume from both the sell stack and the buy stack to remove balancing actions where the Offer / buy Price is less than the Bid / sell price for the balancing actions;
- The expected utilisation cost is added to the Bid – Offer price of Bid – Offer Acceptances made under standing reserve contracts, and the stacks are re-ordered, if required to maintain price ordering;
- NIV Tagging, as currently defined, is undertaken; and
- The main Energy Imbalance Price will then be the most expensive energy balancing action remaining in the NIV, noting that this may be a partial balancing action remaining in the NIV after NIV Tagging.

The following amendments to the Balancing Services Adjustment Data (BSAD) are required to support P136:

- The application of Option fees (Buy Price Price Adjustment (BPA_j) and Sell Price Price Adjustment (SPA_j)) will be amended, such that the option fee for a standing reserve contract will be reflected in the Bid – Offer Acceptance price;
- Energy BSAD will be disaggregated, such that each 'trade' is provided as a volume with a price. Thus there will be a volume and a price notified for each of the following:
 - Energy Pre Gate Closure BM Unit Transactions (PGBTs), BM Unit specific;
 - Energy forward trades; and
 - Non Balancing Mechanism standing reserve.

The actual mechanism is provided in detail in Annex 8, with worked examples provided in Annex 9 (as provided in the second consultation document).

1.2.2 P136 Mechanism

The following balancing actions are taken by the Transmission Company and volumes are derived / calculated (System and Energy BSAD) / instructed (Bid – Offer Acceptances), as relevant:

1. System BSAD (SBVA / SSVA) will not be disaggregated, and will continue to be provided for each Settlement Period as a net volume without any associated price;
2. Energy BSAD will be disaggregated, and for each energy trade, a volume (MWh), price (£/MWh) and BM Unit Id will be provided; and
3. Bid – Offer Acceptances are taken in the same way as currently.

All of these balancing actions are notified to the BSC Central Service Agent.

² The interaction with Urgent Modification P144 'Removal of CADL from the BSC' should be noted. It should also be noted that the Proposer of P136 indicated that CADL Tagging is a required part of P136.

The BSC Central Service Agent (BMRA or SAA, depending on the timescales – BMRA real time, and SAA for Settlement Runs) will, for each Settlement Period:

1. 'CADL' tag the Bid – Offer Acceptances. This results in:
 - A set of Priced Acceptances, i.e. non CADL BOAs, deemed to have been taken for energy purposes, pending NIV Tagging; and
 - A set of Unpriced Acceptances, i.e. CADL'ed BOAs, deemed to have been taken for system purposes, and used only in the derivation of the NIV;
2. De Minimis tag the Bid – Offer Acceptances, resulting in the removal of small (<1MWh), 'unreal' acceptances;
3. Arbitrage tag all balancing actions, resulting in the removal of an equal and opposite volume from both the sell stack and the buy stack to remove balancing actions where the Offer / buy Price is less than the Bid / sell price for the balancing actions; and
4. For the remaining (Period) Bid – Offer Acceptances, use the BM Unit option fee adjustment price derived from a 'look up table', provided by the Transmission Company (and published to BSC Parties) to determine whether there are any option fees to be reflected in the Bid – Offer prices for affected BM Units. Where a BM Unit has an option fee to be applied then the £/MWh Bid – Offer Price will be adjusted to include the fee (which is also a £/MWh value), for all acceptances on the BM Unit, as specified by the look up table.

The remaining balancing actions go forward to NIV Tagging, undertaken as currently, and therefore not explored further. The main Energy Imbalance Price will then be the most expensive action remaining in the NIV. Figure 1 shows the general composition of the buy stack, and Figure 2, the sell stack.

Where the most expensive action remaining in the NIV is 'known' system balancing (i.e. system BSAD, system balancing services or CADL'ed acceptances), then **the most expensive energy balancing action in the NIV will set the marginal System Buy Price.**

TQUAO		} System balancing
SBVA		
QAPO	£195/MWh	} Energy balancing Actions in price order
EBVA	£175/MWh	
QAPO	£150/MWh	
EBVA	£30/MWh	
QAPO	£25/MWh	
QAPO	£20/MWh	
EBVA	£15/MWh	

Figure 1: Composition of the Buy Stack

ESVA	£25/MWh	} Energy balancing actions in price order
QAPB	£20/MWh	
QAPB	£15/MWh	
ESVA	£10/MWh	
QAPB	£5/MWh	
ESVA	- £5/MWh	
QAPB	- £15/MWh	
SSVA		} System balancing
TQUAB		

Figure 2: Composition of the Buy Stack

For the avoidance of doubt, NIV Tagging tags inwards (top down on the Offer / buy stack, and bottom up on the Bid / sell stack), so on both the Bid and the Offer stack, the system balancing actions are the first to be tagged out.

1.3 Proposed Modification P137

1.3.1 P137 Overview

In summary the P137 mechanism is:

- CADL³ and De Minimis Tagging is undertaken, as currently defined;
- All balancing actions – Bid – Offer Acceptances, disaggregated Energy BSAD buys and sells, and net aggregated System BSAD are stacked in price order, least expensive first;
- Arbitrage Tagging is performed, which removes an equal and opposite volume from both the sell stack and the buy stack to remove balancing actions where the Offer / buy Price is less than the Bid / sell price for the balancing actions, noting that option fees are not reflected in the Bid – Offer Acceptance prices for the purposes of Arbitrage;
- BM Unit undo tagging is performed to 'net off' balancing actions taken in opposite directions taken on the same BM Unit. The relevant option fee is added to the Bid – Offer price of Bid – Offer Acceptances made under standing reserve contracts, for the purposes of this undo tagging;
- The option fee is also added back on to the Bid – Offer price of Bid – Offer Acceptances made under standing reserve contracts (that were not subject to BM Unit undo Tagging), and the stacks are re-ordered, if required to maintain price ordering;
- Energy BSAD offsetting tagging is performed, which identifies the volume of energy (non BM Unit specific) BSAD in the reverse stack, i.e. the total energy BSAD buy volume where the system is long and the total energy BSAD sell volume where the system is short, and removes that volume from the relevant stack prior to NIV Tagging;
- NIV Tagging, as currently defined, is undertaken; and
- The main Energy Imbalance Price will then be the most expensive energy balancing action remaining in the NIV.

³ The interaction with Urgent Modification P144 'Removal of CADL from the BSC' should be noted. It should also be noted that the Proposer of P137 indicated that CADL Tagging is a required part of P137.

The following amendments to the Balancing Services Adjustment Data (BSAD) are required to support P137:

- The application of Option fees (Buy Price Price Adjustment (BPA_i) and Sell Price Price Adjustment (SPA_i)) will be amended, such that the option fee for a standing reserve contract will be reflected in the Bid – Offer Acceptance price;
- Disaggregated energy BSAD, such that each 'trade' is provided as a volume with a price. Thus there will be a volume and a price notified for each of the following:
 - Energy Pre Gate Closure BM Unit Transactions (PGBTs), BM Unit specific;
 - Energy forward trades; and
 - Non Balancing Mechanism standing reserve.

The actual mechanism is provided in detail in Annex 8, with worked examples provided in Annex 9 (as provided in the second consultation document).

1.3.2 P137 Mechanism

The following balancing actions are taken by the Transmission Company and volumes are derived / calculated (System and Energy BSAD) / instructed (Bid – Offer Acceptances), as relevant:

1. System BSAD (SBVA / SSSVA) will not be disaggregated, and will continue to be provided for each Settlement Period as a net volume without any associated price;
2. Energy BSAD will be disaggregated, and for each energy trade, a volume (MWh), price (£/MWh) and BM Unit Id will be provided. Where there is no associated BM Unit, then no Id will be provided. For example, power exchange forward trades will not have a BM Unit Id, whereas (energy) Pre Gate Closure BM Unit Transactions (PGBTs) will have a BM Unit Id associated.
3. Bid – Offer Acceptances are taken in the same way as currently.

All of these balancing actions are notified to the BSC Central Service Agent.

The BSC Central Service Agent (BMRA or SAA, depending on the timescales – BMRA real time, and SAA for Settlement Runs) will, for each Settlement Period:

1. 'CADL' tag the Bid – Offer Acceptances. This results in:
 - A set of Priced Acceptances, i.e. non CADL BOAs, deemed to have been taken for energy purposes, pending NIV Tagging; and
 - A set of Unpriced Acceptances, i.e. CADL'ed BOAs, deemed to have been taken for system purposes, and used only in the derivation of the NIV;
2. De Minimis tag the Bid – Offer Acceptances, resulting in the removal of small (<1MWh), 'unreal' acceptances;
3. Arbitrage tag all balancing actions, resulting in the removal of an equal and opposite volume from both the sell stack and the buy stack to remove balancing actions where the Offer / buy Price is less than the Bid / sell price for the balancing actions;

It should be noted that Bid – Offer Acceptances are arbitrated according to the Bid – Offer price accepted by the Transmission Company, i.e. before any option fee expected utilisation cost is applied.

4. BM Unit Undo tagging (see below);

5. For the remaining (Period) Bid – Offer Acceptances, use the option fee expected utilisation cost 'look up table', provided by the Transmission Company to determine whether there are any expected utilisation costs to be reflected in the Bid – Offer prices for affected BM Units. Where a BM Unit has an expected utilisation cost, then the £/MWh Bid – Offer Price will be adjusted to include the option fee (which is also a £/MWh value), for all acceptances on the BM Unit, as specified by the look up table; and
6. Energy BSAD offsetting tagging is performed, which identifies the volume of energy (non BM Unit specific) BSAD in the reverse stack, i.e. the total energy BSAD buy volume where the system is long and the total energy BSAD sell volume where the system is short, and removes that volume from the relevant stack prior to NIV Tagging.

The remaining balancing actions go forward to NIV Tagging, undertaken as currently, and therefore not explored further. **The main Energy Imbalance Price will then be the most expensive energy balancing action remaining in the NIV.**

1.3.2.1 BM Unit Undo Tagging

In accordance with the processing order set out above, for each BM Unit, the BSC Central Service Agent will:

1. Stack all the acceptances (BOAs and energy BSAD trades) for the BM Unit to determine any undo volumes, offer and equivalent volumes, on one stack (the buy volume), and bid and equivalent volumes on the other (the sell volume);
2. Where the buy volume exceeds the sell volume, then the least expensive⁴ priced buy balancing actions are removed up to the sell volume; or
3. Where the sell volume exceeds the buy volume, then the least expensive priced sell balancing actions are removed up to the buy volume;
4. The remaining acceptances go forward to the NIV Tagging process.

For the avoidance of doubt, where there are no offsetting actions on a specific BM Unit, then all actions on that BM Unit will go forward to the Energy Imbalance Price calculation.

For example:

BM Unit A has a PGBT sale taken for energy purposes ahead of Gate Closure. During the Settlement Period Offers are accepted at different prices. At the end of the Settlement Period, and following CADL and De Minimis tagging, the offsetting actions are stacked for undo tagging.

The acceptances are stacked in price order.

The volume of the sell stack is tagged off the buy stack, least expensive acceptances first.

The balancing actions, or part of, remaining on the offer stack go forward to the NIV calculation, so in this example, illustrated by figure 4, it will be the Offer volumes at £100 / MWh and £110 / MWh.

⁴ Least expensive, in this context, is in respect of the expense to the system. In the case of buy balancing actions (including Offers), the least expensive are those that have cost the system the least to buy (i.e. the lowest positive price (and if present, the highest negative price). In the case of sell balancing actions (including Bids), the least expensive are those that have bought the system in the most money (the highest positive price), or, where there are no positively priced sell balancing actions, the actions that the system has had to pay least for where the price is negative (the lowest negative price is the least expensive).

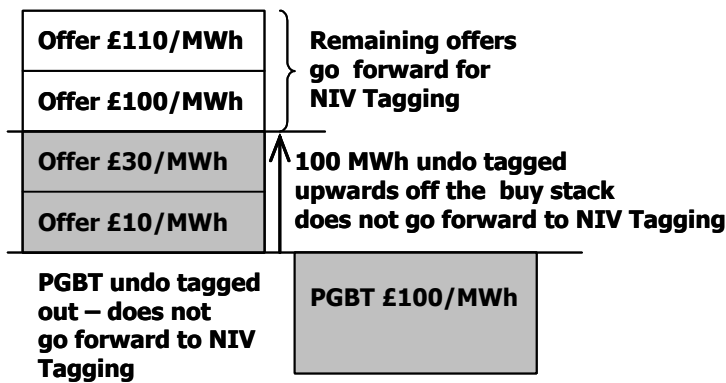


Figure 4: Buy Volume exceeds Sell Volume

For example:

BM Unit B has a PGBT sale taken for energy purposes ahead of Gate Closure. During the Settlement Period a Bid (negatively priced) and Offers are accepted at different prices. At the end of the Settlement Period, and following CADL and De Minimis tagging, the actions are stacked for undo tagging.

The acceptances are stacked in price order and the volume of the buy stack is tagged off the sell stack, least expensive acceptances first.

The balancing actions, or part of, remaining on the offer stack go forward to the NIV calculation, so in this example, illustrated by figure 5, it will be the Bid volume at -£10 / MWh and the untagged portion of the PGBT at £100 / MWh.

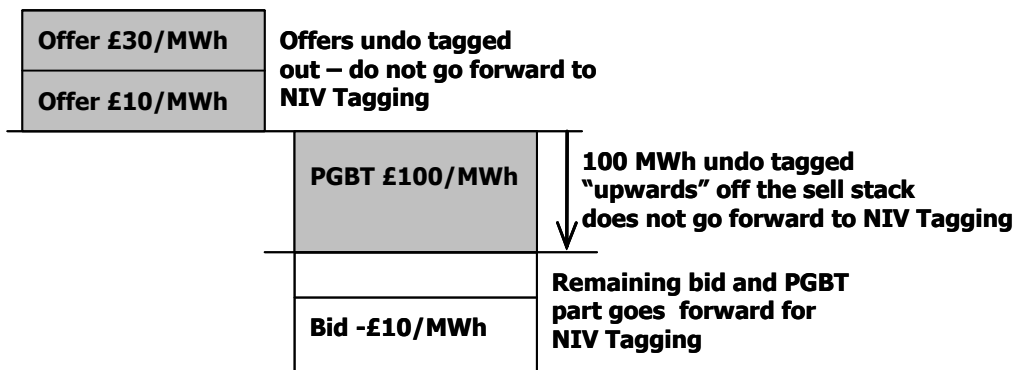


Figure 5: Sell Volume exceeds Buy Volume

1.4 Assessment of how the Proposed Modification will better facilitate the Applicable BSC Objectives

In summary, the majority of the PSMG do not believe that P136 better facilitates Applicable BSC Objectives 3(b) and 3(c) than the current baseline. It should be noted that the majority of the PSMG believe P136 to be neutral to Applicable BSC Objectives 3(a) and 3(d).

Furthermore, the majority of the PSMG do not believe that P137 better facilitates Applicable BSC Objectives 3(b) and 3(c) than the current baseline. It should be noted that the majority of the PSMG believe P137 to be neutral to Applicable BSC Objectives 3(a) and 3(d).

The consultation responses, in respect of the initial and the second consultation on P136 and P137, accord with the views of the PSMG, namely that the majority of respondents do not support either P136 or P137, and do not believe either to better facilitate achievement of the Applicable BSC Objectives.

Section 2 sets out the detailed deliberations of the PSMG in respect of P136 and P137 and the Applicable BSC Objectives. This section provides a 'headline' summary of the issues for and against each of the Applicable BSC Objectives, based on the deliberations of the PSMG and the views expressed in the two consultations.

1.4.1 Applicable BSC Objective 3(b): Efficient, Economic and Co-ordinated Operation of the Transmission System by the Transmission Company

On balance, the majority of the PSMG do not believe that either P136 or P137 better facilitate Objective 3(b) for the reasons set out in the 'Against' below. It should be noted that a minority of the PSMG believe that P136 and P137 do better facilitate this objective, with this minority view supported by the Transmission Company.

FOR:

1. A marginal Energy Imbalance Price sends more appropriate signals to the forwards and spot markets as to the true underlying cost of providing balancing energy and therefore the cost that Parties should face if they are in imbalance. This will have the effect of incentivising Parties to contract ahead to take a more efficient balanced position (forward contracting in sufficient volumes to cover their position, even at peak times), potentially aligning them more closely with the system, which in turn assists the Transmission Company in balancing the system;
2. The risk of exposure to imbalance, with more appropriate Energy Imbalance Prices (marginal) will financially incentivise generators to maintain efficient and reliable plant, and Suppliers to improve demand forecasting, which will improve the quality of the physical position information held by the Transmission Company, and assist them in balancing the system;
3. A marginal Energy Imbalance Price, particularly at times of system stress, will provide price signals that more appropriately value capacity at the margin, thus ensuring the availability of plant to meet demand under all circumstances;
4. Transparency of the marginal balancing action setting the Energy Imbalance Price means that actions are subject to scrutiny from the market and this, in conjunction with an improved view of the cost of the marginal energy balancing action, may improve competitive bidding into the Balancing Mechanism, resulting in a reduction of Bid – Offer prices overall, and in the overall reduction of Energy Imbalance Prices;

AGAINST:

5. A higher (main) Energy Imbalance Price (a postulated outcome of a marginal Energy Imbalance Price) will drive the market excessively and inefficiently long, by collective over contracting;
6. A higher (main) Energy Imbalance Price will incentivise Parties to breach the Grid Code by self insuring / self balancing (i.e. deviating from FPN on other plants in the event of a plant trip in order to meet contracted levels and mitigate exposure to imbalance). Plant may also withhold capacity for self insuring, or to try and avoid trip. Both actions will degrade the ability of the Transmission Company to balance the system;
7. In respect of the postulated incentive to improve Supplier demand forecasts, it could be argued that the quality of demand forecasts is already such that, irrespective of the methodology for calculating Energy Imbalance Prices, they cannot provide any better physical position information to the Transmission Company; and

8. Exposure to (large) imbalance (say plant trip) at the time of a higher Energy Imbalance Price increases the (potentially unmanageable) risk of exposure to imbalance, and may put smaller Parties out of business, creating capacity issues.

1.4.2 Applicable BSC Objective 3(c): Promoting Competition in the Generation and Supply of Electricity and the Sale and Purchase of Electricity

On balance, the majority of the PSMG do not believe that P136 or P137 better facilitate Objective 3(c) for the reasons set out in the 'Against' below. It should be noted that a minority of the PSMG believe that P136 and P137 do better facilitate this objective, with this minority view supported by the Transmission Company.

FOR:

1. A marginal Energy Imbalance Price sends strengthened signals from the Energy Imbalance Price to the forwards and spot markets as to the true underlying cost of electricity balancing the system than the current volume weighted average Energy Imbalance Price, better signalling the cost of electricity balancing, and better promoting efficient market responses to emerging price signals;
2. A volume weighted average Energy Imbalance Price consistently understates the marginal cost of electricity balancing and therefore sends inappropriate and less reflective price signals to the forwards and spot markets;
3. It is not possible to allocate the costs of each individual MWh to the individual Party in imbalance, and therefore each Party contributing to the system imbalance has incurred the marginal cost of electricity balancing the system and, since the Energy Imbalance Price mechanism is about reflecting the costs of electricity balancing (not recovering them), these Parties should incur the marginal cost, as it is more representative than a volume weighted average;
4. A marginal Energy Imbalance Price is, by definition, more cost reflective than an average Energy Imbalance Price, provided the correct energy balancing costs are fed through to the calculation. The enhancements to BSAD for P136 and P137, and tagging (P137) ensure that this proviso is met;
5. A marginal Energy Imbalance Price better targets costs and provides appropriate incentives over the long run, as Parties with unreliable generation or supply arrangements are likely to pay more in imbalance charges than those able to better manage their positions. This is an improvement over the current average arrangements, where underperformers are subsidised by the remainder of the market;
6. Accurate price signals sent by the main Energy Imbalance Price to the forwards and spot markets should encourage an efficient market response by incentivising Parties to forward contract to ensure that their position is covered under all circumstances. Over the longer term, appropriate price signals encourage efficient investment in generation capacity. Currently the volume weighted average Energy Imbalance Price methodology understates the underlying costs of energy balancing and as a consequence there is a weaker than expected link between forward prices and Energy Imbalance Prices, which is causing capacity to be undervalued by the market;
7. A volume weighted average pricing methodology understates the cost of electricity balancing which incentivises Parties to take the risk of being in imbalance, rather than to forward contract to ensure the position is covered;
8. A marginal Energy Imbalance Price is unlikely to result in extreme prices and therefore the risk of imbalance exposure is no greater than under the current mechanism, and is therefore a risk that can be factored into Bid – Offer and contract prices; and

9. Improved signals from a marginal Energy Imbalance Price may signal potential times of system stress and thus incentivise all Parties to respond appropriately. This may make this less likely, reducing the overall risk to the market.

AGAINST:

10. As a consequence of imperfect information and the inability to accurately differentiate between system and electricity balancing, a volume weighted average price methodology is more cost reflective than a marginal price methodology;
11. A marginal Energy Imbalance Price may consistently over or under recover the costs incurred in electricity balancing the system, and so it does not appropriately target the costs of electricity balancing, whereas a volume weighted average price is unlikely to consistently over or under recover the costs and is therefore a more appropriate cost targeting mechanism;
12. Small volumes of extremely priced Bids or Offers could set the marginal Energy Imbalance Price, especially at times of system stress, which are not cost reflective of market conditions, nor reflective of the Transmission Company costs of electricity balancing the system;
13. The current methodology sends adequate price signals to the forwards and spot markets, encouraging an appropriate response from Parties in respect of forward contracting to balance;
14. Volatile, inappropriately high Energy Imbalance Prices will incentivise excessive and inefficient length in the market, which in turn causes volatility in the forwards and spot markets. Such length may also stifle liquidity in the forwards and spot markets, as will withholding of capacity for the purposes of self balancing / self insurance;
15. In respect of the postulated incentive to improve Supplier demand forecasts, there is a point where, since demand forecasts will always contain errors, it becomes questionable whether the improved demand forecast actually provides any additional benefit when the costs of making those improvements are considered. Furthermore, it could be argued that the quality of demand forecasts is already such that, irrespective of the methodology for calculating Energy Imbalance Prices, they cannot provide any better physical position information to the Transmission Company;
16. Increased risk of exposure to inappropriately high Energy Imbalance Prices (if a marginal Energy Imbalance Price is not considered to be cost reflective, then it could be considered to be setting an inappropriate Energy Imbalance Price) is considered to be unmanageable, as events such as plant trip or demand forecast error occur within the Settlement Period and therefore cannot be insured against;
17. Thus a marginal Energy Imbalance Price will result in inappropriately higher Energy Imbalance Prices which increases the risk of exposure to imbalance, and consequently increases the cost of managing that risk. This could also present a barrier to entry for smaller Parties in terms of the disproportionate costs of risk management;
18. The risk of exposure to imbalance should be factored into Bid – Offer prices and contract prices, however, a large exposure to the marginal Energy Imbalance Price at a time of system stress could lead to catastrophic imbalance exposure, for which there is no way of adequately factoring the risk into Bid – Offer prices and contract prices; and
19. Furthermore, a large exposure to an extreme marginal Energy Imbalance Price could lead to a Party incurring imbalance charges far in excess of its Credit Cover, creating consequential risk for all other BSC Parties.

1.4.3 Applicable BSC Objective 3(d): Improving Efficiency in the administration of the balancing and settlement arrangements

In respect of Applicable BSC Objective 3(d), the majority believe that, as neither that P136 nor P137 amend the administration obligations for BSCCo, both P136 and P137 are neutral to this Applicable BSC Objective. However, it should be noted a minority of members of the PSMG believe that the implementation costs of a Modification have an impact on the efficiency of the administration, and, specifically in respect of both P136 and P137, the implementation costs have a detrimental impact on this Applicable BSC Objective.

1.5 Governance and regulatory framework assessment

As noted in section 1.1, both P136 and P137 require amendment to the Transmission Company owned Balancing Services Adjustment Data Methodology Statement to reflect the amendments to BSAD required to give effect to P136 and P137.

It should be noted that the deliberations of the PSMG, and the views of respondents to the P136 and P137 consultations, in respect of the BSAD amendments for P136 and P137, informed the Transmission Company when compiling its consultation on the requisite BSAD amendments. Therefore, whilst recognising that BSAD does not fall under the vires of the Balancing and Settlement Code (the Code), it is appropriate that this document reflect the PSMG deliberations, and the consultation responses in respect of BSAD amendments for P136 and P137.

The Transmission Company are progressing the amendments in parallel with the Modification Procedure for P136 and P137, such that the potential amendments to BSAD are known prior to the legal drafting for P136 and P137 being consulted on at the Report Phase for P136 and P137, and therefore such that there is a consistent solution proposed for determination by the Authority.

2 RATIONALE FOR MODIFICATION GROUP'S RECOMMENDATIONS TO THE PANEL

2.1 Summary of the Recommendations and Rationale

In summary, the majority of the PSMG do not believe that P136 better facilitates Applicable BSC Objectives 3(b) and 3(c) than the current baseline. It should be noted that the majority of the PSMG believe P136 to be neutral to Applicable BSC Objectives 3(a) and 3(d).

Furthermore, the majority of the PSMG do not believe that P137 better facilitates Applicable BSC Objectives 3(b) and 3(c) than the current baseline. It should be noted that the majority of the PSMG believe P137 to be neutral to Applicable BSC Objectives 3(a) and 3(d).

Section 1.4 sets out the PSMG views in respect of P136 and P137 and the Applicable BSC Objectives. In summary, for the reasons set out in section 1.4, and section 2.2 (more detailed), the majority of the PSMG do not believe that either P136 or P137 better facilitate the Applicable BSC Objectives than the current baseline. Therefore on that basis the PSMG recommend, by majority, that Proposed Modification P136 and Proposed Modification P137 should not be made.

It should be noted that a minority of the PSMG believe that P136 and P137 better facilitate the Applicable BSC Objectives than the current baseline.

2.2 Assessment Issues: PSMG Deliberations and Consultation Responses

The following points were developed by the PSMG as the key assessment issues, by considering certain views of the Authority, as expressed in a number of decision letters regarding previous Modifications, as well as raised by consultation responses and PSMG deliberations. For the majority of issues, an attempt has been made to tie them back to the Applicable BSC Objective that the issue is most closely associated with (noting that some issues are relevant to more than one objective).

The following section details:

1. the PSMG deliberations in respect of each issue (formulated with consideration of the responses made in respect of the first Assessment consultation for P136 and P137);
2. Followed by the views of the respondents in respect of the issue, as provided in respect of the second Assessment consultation on P136 and P137; and
3. The PSMG conclusions in respect of each issue.

Those responses greyed out in the summary tables, indicated that they do not support either P136 or P137 (by responding 'No' in respect of both P136 and P137 better facilitating the Applicable BSC Objectives). This convention is utilised throughout these question summaries.

2.2.1 Objective 3(b) 'The efficient, economic and co-ordinated operation by the Transmission Company of the Transmission System'

2.2.1.1 More efficient incentives to achieve individual balance and overall system balance

A number of the PSMG noted that there is no explicit incentive to balance in the Applicable BSC Objectives, although it was noted that it can be implicitly linked to efficiency, i.e. an assessment as to whether it is more efficient to balance. The PSMG further noted that previous Ofgem decisions on Modifications (for example Approved Modification P78) have indicated that Ofgem's view is that Parties should be strongly incentivised to forward contract to cover their position ahead of Gate Closure.

A number of the PSMG believe that both P136 and P137 provide enhanced signals to Parties which will incentivise Parties to adopt an efficient contracting strategy. An efficient contracting strategy is postulated to be one where the Party adopts a (contract) position reflecting the expected load in the Settlement Period, resulting in a position being taken that maximises the commercial position. This could be considered to be an efficient balance and thus does not necessarily mean balanced. Both P136 and P137 seek to incentivise Parties to cover themselves efficiently against 'tail' events (i.e. system extremes), and thus meet their actual load in the Settlement Period.

Some members of the PSMG believe that both P136 and P137 may have the effect of aligning Parties more closely with the system (potentially improving the efficiency of the system). For example, where the system is short, Parties are incentivised to cover a position by the risk of exposure to a marginal System Buy Price, and where the system is long, there is less incentive to go long(er), as there is the risk of exposure to a marginal System Sell Price. It should be noted that a number of the PSMG do not believe that the effect will be symmetrical, in that Parties may prefer to be long to avoid exposure to a charge whatever the size of that charge, and / or that there may be an increase of volatility / size of the System Buy Price (when it is the main price) that will be greater than the effect on the System Sell Price (when that is the main price), such that Parties are incentivised to go long to avoid exposure to the SBP. Therefore some members of the PSMG believe that asymmetry in this aspect of the market will persist.

A number of the PSMG stated that they believe a potential effect of both P136 and P137 at times of system stress would be to incentivise potentially excessive length in the market, i.e. Parties would go (very) long to protect themselves from the risk of exposure to the System Buy Price, thus creating an inefficient level of reserve, by collective over contracting. These members of the PSMG believe that it could be considered to be more efficient for the Transmission Company to obtain the reserve for Parties, i.e. one body buying the reserve. Thus a number of the PSMG believe there to be two extremes; Parties covering all of their demand at all times, individually creating the requisite level of reserve, or the other extreme of the Transmission Company carrying all of the reserve to cover Parties shortfalls.

Thus some of the PSMG believe that the incentives should be on each Party to 'insure' themselves by forward contracting in sufficient volumes to cover peak periods, with the Transmission Company undertaking the residual balancing in real time, i.e. striking an efficient balance between the two extremes. Thus, to achieve this incentive, pricing signals (from the Energy Imbalance Prices into the forwards markets) should be strong enough to indicate what the market is 'doing', i.e. entering a period of stress or surplus.

As noted above, a number of the PSMG believe that both P136 and P137 will have the incentive of encouraging (potentially excessive) length at Party level, in order to protect from the risk of exposure to the marginal System Buy Price, and that therefore P136 and P137 do not achieve the objective of incentivising individual balance.

However, a number of the PSMG noted that the marginal Energy Imbalance Price applies to the main price; the System Buy Price where the system is short, and the System Sell Price where the system is long. Therefore exposure to a marginal System Sell Price will occur where the system is long (potentially as a consequence of individual Parties carrying excessive length) which will disincentivise Parties from carrying inefficient length.

Thus these members of the PSMG postulate that both P136 and P137 will have the effect of incentivising more efficient responses to emerging price signals than the current baseline, as a number of the PSMG believe the price signals emerging from the current baseline, and therefore the incentives to cover a position, to be inadequate, as evinced by the negative surplus predicted for the coming winter (2003 / 2004).

Conversely, a number of the PSMG believe that the current pricing mechanism provides adequate price signals which adequately incentivise Parties to cover their own positions, and therefore do not believe that stronger price signals are necessary.

2.2.1.2 The improved accuracy of (physical position) information given to the Transmission Company (System Operator) in advance of Gate Closure to ensure that it can make informed decisions about balancing the system and ensure security of supply;

A number of the PSMG consider that the heightened price signals resulting from a marginal Energy Imbalance Price, considered in conjunction with the risk of exposure to a marginal Energy Imbalance Price (considered by some to reflect the real cost of imbalance) could encourage and reward more flexible and more reliable plant, and improve demand forecasting, which may have the effect of improving the physical position information held by the Transmission Company in advance of Gate Closure, and of improving the security of supply.

Furthermore, in responding to the heightened forward market price signals that may emerge as a consequence of a marginal Energy Imbalance Price, Parties may indicate earlier that they are available / going to come on to the system, thus improving accuracy of physical position information further ahead of the Settlement Period than is currently the case.

Conversely, a number of the PSMG believe that both P136 and P137, with the risk of exposure to a marginal main Energy Imbalance Price may, at times of system stress where the system is short, and there is (potentially) increased likelihood of a high(er) System Buy Price, incentivise Parties to withhold generation in an attempt to prevent plant trip, and potentially, under extreme circumstances, breach the Grid Code by self balancing rather than risk exposure to the marginal System Buy Price in the event of a plant trip, thus degrading the usefulness of the physical position information provided ahead of time, and adversely affecting the security of supply (which indirectly falls under Applicable BSC Objective 3(b)).

However, the PSMG agreed that it must be assumed, for the purposes of considering P136 and P137, that Parties will operate within the rules of the baseline.

It should be noted that a number of the PSMG do not believe accuracy of physical information provided to the Transmission Company to be impacted by either P136 or P137 and thus do not believe this issue to be relevant to the assessment of P136 and P137.

Consultation Question:	What effect, in your opinion, will P136 / P137 have on Applicable BSC Objective 3(b), particularly with respect to incentives to balance and any consequential effect on security of supply?
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Question 11 (P136) and 9 (P137) (Objective 3(b)) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	N/C	D	D	D	D	D	I	D	D	-	D	-	D	D	D	I	D	I	-	I	D
P137	N/C	D	D	D	D	D	I	D	D	-	D	-	D	D	D	I	D	I	-	I	D

Where 'D' indicates a detrimental effect, 'I' is an improved effect and N/C is no change.

The majority of responses believe that P136 and P137 will have a detrimental affect in respect of P136 and P137 better achieving Applicable BSC Objective 3(b).

Of those responses that believe both P136 and P137 to have a positive effect in respect of Applicable BSC Objective 3(b), the key rationale appears to be that both P136 and P137 will provide more appropriate signals of the cost of being in imbalance, which in turn will incentivise more efficient forward contracting in order to mitigate the risk of not being balanced at Gate Closure. One of the responses asserts that Parties achieving an efficient balance will assist the Transmission Company in achieving overall system balance. Furthermore, two of the responses indicate that these incentives, at times of system shortage, will ensure that the market values capacity appropriately and ensures that generation is available to meet demand under all scenarios.

One of the responses that believe both P136 and P137 to have a positive effect in respect of Applicable BSC Objective 3(b), caveats this positive opinion by asserting that improved price signals and incentives will only occur where transparency in the actions of the Transmission Company and where all BSAD actions are accounted for. The response goes on to state that without these further enhancements, a marginal Energy Imbalance Price could introduce more unmanageable risk.

Of those responses that believe that both P136 and P137 will have a detrimental effect in respect of Applicable BSC Objective 3(b), the key rationale seems to be the belief that the System Buy Price will increase, potentially to high levels at times of system stress, which could have the effect of incentivising Generators to withhold capacity in case of plant trip (self insure) or where reliability is poor, and incentivise (breaches of the Grid Code by) self balancing to mitigate exposure to the high Imbalance Price, thus decreasing security of supply and detrimentally impacting on the Transmission

Company's ability to balance the system. One of these responses asserts that both P136 and P137 should address post Gate Closure plant loss in order to mitigate this effect. One response raises concerns that high Energy Imbalance Prices could put smaller Parties out of business, and this has short term implications on security of supply.

Furthermore, a number of responses indicate that it is believed that Parties will inefficiently over contract to protect from exposure to imbalance, rather than attempt to achieve an efficient balance. One response that expresses this opinion believes that both P136 and P137 will push Parties long, thus ensuring that capacity is available, but raises concerns as to whether this will be done efficiently.

One response indicates that no change is expected in respect of this objective and the response asserts that this is due to the marginal Energy Imbalance Price applying to both sides, according to system length. Thus Parties long when the system is long will receive less thus reducing the incentive to go long, but on the other hand the System Buy Price may increase, thus incentivising length. Thus the overall incentives will not alter much.

PSMG Additional Points and Conclusions in respect of Applicable BSC Objective 3(b)

The PSMG noted that the arguments set out by the consultation responses in respect of both P136 and P137 better facilitating Applicable BSC Objective 3(b) were reasonably reflective of the views of the group.

Additional points raised by the PSMG indicate that some members of the PSMG believe, in response to the assumption that Energy Imbalance Prices will be high resulting in plant being withheld or incentivising breaches of the Grid Code in order to self balance, that there is no evidence that plant will be withheld, nor is there evidence to suggest that the risk of exposure to imbalance will not be factored into Bid – Offer pricing strategies.

Some members of the PSMG also noted that, should the assumptions made regarding (inefficient) over contracting by Parties be correct (and some of the PSMG express doubt in respect of the veracity of this assumption) this may have the effect of better facilitating Applicable BSC Objective 3(b), as it would reduce the costs of the Transmission Company balancing the system by creating a surplus of reserve, at the expense of the efficiency of the market. Conversely some members of the PSMG believe that the costs of reserve for the Transmission Company could increase as a consequence of the decrease in availability should Parties withhold capacity for self balancing / self insurance.

On balance the majority of the PSMG do not believe, for the reasons set out above, that P136 or P137 better facilitates Applicable BSC Objective 3(b). It should be noted that a minority of the PSMG were undecided or neutral as to whether either P136 or P137 better facilitate Applicable BSC Objective 3(b), and another minority do believe, for the reasons set out above, that both P136 and P137 better facilitate Applicable BSC Objective 3(b).

2.2.1.3 The potential effect of P136 / P137 on Balancing Mechanism participation / behaviour:

A number of the PSMG raised concerns that the risk of exposure to a marginal Energy Imbalance Price may have the effect of increasing the Bid – Offer Prices being 'bid' into the Balancing Mechanism in order to adjust the Bid – Offer prices to reflect the (perceived) increase in risk in the exposure to imbalance charges. This in turn may have the circular effect of increasing the marginal Energy Imbalance Price, which in turn raises Bid – Offer prices submitted into the Balancing Mechanism.

Conversely some members of the PSMG believe that if the marginal Energy Imbalance Price is transparent to all Parties (along with the BM Unit that set that price), the effect may be to actually reduce the overall Energy Imbalance Price over time, as Parties can see the marginal price and 'bid' into the Balancing Mechanism below that in order to compete for Bid – Offer Acceptances, again

potentially creating a circular effect, where by the Bid – Offer prices submitted to the Balancing Mechanism are a more accurate reflection of the costs of increasing (Offer prices) or reducing (Bid prices) generation for each plant, allowing the Transmission Company to balance the system more efficiently (which results in more cost reflective Energy Imbalance Prices).

However, the PSMG noted that historically Bid – Offer prices are relatively static and do not appear to change in response to changes in Energy Imbalance Prices and thus it could be assumed that Bid – Offer pricing strategies are adopted for reasons other than Energy Imbalance Price fluctuations.

Consultation Question:	What effect, in your opinion, will P136 / P137 have on Parties behaviour in the Balancing Mechanism, specifically with reference to Bid – Offer pricing strategies?
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Question 12 (P136) and 10 (P137) (BM Behaviour) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	N/C	D	D	-	D	D	N/C	-	D	-	D	-	D	N/C	D	N/A	D	I	-	I	D
P137	N/C	D	D	-	D	D	N/C	-	D	-	D	-	D	N/C	D	N/A	D	I	-	I	D

Where 'D' indicates a detrimental effect, 'I' is an improved effect, N/C is no change and N/A is not applicable.

The majority of responses indicate that it is believed that both P136 and P137 will have a detrimental effect on behaviour in the Balancing Mechanism. A number of responses express the view that this is a consequence of higher Bid – Offer Prices resulting from the increased risk of exposure to imbalance (postulated higher Energy Imbalance Prices with a marginal methodology). The increase in costs from exposure to imbalance will be reflected in the Bid – Offer pricing strategies of Parties operating in the Balancing Mechanism, thus increasing the Bid – Offer Prices submitted, one other responses indicates that, especially at times of system stress, large opportunistic Bid – Offer Prices can not be ruled out. A number of responses expressed concerns that Party behaviour may include attempts to manipulate the Energy Imbalance Price via the submission of small volume highly priced Offers.

One response which believes that both P136 and P137 would have a detrimental effect on behaviour in the Balancing Mechanism indicates that in theory both P136 and P137 should encourage demand with price sensitive load to participate in the Balancing Mechanism, however, in practice because of the volatility of the Energy Imbalance Prices and the difficulty in predicting, the (beneficial) effect will be negligible.

A number of responses express the belief that neither P136 nor P137 will have an effect on behaviour in the Balancing Mechanism. One response notes that generators may increase their Offer prices to reduce / avoid exposure to non delivery, but in doing so, may be reducing their chances of being accepted in the Balancing Mechanism. Therefore the response asserts that there will be a trade off between the chances of receiving income from the Balancing Mechanism and the risk of exposure to imbalance on plant failure, so in effect there is unlikely to be a change. Another response indicates that, in theory marginal Energy Imbalance Pricing may change behaviour, but since the pay as bid regime is retained, in practice there is likely to be minimal effect.

Of those responses that believe both P136 and P137 to have a beneficial effect in respect of changing behaviour in the Balancing Mechanism, the key rationale seems to be the increased scrutiny on Bid – Offer pricing that will arise from a marginal Energy Imbalance Price, such that a Party will (further) ensure that a justifiable price is submitted. Furthermore, those Parties that use the Bid – Offer Price to indicate service unavailability may be more likely to use other dynamic parameters (such as notice to

deliver) to indicate non availability of the service. One response expresses the view that a marginal Energy Imbalance Price is likely to expose Parties to the full cost of reliability and proper provision of supply. The response notes that some Parties may feel constrained by the additional risk, but others may be able to offer greater flexibility and be rewarded for doing so. However, this response is caveated by the assertion that in order for flexible Parties to respond, a quality price signal is required.

PSMG Additional Points and Conclusions in respect of Balancing Mechanism Behaviour

The PSMG noted that the arguments set out by the consultation responses in respect of the impact of both P136 and P137 on the Balancing Mechanism behaviour of Parties under a marginal Energy Imbalance Price regime were reasonably reflective of the views of the group.

Additionally in respect of the arguments raised in the consultation responses, a number of the PSMG expressed the view that the assumption in the consultation responses that large / unreflective opportunistic Bid – Offer prices would occur under such a marginal pricing regime was incorrect, as such a pricing strategy would not be likely to result in income from the Balancing Mechanism, as such Bid – Offers were unlikely to be accepted.

Some members of the PSMG believe that continuation of the ‘pay as bid’ aspect of the Balancing Mechanism will not change Balancing Mechanism behaviour.

Consultation Question:	<p>For the Transmission Company Only:</p> <p>What impact do you believe P136 / P137 will have on the ability of the Transmission Company to operate the Transmission System, particularly in relation to Applicable BSC Objective 3(a) and (b)?</p>
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Transmission Company Response (Analysis and Consultation Response):

The Transmission Company believes that the Proposed Modification will better facilitate the Transmission Company in its ability to discharge its obligations efficiently under the Transmission Licence.

The Transmission Company asserts that calculation of the 'main' imbalance price, using a marginal methodology, will provide more appropriate price signals to incentivise Market Participants to contract forward in order to mitigate the risk of not being able to balance at Gate Closure (even against low probability events). Improving incentives on Market Participants to be able to achieve an efficient position in respect of 'balance' will assist the Transmission Company as System Operator in achieving overall system balance. The Transmission Company further believes that in times of energy shortage, such incentives will allow the market to value capacity appropriately, and ensure that there is always sufficient generation available to meet demand in all scenarios, promoting security of supply.

2.2.2 3(c) – ‘Promoting effective competition in the generation and supply of electricity, and (so far as is consistent therewith) promoting such competition in the sale and purchase of electricity’:

2.2.2.1 The extent to which Energy Imbalance Prices are more reflective of the costs the Transmission Company (System Operator) has incurred in taking energy balancing actions and thus the improvement of the targeting of energy imbalance costs back to those participants that cause them;

Cost Reflectivity of the Energy Imbalance Price

The PSMG noted that in a market with perfect information and well-defined products, the average price would tend towards the marginal price. However, in the electricity market, the definition of products are muddled by the inability to differentiate between system and energy products and this, coupled with less than perfect information, means that there are a raft of prices for different products, and thus the pricing methodology applied has to differentiate between the products and associated prices to determine the most appropriate Energy Imbalance Price. On this basis, a marginal Energy Imbalance Price is considered by some of the PSMG to be the best option, on the grounds of better cost reflectivity than an average methodology, as a marginal pricing methodology better signals the costs of balancing and flexibility.

A number of the PSMG believe that a volume weighted average methodology consistently understates the marginal cost and value of energy balancing the system, particularly at times of system shortage, and is therefore not reflective of the costs of energy balancing the system, and furthermore sends price signals that do not reflect the state of the system.

Thus these members of the PSMG believe that implementation of a marginal Energy Imbalance Price will have the effect of better reflecting the underlying opportunity costs of balancing the system, send more accurate price signals regarding the state of the system i.e. the price signal from the last MWh of being in imbalance, thus promoting efficient market responses to emerging shortages or surpluses, and promoting, over the longer term, efficient investment in generation capacity.

Conversely, a number of the PSMG believe that, as a consequence of there being imperfect information and the inability to differentiate between system and energy balancing products, that an average methodology is a more cost reflective methodology than a marginal price methodology.

Targeting the Costs of Energy Balancing the System

Given the nature of the electricity market, it is impossible to apportion the cost of each individual MWh taken as a balancing action back to the individual Party that incurred that cost. Therefore a number of the PSMG have argued that each Party in imbalance (in the same direction as the system) has incurred the marginal cost of energy balancing the system. Therefore by applying a marginal price, a more accurate reflection of the costs incurred by the Transmission Company emerges, which is targeted back at those in imbalance.

However, some of the PSMG believe that a marginal Energy Imbalance Price does not target the costs incurred in the energy balancing of the system, as use of a marginal Energy Imbalance Price may consistently over or under recover the costs incurred in balancing the system, whereas a volume weighted average Energy Imbalance Price is less likely to lead to consistent over or under recovery.

A number of the PSMG indicated that they believe that the Energy Imbalance Price mechanism is not about recovering the costs of energy balancing the system, as this is achieved by Balancing Services Use of System (BSUoS) charging (undertaken by the Transmission Company), and therefore the main objective of the Energy Imbalance Price mechanism should be seen as cost reflectivity, not cost recovery. If the Energy Imbalance Prices are more cost reflective, then they could be considered to be better targeting the costs of addressing the energy imbalance at those in imbalance.

Cost Reflectivity Considerations in respect of the Proposed Application of Option Fees

In terms of P137 and the treatment of option fees (and P136, if the same treatment is adopted), some PSMG members have expressed concerns over the cost reflectivity of using an expected utilisation cost in the Energy Imbalance Price derivation.

The concern arises as a result of the expected utilisation cost being an estimate, performed ahead of time, as to the usage of the standing reserve. Where the standing reserve contract is used more than the usage envisaged when deriving the expected utilisation cost, then there is the potential for the option fees associated with the standing reserve to be over reflected in the Energy Imbalance Prices derived as the expected utilisation cost being applied to the Bid – Offer Acceptances made under that contract would have been lower if the expected usage was higher.

Conversely where the standing reserve is not used as much as the usage envisaged when deriving the expected utilisation cost, then there is the potential for the option fees associated with the standing reserve to be under represented in the Energy Imbalance Prices derived as the expected utilisation cost being applied to the Bid – Offer Acceptances made under that contract would have been higher if the expected usage was lower.

However, other members of the PSMG believe that this is not a relevant consideration, as the expected utilisation costs are derived from the Transmission Company's expected usage of the standing reserve contract. The Transmission Company would have made an assessment of usage and therefore the expected cost when assessing the tenders in respect of the contracts, and therefore the expected utilisation cost is meant to represent the perceived opportunity cost of the service at the point the service is retained. Therefore under or over representation of the costs in the Energy Imbalance Price is not relevant, and is more than compensated for by the improved cost reflectivity of the effective cost of the option fees in the Energy Imbalance Price derivation.

Consultation Question:	What effect, in your opinion, will P136 / P137 have on the cost reflectivity of the (main) Energy Imbalance Price, and in turn what impact do you believe this will have on the targeting of the costs incurred in energy balancing the system at those in imbalance?
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Question 13 (P136) and 11 (P137) (EIP Cost Reflectivity) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	I	D	D	D	D	D	D	D	D	-	D	-	D	D	D	I	D	I	-	I	D
P137	I	D	D	D	D	D	D	D	D	-	D	-	D	D	D	I	D	I	-	I	D

Where 'D' indicates a detrimental effect, 'I' is an improved effect, N/C is no change and N/A is not applicable.

The majority of responses indicate that it is believed that both P136 and P137 will have a detrimental effect on the cost reflectivity, and therefore cost targeting of the (main) Energy Imbalance Price. A number of responses indicate that a marginal Energy Imbalance Price will potentially over recover the costs that the Transmission Company has incurred in (electricity) balancing the system, thus decreasing efficiency of the market. One response goes on to assert that Parties exposed to the main Energy Imbalance Price are charged the marginal price, whereas in reality the cost of electricity balancing the system is lower than the marginal cost and so neither P136 nor P137 reflects the costs of electricity balancing.

Of the other responses that express the view that both P136 and P137 will have a detrimental effect on the cost reflectivity, and therefore cost targeting of the (main) Energy Imbalance Price, one response indicates

that both P136 and P137 will reduce cost reflectivity because at times of system stress, Energy Imbalance Prices will tend towards the maximum permitted level, increasing the price spread and risk on Parties. Suppliers will go excessively long, with consequential cost implications for customers.

Another response asserts that the Transmission Company has to balance (electricity and system) the system in response to a range of events / stresses across a Settlement Period, making a definitive separation of costs impossible to allocate accurately. Therefore the respondent believes that further work on the current mechanism to understand the dependencies and cost of Transmission Company actions would be more beneficial than a move to marginal pricing.

Another response asserts that very small volumes of extremely priced Bids / Offers could set the Energy Imbalance Price which are in no way reflective of the market conditions or the Transmission Company costs of (electricity) balancing the system. One response expresses the view that a marginal price is, by definition, more cost reflective than an average one, provided that the correct energy imbalance costs are being fed through. The complexity of some of the BSAD judgements raises concerns as to whether that proviso is being met. Therefore the response indicates that it would be better to focus on the flaws in the current mechanism.

Another response indicates that the real issue is whether marginal Energy Imbalance Prices are providing a strong enough incentive to contract in such a way to ensure an efficient level of security is provided, therefore total cost reflectivity is not what is trying to be achieved under these circumstances. One response expresses the view that since it is not possible to apportion the cost of each individual MWh taken to the individual Party that incurred that cost, as a consequence of imperfect information and the inability to differentiate between system and electricity balancing, an average Energy Imbalance Price is more cost reflective.

Of those responses that express the belief that a marginal Energy Imbalance Price is more cost reflective and thus better at targeting the costs of electricity balancing, a number express the view that a marginal Energy Imbalance Price is more cost reflective as it better reflects the price of the last untagged MWh required to electricity balance, and therefore out of balance Parties should be targeted with marginal charges as they more appropriately reflect the costs of electricity balancing the system. One response indicates that, since balancing actions are taken at a range of prices for different electricity balancing products, a volume weighted average methodology can understate the true cost of providing balancing energy, and thus a marginal pricing methodology is more cost reflective.

One response that expresses the view that a marginal Energy Imbalance Price is more cost reflective and thus better at targeting the costs of electricity balancing, asserts that in long run, Parties with unreliable generation or supply arrangements are likely to pay more than those Parties able to manage their positions, and that this is an improvement over an average methodology where underperforming Parties are being subsidised by the rest of the market.

One response asserts that prices in any market should reflect the marginal costs of production (or the marginal value of consumption in times of scarcity). In theory, even a weighted average cash-out price should reflect the marginal cost of balancing as market participants alter their offer/bid prices to the expected level of marginal costs. In practice, however, offer and bid prices persistently understate the marginal costs of balancing. This effect is particularly pronounced at times of generation shortage. Moving to a marginal definition of the cash-out price – with appropriate tagging rules – ensures that cash-out prices more closely reflect the marginal cost of energy balancing.

PSMG Additional Points and Conclusions in respect of cost reflectivity (and cost targeting) of a marginal Energy Imbalance Price

The PSMG noted that the arguments set out by the consultation responses in respect of the impact of P136 and P137 on the cost reflectivity, and therefore the cost targeting of a marginal Energy Imbalance Price were reasonably reflective of the views of the group.

The PSMG had no additional points to note in respect of this issue, and no new arguments were raised in respect of the issue.

The majority of the PSMG consider a marginal Energy Imbalance Price to be less reflective of the costs of electricity balancing the system than a volume weighted average, and therefore believe that a marginal Energy Imbalance Price does not better target the costs of electricity balancing at those in imbalance.

However, it should be noted that a minority of the PSMG consider a marginal Energy Imbalance Price to be more reflective of the costs of electricity balancing the system than a volume weighted average, and therefore believe that a marginal Energy Imbalance Price does better target the costs of electricity balancing at those in imbalance.

2.2.2.2 The formation of Energy Imbalance Prices should not distort, but inform the forwards / spot markets in electricity;

Both Proposers of P136 and P137 cite improved price signals as a key benefit from implementation of a marginal Energy Imbalance Price methodology, as explored in earlier sections.

As previously stated, a number of the PSMG believe that implementation of a marginal Energy Imbalance Price will have the effect of better reflecting the underlying opportunity costs of balancing the system, send more accurate price signals regarding the state of the system i.e. the price signal from the last MWh of being in imbalance, thus promoting efficient market responses to emerging shortages or surpluses, and promoting, over the longer term, efficient investment in generation capacity.

An example of the perceived failure of the current average methodology to inform the forwards markets has been quoted in the Modification Proposal documentation for P137, where the Proposer states his belief that the short-term and forward energy markets have largely failed to respond effectively at times when the system has been under particular stress.

P137 cites an example of this as 10 December 2002 when several events meant that the system was very short of energy and associated reserves. Despite this, prices in short-term markets on 10 December failed to respond, and short-term prices on 10 December were lower than on the day before and the day after, where the supply-demand balance was significantly less tight.

Furthermore, the perceived failure of short-term prices to respond to market shortages raises longer-term concerns about the ability of the forward markets to respond effectively to emerging shortages and consequent risks to security of supply. This concern appears to have been borne out by recent experience in the forward market for next winter, where despite repeated warnings from the Transmission Company regarding the likely lack of sufficient operating margin, there has been little movement in forward prices or increases in projected generation availability to address the shortfall.

However, as previously stated, there are some members of the PSMG that believe that the current average pricing methodology sends adequate price signals into the forwards markets.

Consultation Question:	In your opinion, will P136 / P137 have an impact on the prices emerging from the forwards and spot markets, if so why? If not, why not?
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Question 14 (P136) and 12 (P137) (Impact on forwards markets) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	YI	YD	YD	N/C	YD	Y-	YI	YD	YD	-	YD	-	N/C	Y-	YD	YI	YD	YI	YD	YI	YD
P137	YI	YD	YD	N/C	YD	Y-	YI	YD	YD	-	YD	-	N/C	Y-	YD	YI	YD	YI	YD	YI	YD

Where 'Y' indicates an effect, 'YI' is an improved effect, YD is a detrimental effect, and N/C is no change.

The majority of responses indicate that it is believed that both P136 and P137 will have a detrimental effect on the forwards and spot markets. Key rationale provided is that high Energy Imbalance Prices are likely to drive Parties long causing volatility in the forwards and spot markets prices, furthermore, the risk of exposure to imbalance encouraging Parties to self insure (and potentially self balance) will remove volume from the forwards and spot markets, reducing liquidity. One response indicates that generators will need to achieve higher prices to cover the increased risk of exposure to imbalance (especially plant trip) and if they cannot cover the risk, the generators will withhold the volume, potentially inflating prices in the forwards and spot markets. Another response indicates that forwards curves have already risen substantially without marginal Energy Imbalance Pricing.

A number of responses express the view that there is a weaker link than could be expected between the Energy Imbalance Prices and the forwards and spot markets and therefore the impact of an amendment to the Energy Imbalance Prices is limited. One response indicates that in theory there should be a change to the forwards and spot markets from either of P136 and P137 as a consequence of increased volatility in the Energy Imbalance Prices, but that prior to P78 (where Energy Imbalance Prices were volatile) the forwards and spot market prices were very low, so it may not necessary follow.

Those responses that indicate that it is believed that both P136 and P137 will have a beneficial effect on the forwards and spot markets, provide key rationale asserting that a marginal Energy Imbalance Price provides a better reflection of the underlying cost of energy balancing, sending a more appropriate price signal to the forwards markets. More appropriate price signals provided by Energy Imbalance Prices will incentivise Parties to trade in the forwards markets to an efficient position.

One response further asserts that the prices emerging from these markets will reflect the supply – demand balance, and in times of energy shortage this is likely to mean that prices will reflect the underlying costs of providing energy at the margin. Currently, imbalance prices understate the cost of buying balancing energy, creating the scenario where it is potentially financially more efficient for participants to take the risk of being in imbalance for low probability events (e.g. extremities of demand forecasts) rather than contract ahead in the forward markets to ensure that they are able to cover their position. Thus prices in the forward markets are failing to sustain sufficient generating capacity to ensure that the market is able to balance in all scenarios.

PSMG Additional Points and Conclusions in respect of impact on the forwards and spot markets from a marginal Energy Imbalance Price

The PSMG noted that the arguments set out by the consultation responses in respect of the impact of P136 and P137 on the forwards and spot markets from implementation of a marginal Energy Imbalance Price were reasonably reflective of the views of the group.

Some members of the PSMG noted the issue raised by a number of consultation responses in respect of the link between the Energy Imbalance Prices and the forwards markets being weaker than expected, and expressed the view that a marginal Energy Imbalance Price would have the effect of addressing this issue, strengthening the link. These members of the PSMG believe that the weak(er) link is a consequence of an average Energy Imbalance Price calculation. In the case of P137, the Modification Proposal is explicit that this is one of the issues P137 is seeking to address.

Some members of the PSMG expressed the view that a marginal Energy Imbalance Price may improve the trade off between improved price signals and appropriate additional risk. However, some of the PSMG believes that the increase in risk outweighs any improvement in the signal.

In conclusion, the majority of the PSMG believe that P136 and P137 will have an impact on the forwards and spot markets. Of these members of the PSMG, some believe the effect would be beneficial, and some believe that the effect will be detrimental, but the PSMG are fairly evenly split in this respect. Some of the PSMG believe that the impact from both P136 and P137 on the forwards and spot markets will be beneficial, but that the overall effect will be negligible / insignificant.

2.2.2.3 The impact on the promptness of Energy Imbalance Price reporting and its effect on market transparency.

Covered by Section 2.3 and not explored further here.

2.2.2.4 An assessment of the effect of P136 / P137 on liquidity in the market;

Some of the PSMG believe that both P136 and P137 may improve liquidity in the market as a consequence of Parties trading more in order to achieve (efficiently) balanced positions. The PSMG do not believe this to be a key objective of P136 or P137, and therefore not relevant for further consideration, although it is considered that neither P136 nor P137 is likely to have a detrimental impact on liquidity in the market.

2.2.2.5 An assessment of the potential for market manipulation resulting from the implementation of P136 / P137, and consequentially, an assessment of any distortion or reduction in competition resulting from the ability to manipulate the marginal price;

The PSMG noted that many of the concerns regarding the application of a marginal price are in relation to paying the marginal price for Bid – Offer Acceptances. Under P137 / P136 Bid – Offer Acceptances will continue to be paid 'as bid', whereas the main Energy Imbalance Price is a charge levied on imbalances.

Furthermore, the following features of the trading arrangements make manipulation difficult to impossible:

1. The Balancing Mechanism is a competitive market, where uncompetitive Bid – Offer Data will mean that acceptances are not taken on the relevant units. In order to continue to be competitive Bid – Offer data will need to be set at appropriate levels; and
2. The level of NIV Tagging will determine which balancing action sets the marginal price, and therefore a BSC Party will have little idea of the volume of the NIV, and the price increments in real time, and therefore will not be able to submit Bid – Offer data that will result in an acceptance that ends up in the 'right' place in the NIV stack to manipulate the marginal Energy Imbalance Price.

Therefore the majority of the PSMG believe this to be a non issue, although it should be noted that there are some members of the PSMG that still have concerns over the gameability of a marginal Energy Imbalance Price.

2.2.2.6 The level of any change in incremental costs incurred by BSC Parties and passed back to consumers (to be determined by consultation);

The PSMG have not discussed this issue, as they believe themselves to be insufficiently informed to make such an assessment (as recognised when setting the terms of reference for the assessment of P136 and P137), and therefore it is more appropriate as a consultation question.

Consultation Question:	What effect, in your opinion, will P136 / P137 have on the incremental costs incurred by certain types of Party, and what consequential effect will this have on the costs passed back to consumers?
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Question 15 (P136) and 13 (P137) (Incremental Costs) Response Summary:

The majority of responses believe that P136 and P137 will have the effect of increasing incremental costs to Parties, and therefore these costs will be passed back to consumers. The main rationale for this belief is that a marginal Energy Imbalance Price will mean higher Energy Imbalance Prices, and consequential increased exposure to risk in terms of exposure to imbalance. A number of responses indicate that incremental costs may actually decrease, as Parties respond more efficiently to more appropriate price signals from a more appropriate Energy Imbalance Price. Points raised in the responses are provided below:

- The following costs will increase; transaction costs, credit cover, and consolidation costs for small renewable and CHP generators. All of these costs would be passed on to customers. These costs may also provide a barrier to entry for new entrant generation.
- Increase the risk on all Parties, Suppliers will attempt to buy longer at peak, single plant generators will run a material risk of insolvency resulting from plant trip, portfolio generators will breach the Grid Code by self balancing and costs for consumers will increase, particularly those with volatile demand.
- Single site generators can insure via an MVRN with a portfolio generator (at a price), or can negotiate non firm contracts with the Transmission Company outside of the Balancing Mechanism.
- Management of additional risk exposure will increase incremental costs for all Parties, however, small parties and renewables will be particularly impacted due to their relative lack of portfolio. In any case all such costs will be passed back to the consumer.
- Small and single site generators and small suppliers will be the most affected by P136 and P137, as the former cannot self balance, and the latter suffer from diseconomies of scale in relation to demand forecast error. Both suffer from a natural hedge between generation and demand enjoyed by vertically integrated players and both would suffer the risk of bankruptcy if exposed to extreme prices. New entrants to the small generation or small supplier area will be discouraged by P136 or P137, particularly small and renewable generation technologies that are by nature intermittent. Consumers will pay the risk premium twice over, once to cover the generation trip risk and supplier demand forecast risk.

- Should marginal Energy Imbalance Pricing be implemented it will increase the costs incurred by businesses which will be reflected in the operating cost of the plant, feeding forward into the wholesale price of the electricity generated.
- Marginal Energy Imbalance Price will increase the risk for all physical Parties due to the unmanageable risk inherent in the market following Gate Closure, where positions cannot be changed in response to changing circumstances. If a generator trips, or a supplier finds it has an error in its demand forecast, there is no action that can be taken, and the exposure to imbalance cannot be mitigated. This is true of the current mechanism by marginal Energy Imbalance Prices are likely to be higher, thus exacerbating the effect. Thus increasing costs, that will be passed onto consumers.
- Single site generators tripping at times of high marginal Energy Imbalance Price do not receive any RCRC to offset the exposure to imbalance, and this could have a discriminatory effect.
- Costs to consumers will have to rise to encourage new generation to enter the market. P136 and P137 are ways of addressing this as it will appropriately increase forward prices providing stronger signals on security of supply.
- Marginal pricing will encourage Parties to balance more efficiently with consequential benefits for Parties and customers.
- It is up to Parties how they respond to more appropriate signals provided by more appropriate Energy Imbalance Prices. If Parties adopt a risk management strategy by 'buying' more options, this would reflect an efficient market response to appropriate price signals.
- There should be no material effect on incremental cost and hence no significant cost changes for customers, to the extent that the changes improve the operation of the market, consumers should receive a benefit.
- P136 and P137 are designed to improve the efficiency of the cash-out arrangements and associated markets. It is difficult to predict the impact on any particular party ex ante, because the change would be expected to change the pattern and level of prices at different times. However, by sending more efficient price signals across time, existing cross-subsidies will be driven out. To the extent that consumers bear increased costs (and it is by no means certain that they will), this will represent an efficient level of cost to provide for the increased reliability of the system. In short, whether or not the costs to individual parties increases or decreases is less relevant than improving the efficiency and reliability of the overall system.

PSMG Additional Points and Conclusions in respect of changes to incremental costs for BSC Parties from a marginal Energy Imbalance Price

The PSMG noted the arguments set out by the consultation responses in respect of the impact of P136 and P137 on the incremental costs to Parties from implementation of a marginal Energy Imbalance.

Some members of the PSMG noted that, when considering the costs to consumers, it is pertinent to consider both what they pay for energy when they get it, and what happens when they do not get it (i.e. are interrupted). A number of the PSMG noted that P136 and P137 are aimed at reducing the likelihood of interruptions.

Furthermore, a number of PSMG members note that P136 and P137 aim to improve reliability in the delivery of energy, and therefore this may also benefit consumers.

The PSMG believe that both P136 and P137 will target (imbalance) costs differently, by targeting them more closely to those Parties that are unreliable and inflexible. Some members of the PSMG believe this to be a more appropriate targeting of costs, whilst others do not.

The PSMG noted that a number of responses express the belief that costs will be incurred, and passed on to consumers, but concluded that it is difficult to assess the affect on any individual Parties / type of Parties, as some Parties will benefit and some may not. Whether there is a beneficial effect will depend on the flexibility, reliability, controllability and profile of consumption.

2.2.2.7 An assessment of changes to risk, and consequential risk management from P136 / P137

A number of the PSMG believe that P136 and P137 may increase the potential for high Energy Imbalance Prices (as a result of using the marginal energy balancing action) which in turn increases risk for Parties from exposure to the Energy Imbalance Price. Furthermore, some of these members of the PSMG believe that the risk of exposure to high Energy Imbalance Prices introduces an unmanageable risk.

Their view is that currently the risk of exposure to Imbalance under the average price methodology is reflected in the contract prices and the Bid – Offer prices of Parties. Although the Energy Imbalance Price has the potential to be extreme with an average methodology, the risk is perceived to be lower than with a marginal methodology, and therefore more easily factored into the contract / Bid – Offer prices for a Party. However, some members of the PSMG believe that a marginal imbalance price could reach extreme levels which could have the effect of bankrupting a Party exposed to the imbalance price, and therefore impose such an extreme risk that it cannot be (adequately) factored into the contract / Bid – Offer prices.

Furthermore, some members of the PSMG believe that an extreme Energy Imbalance Price, coupled with a large imbalance exposure (say from a plant trip), could incur imbalance charges for the affected Party far in excess of its credit cover. This could have a consequential / implicational risk to other Parties from any payment default not covered by the Credit Cover of the defaulting BSC Party, putting other Parties into consequential default (a domino effect).

These members of the PSMG believe that, this risk is unmanageable, because there are currently no insurance products available to mitigate the risk of exposure to imbalance charges resulting from a failure of some description after Gate Closure. Furthermore, they believe that the potential for more extreme Energy Imbalance Prices may prevent the development of such products.

Conversely, other members of the PSMG believe the previously mentioned perception of the risk to be predicated on the assumption that the Energy Imbalance Prices will be more extreme. In their opinion this is unlikely to be the case, and therefore the risk associated with both P136 and P137 is no greater than the risk associated with an average imbalance price methodology, and is therefore a risk that can be factored into contracts and Bid – Offer prices in the same way as currently, or for which insurance products may emerge over time to mitigate this risk. Furthermore, these members of the PSMG noted that there are current strategies for risk management which would apply equally well under a marginal methodology, namely improving the reliability of plant, improving demand forecasts and buying options.

Furthermore, stronger price signals from the Energy Imbalance Prices and consequentially the forwards markets may mitigate the likelihood of extreme events, such as extreme system shortage, and demand control being required, as Parties can see the emerging price signals and respond to them, thus averting the extreme event. This may have the effect of reducing the overall risk to the market.

Consultation Question:	In your opinion, do P136 / P137 change the level of exposure to risk? In your opinion, how does this consequentially impact risk management?
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Question 16 (P136) and 14 (P137) (risk management) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	N/C	YD	YD	YD	YD	YD	N	YD	YD	-	YD	-	YD	YD	YD	YI	YD	Y	Y	YI	YD
P137	N/C	YD	YD	YD	YD	YD	N	YD	YD	-	YD	-	YD	YD	YD	YI	YD	Y	Y	YI	YD

Where 'Y' indicates an effect, 'YI' is an improved effect (decreased risk), YD is a detrimental effect (increased risk), and N/C is no change.

The majority of responses believe that P136 and P137 will have the effect of increasing risks to Parties. The main rationale for this belief is that a marginal Energy Imbalance Price will mean higher Energy Imbalance Prices, and consequential increased exposure to risk in terms of exposure to imbalance. It should be noted that a number of responses indicate that the rationale provided in respect of questions 15 (P136) and 13 (P137) provides further rationale for their response.

There are a number of responses that express the belief that a marginal Energy Imbalance Price may have a beneficial effect on the risk exposure and risk management for Parties. One response asserts that the current mechanism results, overall, in an inefficient allocation of risks to market participants, which results in inefficient trading and investment decisions, such as poor incentives to maintain plant or to forecast demand effectively). The response asserts that by allocating imbalance exposure risk more efficiently, a marginal Energy Imbalance Price should lead to the development of more efficient risk management tools.

Another response asserts that currently, Energy Imbalance Prices understate the cost of buying balancing energy, creating the scenario where it is potentially financially more efficient for participants to take the risk of being in imbalance for low probability events (e.g. extremities of demand forecasts) rather than contract ahead in the forward markets to ensure that they are able to cover their position. Hence if Market Participants are exposed to the appropriate level of risk (where imbalance prices better reflect the costs of energy balancing) when they are in imbalance, the incentives to make efficient trading decisions, to maintain reliable plant are improved.

One response (Y) believes that stronger linkages between the forwards and spot markets and the Energy Imbalance Prices may lead to a better ability to price risk products which may be useful to some Parties. Another response (N) asserts that changes to Energy Imbalance Pricing is part of the regulatory risk under which the industry operates, and this risk is already factored into power prices.

Those responses that express the belief that a marginal Energy Imbalance Price will detrimentally increase the risk Parties are exposed, provide the key rationale that a marginal Energy Imbalance Price increases the need for risk management (through generator plant trip or demand forecast errors), and will also increase the cost of the risk management.

A number of responses note that since post Gate Closure events cannot be insured against, managing the risk exposure may prove prohibitive / unmanageable, and although this is a feature of the current arrangements, higher Energy Imbalance Prices (a postulated outcome of both P136 and P137) will exacerbate the risk exposure. A number of responses assert that smaller generators do not have full access to RCRC, or will not get RCRC in the event of a plant trip, to offset risk of exposure to imbalance. It is also noted by a number of responses that risk of bankruptcy (from exposure to high

Energy Imbalance Prices) is an extreme risk that cannot be factored into the contract / Bid – Offer prices or the credit arrangements that currently exist within the Code.

One response indicates that both P136 and P137 would impose unmanageable risks on Parties, particularly at times of system stress, of gaming, or of “pollution” of the main Bid –Offer Acceptance stack due to inaccurate and incomplete targeting of system-related actions in the tagging process. In other words, marginal pricing would greatly sensitise imbalance prices to the nature of the estimated-identification (tagging) of system balancing actions. Inaccurate tagging would have relatively little effect on the main price at present, but if P136 or P137 were implemented it could potentially greatly distort the main Energy Imbalance Price.

One response (N/C) believes that the threat of imbalance exposure will improve the reliability of plant and of demand forecasting, and may also encourage the development of pre-Gate Closure insurance products. Since post Gate Closure events cannot be insured against, a rule change may be required to allow insurance products to be developed.

PSMG Additional Points and Conclusions in respect of impact on risk management from a marginal Energy Imbalance Price

The PSMG noted that the arguments set out by the consultation responses in respect of the impact of either of P136 and P137 on risk and risk management from implementation of a marginal Energy Imbalance Price were reasonably reflective of the views of the group. No additional issues were raised by the PSMG.

The majority of the PSMG believe that both P136 and P137 will have a detrimental impact on risk and risk management. However, a number of the PSMG wished to add that it is their belief that a marginal Energy Imbalance Price will more appropriately target the risk of exposure to imbalance than the current average pricing methodology, thus improving risk exposure and risk management.

2.2.2.8 Effects from the Residual Cashflow Reallocation Cashflow

The perception of the risk of exposure to Imbalance charges may influence the behaviour of Parties. Some of the PSMG believe that Parties may take a view that the risk of exposure to a marginal Energy Imbalance Price could be offset by any return via Residual Cashflow Reallocation Cashflow (RCRC). The assumption is that where there is a high marginal price (and Parties are, in general, short), the BM cashflows are potentially going to be consistently over recovered, and the residual cashflow will be high. This could mean that Parties may recover a ‘lump’ of the exposure to imbalance paid at SBP back from RCRC, reducing the overall cost of imbalance, and mitigating the effect of the price signal from the marginal Energy Imbalance Price. Furthermore, a number of the PSMG believe that the expectation of receipt of RCRC will affect, as a second order effect, forward contracting behaviour for some Parties.

A number of the PSMG believe that any increase in the RCRC may potentially distort competition as, due to the asymmetry of RCRC, some types of Party may consistently receive more RCRC than others, for example a single site generator that fails will not receive any RCRC to offset their exposure to imbalance.

However, some of the PSMG noted that RCRC could be considered to be a side effect of the Settlement calculations. Furthermore, one which is unpredictable as the relative sizes of the System Sell Price (SSP) and SBP could lead to the RCRC being a debit, rather than a credit, especially where the system is persistently short. Therefore, these members of the PSMG believe that the inability to predict the RCRC may mean that it has little to no influence on Parties incentives, and will not cause Parties to change their behaviour.

Consultation Question:	What effect, in your opinion, will P136 / P137 have on the RCRC, if any, and what influence do you think this will have on the (balancing) behaviour of Parties?
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Question 17 (P136) and 15 (P137) (Effect on RCRC) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	N/C	YD	Y	Y	Y	YD	N/C	N/C	YD	-	N/C	YD	N/C	Y	YD	N/C	YD	N/C	-	N/C	YD
P137	N/C	YD	Y	Y	Y	YD	N/C	N/C	YD	-	N/C	YD	N/C	Y	YD	N/C	YD	N/C	-	N/C	YD

Where 'Y' indicates an effect, 'YI' is an improved effect (decreased risk), YD is a detrimental effect (increased risk), and N/C is no change.

A (small) majority of responses indicate that any changes to RCRC (even if there are any) are unlikely to have an effect on the behaviour of Parties, the main rationale provided to support this assertion is that RCRC is unpredictable and a second order effect of the Energy Imbalance Price regime. One response indicates that the income from the RCRC when the system is short will, for all but the smallest imbalances, be far lower than the exposure to imbalance, even for a Party with a large market share, and therefore it is difficult to see how RCRC income will mitigate the effect of the marginal Energy Imbalance Price signal, as RCRC is independent of contractual position and thus provides no incentive to balance.

One response notes that a single site generator will miss RCRC where it trips, but this is not specific to marginal pricing, and will occur now.

Another response notes that neither P136 nor P137 change the principles of RCRC and its allocation. The net position of a party who is balanced (and has not paid imbalance charges) will remain better than if that party had been in imbalance, and paid imbalance charges. Hence it is unlikely to change balancing behaviour of Parties. The response stresses that RCRC is not a mechanism for "offsetting" exposure to imbalance charges, and Energy Imbalance Prices and RCRC are not mechanisms for recovering the costs of balancing actions taken by the System Operator, as these are recovered through Transmission Company Balancing Services Use of System (BSUoS) charges.

One response notes that there may be short term effects on the level of RCRC but over the long term the effect should be minimal, as Parties constantly subjected to a marginal Price regime are likely to take actions to reduce exposure to imbalance to at least the level they are willing to bear.

Once response asserted that a marginal Energy Imbalance Price may increase RCRC but without effect on the behaviour of Parties. Another response asserted that changes to behaviour would be difficult to assess and is dependent on Party behaviour and plant / demand forecasting reliability.

Those responses indicating a detrimental effect on RCRC and consequentially on Party behaviour assert that larger Parties may see RCRC as compensation for exposure to imbalance, and there may be perverse effects and incentives relating to RCRC which may favour large portfolio generators (especially as embedded generators do not have full access to RCRC and do not receive any in the event of a plant trip), especially considering the redistribution of RCRC on an arbitrary basis (according to metered volume), with the reallocation creating inequities. Whilst this is true of the current baseline, it will be exacerbated by a marginal Energy Imbalance Price regime.

One response asserts that RCRC cost recovery will be high allowing a small number of Parties to benefit from artificially high Energy Imbalance Prices, thus reducing competition, this can only mean that Parties will try to maintain a long position or withhold capacity to minimise risk of imbalance, rendering

the market inefficient. Both P136 and P137 will increase RCRC and a high RCRC indicates poor cost allocation.

PSMG Additional Points and Conclusions in respect of the effect on RCRC from a marginal Energy Imbalance Price

The PSMG noted that the arguments set out by the consultation responses in respect of the impact of P136 and P137 on RCRC from implementation of a marginal Energy Imbalance Price were reasonably reflective of the views of the group. No additional issues were raised by the PSMG, and given the split of views, no conclusions were reached.

2.2.2.9 Impact on Credit Cover arrangements resulting from any (general) change to Energy Imbalance Prices from P136 / P137;

The PSMG noted that the potential for Party default as a consequence of 'extreme' Energy Imbalance Prices exists currently.

A number of the PSMG expressed concerns regarding the potential for BSC Parties to be exposed to the consequences of a Party default, in conjunction with the potential for both P136 and P137 to exacerbate the circumstances under which this may occur.

However, given that amendment to the Credit Cover arrangements can only be undertaken in light of operational experience and any such amendments do not form part of either of the Modification Proposals, further consideration of the implications of P136 and P137 on the Credit Cover arrangements will not be undertaken as part of the assessment of P136 and P137.

Consultation Question:	In your opinion, is Credit Cover under P136 / P137 any more of an issue than under the current arrangements?
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Question 18 (P136) and 16 (P137) (credit cover) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	N	Y	Y	Y	Y	Y	N	Y	Y	-	Y	-	Y	Y	Y	N	Y	N	Y	N	Y
P137	N	Y	Y	Y	Y	Y	N	Y	Y	-	Y	-	Y	Y	Y	N	Y	N	Y	N	Y

The majority of responses indicate that it is believed that credit cover becomes more of an issue under both P136 and P137 than under the current arrangements, mainly because it is believed that both P136 and P137 will have the effect of increasing Energy Imbalance Prices and making them more volatile, with the associated risk of exposure to imbalance increasing.

However, a number of responses indicate that they do not believe Credit Cover to be more of an issue than it is currently, because, if there is exposure to high Energy Imbalance Prices now, Parties may have to post additional credit. Furthermore, one response indicates that marginal pricing should result in parties reducing exposure to imbalance costs. Another response acknowledges that the concern arises from a concern that marginal Energy Imbalance Pricing may result in higher and more volatile levels of Energy Imbalance Prices, however, the response asserts that the current arrangements are sufficiently robust to accommodate changes to the levels of Energy Imbalance Prices.

Of the responses that believe that credit cover becomes more of an issue under both P136 and P137 than under the current arrangements, because high imbalance prices coupled with large exposure could result in imbalance charges in excess of lodged Credit Cover, exposing the industry to greater risk of default and shortfall in the event a party fails, unless credit cover is increased significantly which

increases the cost of participation. Whilst this can be true under the current arrangements, the effect will be exacerbated by both P136 and P137.

One response asserts that the BSC is likely to become a contributory factor in party insolvency. Another response indicates that should a marginal Energy Imbalance Price be adopted, then a complete overhaul of the credit arrangements would be required, adding significant costs onto the final delivery of the solution. Parties costs increased in this area due to the added risk and uncertainty of Energy Imbalance Prices.

Another response states that if Energy Imbalance Prices are to be more extreme then this may result in some Parties paying much higher quantities of imbalance charges at certain times, so that levels of indebtedness could become a lot more volatile, this could further expose the inability of the credit cover arrangements to accurately estimate a Party's indebtedness at certain times.

One response expresses the view that the Credit Assessment Price (just reduced from £25 / MWh to £18 / MWh) would need increasing over the current value, and may need temporally profiling to reflect peaks in marginal System Buy Price to ensure proper protection for Participants. However, this is likely to increase the size of cash deposits or letters of credit, and as these can be considerably more expensive for certain classes of party, there is an indirect discriminatory effect.

PSMG Additional Points and Conclusions in respect of the effect on Credit Cover from a marginal Energy Imbalance Price

The PSMG noted that the arguments set out by the consultation responses in respect of the impact of P136 and P137 on credit and Credit Cover from implementation of a marginal Energy Imbalance Price were reasonably reflective of the views of the group.

A number of the PSMG noted that default problems with Parties in this area have, so far, not been caused by exposure to imbalance under the Balancing and Settlement Code, but raise concerns that under a marginal Energy Imbalance Price, this may not be true going forward.

The majority of the PSMG agreed that there were concerns regarding both P136 and P137 increasing risk to Parties and thus having a detrimental impact on the current credit arrangements. However, the PSMG noted that the current mechanism should be considered to be robust to changes in the Energy Imbalance Price regime, or the imbalance profiles of Parties over time.

2.2.2.10 An assessment of the potential impact of P136 / P137 on Parties / Party types:

The PSMG have made no assessment as to the likely impact on either P136 or P137 on particular types of Party, therefore a consultation question has been included aimed at obtaining the views of Parties / particular types of Party as to the perceived impact of both P136 and P137.

Consultation Question:	In your opinion, what will the likely impact of P136 / P137 be on certain types of Party (for example, large portfolio player, single site generator, small Supplier)?
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Question 19 (P136) and 17 (P137) (Impact on Party Types) Response Summary:

The consultation responses made in respect of the previous questions set out the perceived impacts in some detail. In summary, the consultation responses believe that the following impacts will result from both P136 and P137:

- Marginal Energy Imbalance Pricing should encourage Parties to balance more efficiently and could result in a reduction in exposure to imbalance charges;

- The allocation of the risks of imbalance is improved and this will therefore reward those participants that manage their risks efficiently whatever the size or type of Party;
- The Grid Code prevents any Party from self balancing post Gate Closure and therefore incentives to balance are uniform across all classes of Party;
- Detrimental impact on single site generators and embedded generators from loss / restricted access to RCRC in the event of plant trip;
- Barrier to entry for smaller / new entrant generators;
- Single site generators will be encouraged to withhold capacity to self insure to protect from exposure to imbalance in the event of plant trip
- Adverse impact on unpredictable generation, such as renewables, which seems to run contrary to the government policy;
- Barrier to entry for all as risks too high / unmanageable, particularly smaller parties;
- Generators may hoard capacity, specifically portfolio generators
- Increase funds from RCRC for larger portfolio players;
- Supplier go excessively long to cover peaks;
- Portfolio generators will be incentivised to breach the Grid Code and self balance to protect from exposure to imbalance in the event of plant trip; and
- Integrated and portfolio players will have more operational and commercial options and mechanisms available to them to better manage the increased risk both P136 and P137 will create, thus smaller players will be disproportionately disadvantaged.

PSMG Additional Points and Conclusions in respect of the effect on Party types from a marginal Energy Imbalance Price

The PSMG noted the issues raised.

General Questions:

Consultation Question:	What effect, in your opinion, will P136 / P137 have (overall) in relation to Applicable BSC Objective 3(c)?
	Do P136 / P137 better facilitate the Applicable BSC Objectives overall?

Question 20 (P136) and 18 (P137) (Objective 3(c)) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	Y	-	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	-	Y	N
P137	Y	-	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	-	Y	N

'Y' – yes P136 or P137, as the case may be, are better at facilitating Applicable BSC Objective 3(c), 'N' – no, P136 or P137, as the case may be, do not better facilitate Applicable BSC Objective 3(c).

Question 21 (P136) and 19 and 20 (P137) (All Objectives) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N	Y	N
P137	Y	N	N	N	N	N	N	N	N	N	N	N	N	N	N	Y	N	Y	N	Y	N

'Y' – yes P136 or P137, as the case may be, are better at overall facilitating the Applicable BSC Objectives, 'N' – no, P136 or P137, as the case may be, do not better facilitate overall the Applicable BSC Objectives.

The majority of responses express the belief that neither P136 nor P137 better facilitate Applicable BSC Objective 3 (c) in relation to better facilitating competition in the supply and generation of electricity and in respect of the sale and purchase of electricity. The same is true in respect of the majority of responses expressing the view that neither P136 nor P137 better overall facilitate the Applicable BSC Objectives (see also responses to question 11 (P136) and 9 (P137) in respect of Applicable BSC Objective 3(b)).

Rationale provided is as follows:

YES:

- Both P136 and P137 will provide stronger signals to return mothballed plant to service and invest in new generation, thus improving competition in generation;
- More efficient price signals will be sent to the forwards and spot markets in respect of the efficient maintenance of, and investment in, generating capacity and the value of demand side flexibility;
- Both P136 and P137 will send more appropriate pricing signals to Parties of the costs of managing electricity imbalance, and this in turn will place more appropriate incentives on Parties to balance efficiently, thus incentivising trading on the forwards and spot markets in response to a more appropriate price signal;
- Incentivising Parties to trade forward to a more efficient position will also enhance the ability of Parties to achieve an individual balanced position, in turn better facilitating the Transmission Company in achieving overall system balance and thus meeting Applicable BSC Objective 3(b);
- Encouraging Parties to balance more efficiently, both P136 and P137 should improve liquidity and create the right conditions for a more competitive market;
- The more appropriate price signal resulting from a marginal Energy Imbalance Price will ensure that Parties are exposed to more appropriate levels of risk, meaning that Parties will compete based on their actual risk; and
- Both P136 and P137 may also expand the range of risk management tools in the market, and the range of Parties;

NO:

- Both P136 and P137 will be a barrier to entry for all new Parties as the risk associated with trading in the market will be higher and therefore there will be fewer incentives to join the market.
- Both P136 and P137 will reinforce the trend towards market domination by portfolio players, with a detrimental impact on competition;
- Both P136 and P137 will encourage generation to withhold capacity to self insure, which is inefficient;
- Both P136 and P137 will incentivise breaches of the Grid Code by portfolio players attempting to protect themselves from exposure to imbalance following a plant trip;
- Both P136 and P137 will increase risk on all types of Party, specifically small and unpredictable players, which cannot be efficiently managed / is unmanageable;
- Additional credit risk, and associated costs of managing it are detrimental to competition;
- Energy Imbalance Prices resulting from both P136 and P137 are not cost reflective of the costs of electricity balancing the system and therefore do not better target the costs of electricity balancing the system; and
- The additional complexity of the tagging mechanisms in respect of BM Unit Undo and BSAD Offsetting Tagging are detrimental to BSC Objective 3(d) in respect of efficiency in the balancing and settlement arrangements.

PSMG Additional Points and Conclusions in respect of whether P136 and / or P137 better facilitate achievement of the Applicable BSC Objectives

The PSMG considered the arguments set out by the consultation responses in respect of whether both P136 and P137 better facilitate achievement of the Applicable BSC Objectives and agreed that the responses were reasonably reflective of the views of the group.

The majority of the PSMG concluded that neither P136 nor P137 better facilitate the Applicable BSC Objectives than the current baseline, for the reasons set out in this section. It should be noted that a minority of the PSMG believe that both P136 and P137 better facilitate the Applicable BSC Objectives than the current baseline, for the reasons set out in this section.

2.2.3 3(d) – ‘efficient administration’. An assessment of whether the potential improvements in the above Applicable Objectives outweigh the costs of administering the modified trading arrangements:

The PSMG discussed this aspect of both P136 and P137 following receipt of the Impact Assessments from the BSC Central Service Agent, BSCCo and the Transmission Company in respect of P136 and P137.

The majority of the PSMG believe that Objective 3(d) is applicable to any changes in the administration of the balancing and settlement arrangements of ELEXON, and that therefore since neither P136 nor P137 alter the administration of the arrangements, they are both neutral to this objective. However, a number of the PSMG believe that the costs associated with implementing P136 or P137 are relevant to this Objective and that therefore both P136 and P137 are detrimental to Applicable BSC Objective 3(d).

The PSMG noted that the costs and timescales had not been included in the consultation. However, it was believed that even with the cost information for both P136 and P137, the respondents would be unlikely to change their views. The PSMG also noted that the costs and timescales would also form part of the Modification Report(s) in respect of P136 and P137 and therefore Parties would have a further chance to express their views.

2.3 Rationale for the Preferred Solution

The following points were developed by the PSMG as the key definition issues, as raised by consultation responses and PSMG deliberations. When defining the solution for P136 and P137 the PSMG have been informed by the views of respondents in respect of the second assessment consultation. The final solution reflects the agreement of the issues set out below.

The following section details:

1. The PSMG deliberations in respect of each definition issue (formulated with consideration of the responses made in respect of the first Assessment consultation for P136 and P137);
2. Followed by the views of the respondents in respect of the issue, as provided in respect of the second Assessment consultation on P136 and P137; and
3. The PSMG conclusions in respect of each issue.

2.3.1 Definition of an appropriate marginal price:

Both P136 and P137 define the marginal price in the Modification Proposal, as the most expensive (to the system⁵) balancing action, or part thereof, remaining in the Net Imbalance Volume, (the most expensive NIV Untagged Offer / BSAD energy buy remaining in the NIV where the system is short, and the least expensive NIV Untagged Bid / BSAD energy sell, or part thereof, remaining in the NIV where the system is long), regardless of the volume of action remaining and the price of that action (i.e. there is no de minimis volume threshold, and no cap on the price).

Marginal Price Definition:

The PSMG considered the definition of the marginal price in respect of both P136 and P137.

The PSMG noted that the rationale for using the marginal balancing action remaining in the NIV to set the marginal Energy Imbalance Price is that the intent of NIV Tagging is to differentiate between system and energy balancing. Therefore, by definition, any balancing action, or part thereof, remaining in the NIV (i.e. NIV Untagged) is deemed to have been an energy balancing action.

The PSMG noted that concerns have been raised regarding the appropriateness of small volumes setting the Energy Imbalance Price. This aspect was considered by the PSMG and it was noted that, where the marginal action in the NIV is a small volume, it could be considered appropriate for this volume to set the marginal price, as if it is an acceptance, then it has been through the Bid – Offer Acceptance Tagging (CADL, De Minimis and Arbitrage) and the NIV Tagging mechanism, and where it is an energy BSAD trade, then it has been through the Transmission Company's assessment as to the purpose of the trade (i.e. an assessment as to whether the trade was for system or energy balancing) and NIV Tagging.

⁵ The most expensive to the system means, when considering the Offers / buy BSAD, the action which has cost the system operator the most to take, i.e. the action with the highest price. In terms of Bids / sell BSAD, the most expensive to the system is the action which has brought the system operator in the least or which has required the system operator to pay, i.e. the action with the lowest price.

Thus it can be argued that where even a small volume of a balancing action (Bid – Offer Acceptance or BSAD Energy trade) remains in the NIV, that volume can be considered to be an energy balancing volume and is therefore eligible for setting the marginal Energy Imbalance Price.

It was the belief of a number of the PSMG that using the definition of the marginal price proposed by both P136 and P137, requires a more accurate NIV derivation, with the inclusion of all the possible balancing action volumes, including some that are not currently utilised in the NIV derivation (for example, frequency response volumes, non Balancing Mechanism delivered standing reserve), to ensure, as far as is possible (as no tagging mechanism will ever be perfect), that the marginal acceptance is an energy balancing action. This aspect is explored further in 3 below.

A number of the PSMG considered implementing a marginal Energy Imbalance Price derived from a 'band' of volume / number of balancing actions remaining in the NIV. One option the PSMG considered was to relate the volume of the band to the frequency of the system, as the Transmission Company does not balance the system to 50 Hz at all times, and thus frequency changes may be considered to have an associated volume which could be used to set the volume of any marginal band of balancing actions. However, it was not clear to the PSMG how such a volume would be determined. More generally, the PSMG could not agree what the underlying rationale for the composition of such a band could be, nor what volume / number of balancing actions such a band would comprise, for example, the top 10% of the NIV, or the top 3 balancing actions, or a volume derived in some other way, and therefore this aspect has not been progressed by the PSMG.

Capped Marginal Price:

The PSMG considered whether a cap on the marginal price would be appropriate for P136 and / or P137. The PSMG noted that there is the potential for high Energy Imbalance Prices, as the Transmission Company, in accordance with all of its obligations, outlined in the Balancing Principles Statement, could take highly priced balancing actions, as the Transmission Company is required to match supply to demand. Furthermore, demand cannot disconnect voluntarily at a point where the price of the supply becomes too high. Therefore the PSMG considered a cap on the marginal price equivalent to the price at which demand would choose, if there was perfect information and full transparency, to disconnect, for example, the value of lost load (VOLL).

Other values for the cap were considered. However, the PSMG could not reach a consensus on the value of the cap, or whether one was appropriate for P136 and / or P137.

Consultation Question:	Do you agree with the definition of the marginal price proposed by the PSMG for P136 / P137? If not, what definition of the marginal price would you propose?
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Question 1 Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	Y	-	N	N	N	Y	Y	N	N	-	Y	-	N	Y	N	Y	-	Y	N	Y	-
P137	Y	-	N	N	N	Y	Y	N	N	-	Y	-	N	Y	N	Y	-	Y	N	Y	-

Those responses greyed out, indicated that they do not support either P136 or P137 (by responding 'No' in respect of both P136 and P137 better facilitating the Applicable BSC Objectives). This convention is utilised throughout these question summaries.

The consultation responses were evenly split in terms of supporting, or not, the definition of the marginal Energy Imbalance Price proposed by both P136 and P137 (eight respondents supported and

eight did not). A number of responses that did not support the definition proposed, indicated that this was a consequence of not supporting a marginal Energy Imbalance Price, and therefore did not propose an alternative definition. However, one response indicated that although a marginal Energy Imbalance Price is not supported, the proposed definition is the most appropriate.

Those that did not support the implementation of a marginal Energy Imbalance Price indicated various reasons, such as preferring an average Energy Imbalance Price as being more equitable, believing that the risks associated with moving away from the current (P78) mechanism outweigh any benefit of marginal Energy Imbalance Pricing, and indicating the belief that the current mechanism is satisfactory with regards to an average Energy Imbalance Price, but is not satisfactory for a marginal definition, as any marginal mechanism will be flawed.

One response indicated that a cap on the marginal Energy Imbalance Price would be the preferred mechanism as a cap would remove the risk of financial collapse of Parties through exposure to unmanageably high Energy Imbalance Prices at times of system stress. Conversely, another response indicates that placing a cap on the marginal Energy Imbalance Price seems to be counter intuitive to the approach adopted to date, namely that a market mechanism is the most appropriate.

One response indicated that, whilst the principle of marginal Energy Imbalance Prices was not supported, if it were to be implemented, then a banded approach, say top 90 MWh of the main stack, would be the preferred mechanism as this would (slightly) reduce the sensitivity of a marginal price to gaming and the inaccuracy of system – electricity balancing differentiation. One response that did support the definition of a marginal Energy Imbalance Price proposed by both P136 and P137 (believing the current mechanism to be robust in its differentiation between system and electricity balancing) noted the Authority concerns regarding the Energy Imbalance Price being set by a single action, and indicated that this leans towards a 'chunkier' marginal definition.

Other respondents also indicate that the current mechanism for differentiating between system and electricity balancing (by derivation of the Net Imbalance Volume) is sufficiently robust to ensure that an energy balancing action sets the marginal price, and thus supported the proposed definition of the marginal Energy Imbalance Price. One response expresses the view that consequentially, setting the Energy Imbalance Price with a small volume is not a concern if that is the marginal action. Furthermore the response indicates that there is currently no economical justification for using a band of acceptances to set the marginal Energy Imbalance Price.

PSMG Additional Points and Conclusions in respect of the definition of a marginal price for P136 and P137

The PSMG noted the arguments set out by the consultation responses in respect of the marginal Energy Imbalance Price derivation. The majority of the PSMG support the definition of marginal as either the most expensive energy balancing action (or part thereof) in the buy stack when the system is short, or the least expensive energy balancing action (or part thereof) in the sell stack when the system is long, as the most appropriate definition for both P136 and P137. Therefore this definition has been adopted as part of the Proposed Modification for P136 and P137.

The PSMG noted that a couple of responses raise the issue of a band of volume setting the marginal price. The PSMG further considered the 'marginal depth' issue, and noted that a potential alternative to either or both P136 and P137 could encompass a definition of marginal price that is the volume weighted average of a specified volume of energy balancing at the margin of the NIV.

The PSMG then considered the appropriateness of a banded volume approach to the marginal price. Some members of the PSMG raised concerns as to the validity of this approach, expressing the belief that a banded volume comprising the marginal Energy Imbalance Price can not be considered to address the same defect as the Proposed Modifications for P136 and P137, and is therefore not a valid

Alternative to either Modification. However, the majority of the PSMG agreed that a marginal volume could form a valid alternative to both P136 and P137.

The PSMG discussed the rationale for such an approach. A number of PSMG members note that a banded marginal volume could be considered to mitigate some of the concerns raised regarding the accuracy of the NIV derivation. Since any system – electricity differentiation, as approximated by CADL and NIV Tagging, has the potential to be inaccurate, using a band of volume decreases the likelihood of an inappropriate balancing action setting the Energy Imbalance Price.

The PSMG then considered on what basis the volume could be set. A number of PSMG members noted that the Net Imbalance Volume is a proxy for the Total Energy Imbalance Volume (TQEI) across all Parties for a Settlement Period (not used in the derivation of the Energy Imbalance Price, as a consequence of it not being calculated firmly until the Initial Settlement Run). Therefore one suggestion was that the (historical) average difference between the NIV and TQEI could be used. One of the PSMG members interested in this approach had undertaken some analysis and determined that when the market is short, the average difference between NIV and TQEI is 20 MWh, whereas when the market is long, the average difference between TQEI and the NIV is 5 MWh. Therefore these volumes could be utilised as the band width.

The PSMG then considered whether, if the marginal band of volume approach were to be proposed as an alternative to either or both of P136 and P137, this approach would better facilitate the Applicable BSC Objectives than the Proposed Modifications.

A number of PSMG members expressed the view that a marginal band of volume would mitigate some of the concerns raised by Parties in respect of the marginal definition proposed by P136 and P136, namely the concern of a single action or a system balancing action setting the (main) Energy Imbalance Price, and therefore such an alternative should be considered to better facilitate the Applicable BSC Objectives than the Proposed Modifications.

However, the majority of the PSMG do not believe the alternative to better facilitate the Applicable BSC Objectives than the Proposed Modification, for both P136 and P137, and therefore agreed that this option should not be taken further and should not form an Alternative Modification for either P136 or P137.

2.3.2 Composition of the Net Imbalance Volume:

Following on from 2.3.1 above, the PSMG noted that the composition of the Net Imbalance Volume becomes more important with a marginal price methodology, as even minor amendments to the composition of the NIV (in terms of volumes) may have a material impact on the resulting marginal price.

Therefore, some members of the PSMG believe that, in order to get the 'right' marginal price, i.e. the deemed marginal energy balancing action, the NIV calculation should contain as accurate a representation of all the volumes associated with balancing the system as possible, for both P137 and P136.

However, some members of the PSMG believe that with a marginal pricing methodology, even an imperfect approach to tagging (as it is acknowledged that no tagging mechanism will be perfect in all circumstances) is likely to be significantly more efficient than the current volume weighted average methodology and imperfect tagging.

P137 explicitly requires that all balancing action volumes go forward to the NIV derivation, referencing balancing actions that are currently not in the NIV derivation, but which P137 requires to be included, namely volumes associated with non Balancing Mechanism delivered standing reserve. Some members

of the PSMG believe that the volumes to be included in the NIV should be extended further to include volumes associated with the delivery of frequency response.

The P137 mechanism means that all balancing actions are treated in the same way and there is effectively no distinction in the treatment of balancing action pre and post Gate Closure.

However, as explored in the P136 and P137 mechanism document (provided with the initial consultation) and as dealt with the BSAD consultation (also provided, for information only, with the second consultation), there are issues around the ability of the Transmission Company being able to derive the relevant volumes (and prices where relevant) with any degree of certainty in sufficient time to ensure the relative accuracy of the Balancing Mechanism Reporting Agent (BMRA) derivation of the Indicative Energy Imbalance Prices in real time.

'Accuracy' of the Net Imbalance Volume Derivation

The PSMG place a high level of importance on the accuracy of the Indicative (main) Energy Imbalance Price reported on the BMRA at the end of each Settlement Period, as, particularly under times of system stress, it is important to be able to derive an accurate Energy Imbalance Price in real time, in order to be able to exercise a trading strategy in respect of expectations indicated by that price. Should that Energy Imbalance Price change significantly post event, it is not possible to amend the position taken at the time in response to the new price.

Some members of the PSMG believe that the key benefit of a marginal price is the price signal delivered by the marginal price in real time. Thus the Indicative Energy Imbalance Price calculated by the BMRA at the end of the Settlement Period provides such a real time price signal, and as such could be considered to be the 'right' Energy Imbalance Price.

These members of the PSMG argue that once the (Indicative) Energy Imbalance Price has been calculated and thus the price signal has been delivered real time, changes to the Energy Imbalance Price over time, (as a consequence of refinements to the volumes used in calculating the Energy Imbalance Price), are superfluous, as it is too late for the price signal to be of any benefit. Therefore these members of the PSMG argue that the Indicative Energy Imbalance Price should be 'frozen' once derived in real time, and that price be used in each subsequent Settlement Run.

Conversely, a number of the PSMG believe that the Energy Imbalance Price applied to Party imbalances should be derived from the latest information, and refined over time as volumes become more accurate. Some of these members of the PSMG believe that there could be a 'moral' issue with not recalculating the Energy Imbalance Price post event with the latest information. The cited example is one where a Party is exposed to imbalance in a period where the Energy Imbalance Price is high, and this has a catastrophic effect on that Party. However, had the Energy Imbalance Price been recalculated post event, and been lowered by amendments to data, the Party would not have had the same level of exposure and may have 'survived'.

Regardless of the adopted approach (i.e. freezing the prompt price, or allowing changes through time), the PSMG believe that the volumes used in the NIV derivation in real time should be as accurate a representation as possible:

- Some members of the PSMG believe that this means that the NIV derivation performed by the BMRA at the end of the Settlement Period to get the prompt price should contain estimates of non firm volume data, for example, frequency response volumes (should they be required in the NIV derivation) and non Balancing Mechanism delivered standing reserve, such that the NIV is fully reflective of all balancing action volumes;

- Other members of the PSMG believe that this means that the NIV derivation performed by the BMRA at the end of the Settlement Period to get the prompt price should contain only those volumes that are firm, i.e. non firm volumes should be excluded, as these members of the PSMG believe that there is a trade between the use of actual data in the NIV derivation (as it becomes known over time), and the stability of the Energy Imbalance Price, and thus believe that it may be better to have a less 'accurate' NIV, but a more stable Energy Imbalance Price.

Thus a number of the PSMG believe that there is a trade off between getting the price signal right and delivered in real time, and reflecting the right costs on those Parties in imbalance.

2.3.3 Stability of the main Energy Imbalance Price:

The PSMG noted that a marginal price is far more susceptible to amendment to volumes (and associated prices) over time, for example, amendments to Balancing Services Adjustment Data (BSAD) post event and / or movement in the Transmission Loss Multipliers applied.

Although this is equally true of the current volume weighted average Energy Imbalance Price methodology, the post event amendments that result from an average methodology are likely to be minimal unless there are extreme changes in balancing action volumes. With a marginal methodology even a minor change in the volume of a balancing action could cause a material change to the (marginal) Energy Imbalance Price.

The PSMG noted that BSAD particularly has the ability to change post event, as the Transmission Company 'finalises' the volumes associated with intra Settlement Period balancing actions. Therefore should non firm balancing actions be required to go into the NIV derivation, for example inclusion of frequency response volumes, the potential for volume amendments increases, and thus the potential stability of the Energy Imbalance Price is further degraded.

Thus some members of the PSMG, whilst acknowledging the importance of the accuracy of the Net Imbalance Volume derivation (see 2 above), also recognise the importance of relative stability in the Energy Imbalance Price following the initial indicative calculation by the BMRA at the end of the Settlement Period.

The PSMG therefore considered the possibility of 'freezing' the Indicative Energy Imbalance Price, once it has been calculated by the BMRA, such that it only changes post event where there is a manifest error rectification and / or a Trading Dispute resolution that impacts the Energy Imbalance Price calculation.

The PSMG noted that this approach would require the Transmission Company to provide estimates of the intra Settlement Period (non Balancing Mechanism) balancing actions (and of any other balancing actions where the volumes are not firm by the end of the Settlement Period) by no later than 15 to 30 minutes following the end of the Settlement Period, such that they are available for inclusion in the Indicative Energy Imbalance Price calculation.

Consideration is being given to providing an illustrative (pictorial) representation of the Energy Imbalance Price derivation on the BMRA as part of the technical solution to both P136 and P137, so it can be seen what balancing actions (price and volume) were used in the NIV derivation and which comprise the NIV and thus which balancing action set the marginal Energy Imbalance Price,.

Once the Indicative Energy Imbalance Price calculation has been performed in real time, there are three options:

1. Revise the balancing action volumes as required, and allow the Energy Imbalance Price to change in response to amendments over time, as is currently the case. Consideration is being given to amending BMRA such that the BMRA recalculates and publishes the Indicative Energy Imbalance

Price on every amendment to balancing action volumes (and prices) up to the Interim Information Settlement Run (where the Settlement Administration Agent (SAA) takes over);

2. Freeze the balancing action data (Bid – Offer Acceptances and BSAD) used by the BMRA and use only this data in the following Settlement Runs, such that only amendments to the Transmission Loss Multiplier values (that result from amendments to metered volume data) affect the Energy Imbalance Price over time; or
3. Freeze the Energy Imbalance Price itself, such that the Indicative Energy Imbalance Price derived by BMRA is then used in every subsequent Settlement Run.

It should be noted that revised balancing action data will be published post event, so that the amendments over time are transparent, even if the amended data is not used in subsequent Settlement Runs for determining any amendments to the Energy Imbalance Price over time.

The Transmission Company has raised concerns regarding ‘freezing’ the Energy Imbalance Price / data used in deriving the Energy Imbalance Price (b and c above) in the case where there is an error in the BSAD used (as opposed to finalisation of BSAD volumes), for example where an empty file has been sent in error, or there is manifestly an error in the data provided. The PSMG therefore considered allowing the Energy Imbalance Price to be recalculated using the correct BSAD under these sorts of exceptional circumstances only. For the avoidance of doubt, this error correction will not include amendments to BSAD caused by the refinement of volumes over time.

Consultation Questions:	As covered by bullet (2), would you prefer to have the NIV derived in real time from all possible balancing actions with estimates of non firm volumes, or would you prefer to have the NIV derived in real time with only firm volumes?
	Of the three options set out in regards to the stability of the Energy Imbalance Price, which do you favour, and why? ((a) allow changes to the Energy Imbalance Price over time, (b) freeze the balancing action data at real time, (c) freeze the Energy Imbalance Price at real time)
	Do you support the approach of allowing error correction of BSAD under exceptional circumstances only?

Question 2 (NIV derivation) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	E	-	E	E	F	E	E	E	E	-	F	-	E	E?	F	F	-	F	F	E	E
P137	E	-	E	E	F	E	E	E	E	-	F	-	E	E?	F	F	-	F	F	E	E

E = Estimates of volumes in the NIV; F = Firm volumes only in the NIV

The responses were evenly split in terms of whether estimates of non firm volumes should be used in the NIV derivation, or whether only firm volumes should be used. However, most responses expressed the view that the accuracy of real time Energy Imbalance Prices (whatever the individual interpretation of accuracy is) is important.

A number of responses indicate that the real time NIV derivation is important, and therefore estimates of volumes would be preferred, as this would ensure, as far as possible, that the 'right' marginal Energy Imbalance Price is determined and that use of estimates is better than ignoring these volumes. However, one response indicated that although they preferred the use of estimates, estimates should be used only where there is a reasonable degree of accuracy, and thus only firm volumes should be used if this is not the case.

The Transmission Company response indicates that the derivation of the NIV will be improved by the inclusion of volumes associated with non Balancing Mechanism delivered standing reserve, but that inclusion of 'other' volumes (by implication, volumes associated with the delivery of frequency response) is unlikely to provide significant benefit to the signals from the Energy Imbalance Prices, particularly if the volumes are estimates reconciled post event.

A number of responses note the exacerbated sensitivity of a marginal Energy Imbalance Price to ex post changes in volume and some responses indicate that they believe this to be a (major) drawback of a marginal Energy Imbalance Price, which is mitigated by an average pricing methodology.

A number of responses raised concerns regarding the implications of setting an erroneous / inappropriate marginal Energy Imbalance Price by use of estimated / non firm volumes, in respect of implications for Parties exposed to the resulting Energy Imbalance Price. One response notes that the Energy Imbalance Price should not be subject to the vagaries of information available in real time, and thus the Energy Imbalance Price should be allowed to change over time, and that the lack of confidence in any real time Energy Imbalance Price is a major drawback of both P136 and P137.

A number of responses express the belief that the stability of the Energy Imbalance Price is important and that only firm volumes should be used in the Net Imbalance Volume derivation to limit the volatility of the Energy Imbalance Price ex post. One response indicates that the accuracy of the real time Energy Imbalance Price is critical, as it effects real time decision making, and therefore the calculation should use as accurate a data set as possible. One response indicates that a less accurate NIV and more stable Energy Imbalance Price is preferred, as changes to the Energy Imbalance Price ex post have a de-stabilising and risk enhancing effect which is undesirable.

PSMG Additional Points and Conclusions in respect of the composition of the Net Imbalance Volume for P136 and P137

The PSMG noted the arguments set out by the consultation responses in respect of the preferred composition of the NIV.

The PSMG noted that the proposed definition of BSAD (as defined in the Transmission Company BSAD consultation) for P136 and P137 ensures that firm volumes are available for all relevant balancing actions (including non Balancing Mechanism delivered standing reserve) for inclusion in the NIV derivation in real time. This approach for BSAD volumes ensures that the NIV is derived from the most complete and accurate volumes in real time.

It should be noted that it is not proposed that frequency response volumes be derived and included in the NIV at this time, due to the difficulty in deriving the associated volumes with any degree of accuracy in real time. The PSMG did not believe this to be an issue on the grounds that frequency response volumes are likely to be small, and that the benefits of having all other relevant volumes in the NIV outweighs the (dis-)benefit of using potentially (very) inaccurate volumes for frequency response in the NIV.

The PSMG noted that the proposed formulation of BSAD allows any future changes to feed into the derivation and be subsumed into the proposed variables should it be determined in the future that there is a call to include other balancing actions in the BSAD (obviously subject to approval of the relevant BSAD consultation).

Therefore the PSMG concluded that the approach to BSAD mitigates the concerns raised regarding use of estimates (concerns with regards to the potential for the estimates to be inaccurate) and use of firm data (potential for missing volumes), and therefore support the proposed approach as the most robust, namely use of the most accurate and complete data in real time, with limited scope for amendments to BSAD post event.

Question 3 (EIP Stability) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	a	-	b	b	c	c	a	a	a	-	c	-	c	n/p	c	a	-	b	b	b	a
P137	a	-	b	b	c	c	a	a	a	-	c	-	c	n/p	c	a	-	b	b	b	a

The responses were evenly split in terms of the view on the stability of the main Energy Imbalance Price; five responses indicate support for the current mechanism, whereby the Energy Imbalance Price changes in response to changes in data through each Settlement Run (option (a)). Five responses express support for freezing the data used to calculate the Energy Imbalance Price in real time (option (b)), and five responses support freezing the real time Energy Imbalance Price ((option (c)), and one response expressed no preference (n/p above).

Those responses that support option (a) indicate that this is the preferred option because the Energy Imbalance Price should be based on the most accurate data. Two responses effectively caveat this response by indicating that real time Energy Imbalance Price calculation should use the most accurate data available to mitigate the potential for changes to data that move the Energy Imbalance Price after real time (one of these responses indicates that any delivery of material volumes and price up to Initial Settlement is unacceptable with a marginal price methodology).

The response that expresses no preference for any option indicates that there is a trade off between freezing data for certainty about real time strategy in response to the Indicative Energy Imbalance Price, and ensuring the accuracy of the Energy Imbalance Price such that the Energy Imbalance Price is set taking into account the real position of the market. This response expresses the view that the risk of uncertainty and inaccuracy with respect to the Energy Imbalance Price appears to be a strong reason for not implementing either P136 or P137.

One response indicates that the importance of having firm real time Energy Imbalance Prices is recognised, but notes that changes to data, such as metered volumes and as a result of disputes, are inherent to the settlement process, and therefore recalculation of the Energy Imbalance Prices at each Settlement Run with the latest data continues to be appropriate. Furthermore this response indicates that it would be appropriate to determine whether Parties act in response to real time Energy Imbalance Prices, or whether the strategy is developed in response to historical Energy Imbalance Prices before making any amendment, and the response goes on to suggest that this aspect of the considerations be decoupled from both P136 and P137 and progressed separately.

Those responses that support option (b) and (c) (as both are similar) mainly express the view that a firm indication of real time Energy Imbalance Prices is important, as these inform the real time strategy, and Parties cannot react after the event in response to ex post Energy Imbalance Price changes. One response caveats this with the requirement to have sufficient confidence in the real time Energy Imbalance Price calculation, and thus the quality of data available in real time, to ensure that the concept of marginal pricing is not undermined and that resulting Energy Imbalance Prices are not open to challenge.

Another response indicates that use of accurate estimates means that there should be no 'moral' or other difficulties with setting the Energy Imbalance Price in real time, since the real time Energy Imbalance Price should be based on an accurate estimate of the NIV.

PSMG Additional Points and Conclusions in respect of the stability of the Energy Imbalance Price for P136 and P137

The PSMG noted the arguments set out by the consultation responses in respect of the preferred approach for deriving the main Energy Imbalance Price through time. The PSMG noted the importance placed by respondents to the consultation on the accuracy of the main Energy Imbalance Price in real time (the Indicative Energy Imbalance Price derived by the BMRA).

The PSMG considered the likelihood of changes to the Energy Imbalance Price following the initial derivation by BMRA. Given the approach to BSAD set out in the preceding section, namely firm volumes in real time, the PSMG noted that the scope for changes is limited. Therefore the Energy Imbalance Price is likely to change following BMRA calculation only by exception. It should be noted that changes to Transmission Loss Multipliers (TLMs) will not affect the volume in the NIV, and thus the resulting Energy Imbalance Price, as the NIV is derived from volumes without TLMs applied.

Therefore the majority of the PSMG agreed to support approach (a), allow changes over time, with the SAA calculating the Energy Imbalance Price for each Settlement Run, using the latest data, noting that in reality the Energy Imbalance Price is unlikely to change between initial calculation in real time and the first Settlement Run (and between subsequent Reconciliation Runs).

Question 4 (BSAD error correction) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	
P136	Y	-	Y	Y	N	Y	Y	N	-	-	N	-	Y	Y	N	N	-	Y	Y	Y	N
P137	Y	-	Y	Y	N	Y	Y	N	-	-	N	-	Y	Y	N	N	-	Y	Y	Y	N

The majority of responses support allowing BSAD error correction (under specific circumstances).

A number of those responses that indicate support for BSAD error correction envisaged a process similar to that for manifest errors, potentially limiting the Transmission Company to identifying the error within strictly defined timescales, another response indicated that the Panel should be involved in determining the exceptional circumstances. In general, the approach of allowing BSAD error correction is supported on the grounds that the process needs to be reasonable otherwise it will be open to legal challenge, and potentially undermine the credibility of the marginal Energy Imbalance Price, especially where Parties are exposed to an Energy Imbalance Price that would have been 'dampened' by use of the 'correct' data.

Of the responses that do not support allowing BSAD error correction under specific circumstances, three responses indicate that this is a consequence of supporting inclusion of all changes to BSAD post event in the Energy Imbalance Price calculation, not just those identified under exceptional circumstances. Of the other responses that do not support BSAD error correction under specific circumstances, the general rationale seemed to be the requirement to stabilise the Energy Imbalance Price to that derived in real time. One response reiterates the inability of Parties to respond to changes in the Energy Imbalance Price post event, and two responses indicate that the uncertainty that allowing such changes could introduce is undesirable. One of these responses indicates that it should this approach be adopted, it should be made (legally) clear to Parties that there is no legal recourse where the Energy Imbalance Price would have been different had the error been corrected.

PSMG Additional Points and Conclusions in respect of the scope for amendments to BSAD for P136 and P137

The PSMG noted the arguments set out by the consultation responses in respect of the preferred approach for allowing amendments to BSAD for error corrections. The PSMG also noted the importance placed by respondents to the consultation on the accuracy of the main Energy Imbalance Price in real time (the Indicative Energy Imbalance Price derived by the BMRA).

The PSMG noted that the scope for amendments to BSAD is limited. The envisaged amendments are limited to those due to use of a previous submission due to failure of the system sending BSAD to the BSC Central Service Agent, or indeed the system receiving the BSAD. There may be limited scope for error correction where the Transmission Company determines that a BSAD value submitted is incorrect.

The PSMG considered the limited scope for BSAD amendment and determined that:

1. Where the BSAD submission / receipt fails and a previous BSAD file is utilised, then a warning message to this effect should be published on the BMRA (similar to the message warning that no Market Index Data has been received at the point of calculating the Indicative Energy Imbalance Price); and
2. Where the Transmission Company discover an error in the data submitted, then the Transmission Company should notify BSCCo, who will determine the materiality of the error in respect of the Energy Imbalance Price. Where the materiality is high, BSCCo will notify all Parties (in a similar mechanism to now where material errors are discovered) of the error and of the materiality.

The PSMG believe this approach to be the most robust and therefore this approach has been adopted for the solution in respect of P136 and P137.

2.3.4 P136: Treatment of BSAD:

The PSMG have not concluded on the most appropriate usage of BSAD in the P136 methodology. As highlighted in the P136 and P137 mechanism description document (section 1, provided with the second consultation), the PSMG have considered all variations on the usage of BSAD in P136, from none at all (considered as a potential alternative Modification to P136, where the Energy Imbalance Price is derived from Bid – Offer Acceptances only, i.e. no BSAD used in the NIV derivation, and no Buy and Sell Price Price Adjustment (adjustment to reflect option fees) of the Energy Imbalance Price), to a similar utilisation to that described for P137. It should be noted that the Transmission Company’s BSAD consultation documentation (provided with the second consultation for information) provides the proposed approach.

Those members of the PSMG that support the approach of removing BSAD from the Energy Imbalance Price calculation (as a potential alternative to P136) cited the worked example of the Energy Imbalance Price calculations for 17 September 2002 as an illustration of, what they consider to be, the undue influence of BSAD in the calculation, as for all mechanisms (current, P136 and P137), BSAD sets the Energy Imbalance Price.

Consultation Question:	Noting the Transmission Company BSAD consultation, what utilisation of BSAD would you prefer to see for P136 (including the treatment of option fees)?
	Do you support the proposed approach (being considered as a potential alternative to P136) whereby BSAD is removed from the Energy Imbalance Price calculation in entirety?

Question 5 (P136) (BSAD usage) Response Summary:

There is general support for use of disaggregated BSAD in the Energy Imbalance Price calculation for P136 on the grounds of improved transparency in the balancing actions that the Transmission Company undertakes.

One response supports continuation of the current derivation and use of BSAD, another response supports the same usage of BSAD for P136 as that defined for P137. A number of responses support the application of option fees back to the Bid – Offer Acceptance, either as described in the BSAD consultation option 1 or option 2. One response does not support the addition of option fees to Bid – Offer acceptance Prices, believing that this approach will have a randomising effect on the price and thus should not be adopted.

One response does not support use of BSAD at all in P136.

Two responses note that the BSAD consultation in respect of BSAD amendments for P136 is the most appropriate vehicle to make views known.

PSMG Additional Points and Conclusions in respect of alternative formulations for BSAD for P136 and P137

The PSMG noted that this is predicated on the BSAD consultation and therefore did not consider this point further.

Question 6 (P136) (Removal of BSAD) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	N	-	Y	Y	N	N	Y	N	-	-	N?	-	N	N	N	N	-	N	Y	N	Y?

The majority of respondents do not support the removal of BSAD from the Energy Imbalance Price derivation.

Of those that support the removal of BSAD from the Energy Imbalance Price calculation, one response indicates that as the forward trades undertaken by the Transmission Company are reflected in the market price, and in the Physical Notifications of Parties, that including them in the derivation of the Energy Imbalance Price is effectively double counting the trades, thus ensuring that, even with a marginal price, that the main Energy Imbalance Price will tend towards the market price (reverse Energy Imbalance Price), quoting the example Settlement Period on 17 September 2002, and that this will have the effect of artificially reducing incentives to balance. Another response indicates that BSAD should be excluded from the Energy Imbalance Price derivation as Transmission Company trades pre-Gate Closure are a sunk cost, and those post Gate Closure are not transparent.

One response (N?) believes that BSAD should 'probably not' be included in the Energy Imbalance Price derivation if its inclusion is generating Energy Imbalance Prices that are not reflective of the underlying costs of balancing.

Those respondents that support the (continued) inclusion of BSAD in the Energy Imbalance Price derivation generally believe that all balancing actions taken by the Transmission Company, regardless of when, should be reflected in the Energy Imbalance Price. One response notes the Authority comment that Energy Imbalance Prices should, as far as possible, reflect the costs of all electricity balancing actions, whether incurred in the Balancing Mechanism or through pre Gate Closure transactions.

One response raised a specific point in respect of Pre Gate Closure BM Unit Transactions (PGBTs), namely that PGBTs are surrogate Bid – Offer Acceptances for BM Units without the dynamics to operate

in the Balancing Mechanism. One response indicates that the rationale for excluding BSAD trades from the Energy Imbalance Price derivation is not clear.

Two responses (including the Proposer of P136) express the belief that removal of BSAD is not a valid alternative to P136, as P136 addresses the issue of a marginal price, and indicates the continuance of the BSAD Methodology Statement. Furthermore, one response indicates that removal of BSAD will not better address the defect that P136 seeks to address.

A number of responses raised issues in respect of the transparency and 'allowed' approach of the Transmission Company's forward trading, however, this is beyond the scope of P136 (and P137) and furthermore is outside of the vires of the Code.

PSMG Additional Points and Conclusions in respect of an Alternative to P136 where BSAD is removed

The PSMG noted the consultation responses in respect of this issue. No new arguments were raised by the PSMG. The majority of the PSMG agreed not to consider this option further, for the reasons set out above, namely that it is not a valid alternative to P136, and even if it were, it would not better facilitate the Applicable BSC Objectives than the Proposed Modification. Therefore no alternative to P136, encompassing the removal of BSAD, has been proposed.

2.3.5 P137: Treatment of Option Fees:

Noting the Transmission Company's BSAD consultation documentation, the treatment of option fees for P137 (and potentially P136) is highlighted in the P136 and P137 mechanism description document. The Proposer of P137 indicates in the Modification Proposal and supporting documentation, that, as they believe that the Energy Imbalance Prices should reflect the opportunity cost of energy balancing, it is more appropriate to target the option fees for a standing reserve contract at the periods the service is actually called off, rather than averaging the option fees over every Settlement Period in the service availability window. The intent of the Modification is that this approach provides transparency to BSC Parties as to what the service has actually cost.

Consultation Question:	Do you support the usage of option fees (as currently reflected in the Buy and Sell Price Price Adjustment variables (BPA and SPA)) set out by P137?
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Question 7 (P136) and 5 (P137) (treatment of option fees) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	Y	N	N	N	N	N	N	-	-	-	Y	-	N	Y	Y	N/A	-	Y	N	Y	N
P137	Y	N	N	N	N	N	N	-	-	-	Y	-	N	Y	Y	N/A	N	Y	N	Y	N

A (small) majority of responses did not support the use of option fees proposed by P137 (either for use in P136, or for use in P137).

Rationale provided by those responses that support the usage of option fees proposed by P137 (for P136 and P137) is generally that option fees targeted against the Settlement Periods where the service is actually called off will send stronger signals to the market of the costs of procuring / holding reserve. One response indicates that the current BSAD methodology obscures the underlying (true) cost of electricity balancing and believe that allocation of the costs of reserve to those Settlement Periods where it is used will send more appropriate signals to incentivise forward contracting, (however, this respondent, indicates that the usage would, over the current average methodology, provide better cost

targeting of BSAD and thus better incentivise Parties to balance in times where there is expectation that reserve will be called).

One response indicates that the allocation of option fees proposed by P137 may provide a more realistic representation of the costs of reserve to allocate the costs to the Settlement Periods where the reserve is called, but indicates that it must be ensured that the costs are allocated as realistically as possible to ensure that that no additional distortions are introduced.

One response indicates that smearing the option fees over the period of availability, rather than when it is used, will systematically understate the opportunity cost of the reserve, and this understates the value of capacity for those generation resources that are not pre contracted. The response asserts that this will gradually erode the reserve margin, increasing the need to pre contract for reserve, which will in turn further depress the spot prices at peak times, leading to less available capacity and so on. Including the option fees in the Energy Imbalance Prices when reserve is used sends an improved Energy Imbalance Price signal on the value of generating capacity at peak.

Those responses that do not support the utilisation of option fees proposed by P137 (for P137 or P136) provide various reasons for not supporting this approach. One response indicates that this usage is subject to arbitrary judgements, another response indicates that the inclusion of option fees in the Bid – Offer Acceptance price has an (extremely) randomising effect on the Energy Imbalance Price, another response indicates that this treatment of option fees may act like an artificial construct placed over the existing arrangements, unnecessarily increasing balancing costs. Another response indicates that this utilisation of option fees is not supported as it adds further complexity to an already complex Energy Imbalance Price methodology.

One response indicates support for an alternative use of option fees, as proposed in the Transmission Company's BSAD consultation, namely option 1.

Two responses indicate that option fees are similar to insurance (for the system), as the costs are still incurred even if the insurance is no exercised, and therefore favour the current treatment of option fees. One of these responses raises concerns over the proposed treatment of option fees having the effect of artificially increasing the System Buy Price, and this introducing the issues explored during the assessment of Rejected Modification P135 (Marginal Definition of the System Buy Price during periods of Demand Control) in relation to high Energy Imbalance Prices causing plant to withhold capacity in case of trip or where it is unreliable.

PSMG Additional Points and Conclusions in respect of the application of option fees for P136 and P137

The PSMG noted that this is predicated on the BSAD consultation and therefore did not consider this point further.

General question:

Consultation Question:	Do you wish to propose a different treatment of BSAD for P136 / P137?
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Question 8 (P136) and 6 (P137) (different treatment of BSAD) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	N	N	N	N	Y	N	Y	N	-	-	N	-	N	N	N	N	-	N	N	N/A	-

P137	N	N	N	N	Y	N	Y	N	-	-	N	-	N	N	N	N	-	N	N	N/A	-
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One of the responses that wishes to propose a different utilisation of BSAD to P136 and P137, response 5, proposes a review of BSAD (responses 11 and 18 also request a review of BSAD). However, this is beyond the scope of P136 and P137 and outside of the vires of the Code.

Response 7 proposes exclusion of Transmission Company forward trades from the derivation of the Energy Imbalance Price. Furthermore, it is proposed that post Gate Closure non BM Unit volumes are included in the relevant stack in a manner equivalent to Bid – Offer Acceptances. It was noted by the PSMG when considering the responses that this latter aspect forms part of the BSAD consultation and is therefore a proposed approach.

PSMG Additional Points and Conclusions in respect of different treatment of BSAD for P136 and P137

The PSMG noted that this is predicated on the BSAD consultation and therefore did not consider this point further.

2.3.6 Non Delivered Bid – Offer Acceptances

The PSMG considered whether, in principle, a non delivered balancing action should be allowed to set the marginal Energy Imbalance Price. A number of the PSMG believe that in principle, since the Transmission Company has no way, at the time of taking the action, of determining whether it is delivered, that it could be considered to be a valid action and therefore eligible to set the marginal price. Furthermore, the Transmission Company would have taken another acceptance in place of the non delivered acceptance, and the non delivering Party is penalised, via the application of Non Delivery charges, thus the non delivery is effectively irrelevant.

However, others in the PSMG believe that if a balancing action is not delivered, then it should not be eligible for setting the Energy Imbalance Price.

The PSMG considered the logistics associated with determining what was non delivered and then removing it from the relevant balancing actions and noted that technically the solution would be incredibly complex, and introduce an additional layer of instability into the Energy Imbalance Price derivation, as non delivery would not be able to be determined until metered data is available at the time of the Interim Information Settlement Run (for CVA BM Units) and the Initial Settlement Run (for SVA BM Units). Therefore the PSMG have not developed proposals to remove non delivered actions from the Energy Imbalance Price derivation.

Consultation Question:	In your opinion, and given the technical complexity involved, is it appropriate for a non delivered Bid – Offer Acceptance (or BSAD balancing action) to set the marginal Energy Imbalance Price?
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Question 9 (P136) and 7 (P137) (non Delivered actions) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	Y	-	N	N	Y	Y	Y	N	-	-	Y	-	N	Y	Y	Y	-	Y	N	Y	N
P137	Y	N	N	N	Y	Y	Y	N	-	-	Y	-	N	Y	Y	Y	-	Y	N	Y	N

The majority of responses believe it to be appropriate, given the qualification in the question, for a non delivered balancing action to set the marginal price. It should be noted that only two of the responses

that indicated that it is NOT appropriate for a non delivered action to set the marginal Energy Imbalance Price provided rationale. One response expresses the view that it is not appropriate, as it is not part of the costs of balancing the system, and one acknowledges the complexity involved in identifying and excluding non delivered volumes, but expresses concern that a non delivered action could set the marginal Energy Imbalance Price.

It should also be noted that response 11 provided a 'No' response, but the rationale provided supported the appropriateness of a non delivered action setting the marginal Energy Imbalance Price and therefore a 'Yes' response is provided in the table above.

Therefore the key reasons for allowing a non delivered action to set the marginal Energy Imbalance Price seem to be the technical complexity of identifying and removing the non delivered volumes, the destabilising effect this has on the Energy Imbalance Price (as non delivery cannot be determined until metered volumes are available, some time after real time), and the fact that any non delivery would result in another action being taken, which would be reflected in the Energy Imbalance Price derivation. One response indicates that irrespective of whether an action is delivered or not (and there are strong incentives to deliver) the acceptance of these actions indicate the value that the Transmission Company places on energy balancing at that time, which should be reflected in the Energy Imbalance Price.

Furthermore a number of responses indicate that since the Transmission Company will not be aware of the non delivery at the point the action is instructed, it is appropriate for such actions to be in the Energy Imbalance Price derivation. One response also notes that it is highly unlikely that a non delivered action would be the one that sets the Energy Imbalance Price.

One response indicates that although in principle a non delivered action should not set the marginal Energy Imbalance Price, the technical complexity of removing the non delivered volume means that it is too difficult to remove them and asserts that this is another problem with P136 and P137.

PSMG Additional Points and Conclusions in respect of a non delivered action setting the Energy Imbalance Price for P136 and P137

The PSMG noted the arguments set out by the consultation responses in respect of the preferred approach for non delivered actions contributing to the Energy Imbalance Price. The PSMG noted the concerns of some respondents with respect to a non delivered action contributing to the Energy Imbalance Price. The PSMG also noted the importance placed by respondents to the consultation on the accuracy of the main Energy Imbalance Price in real time (the Indicative Energy Imbalance Price derived by the BMRA) (identification of non delivery cannot be done in real time, and therefore the Energy Imbalance Price might change post event in response to non delivery).

The majority of the PSMG agreed that P136 and P137 should not include provisions to remove non delivered actions from the Energy Imbalance Price derivation. However, it should be noted that a minority of the PSMG expressed concerns regarding the potential for a non delivered action to set / contribute to the Energy Imbalance Price.

2.3.7 P137: BM Unit Undo Tagging and BSAD Offsetting Tagging: Described in the P136 / P137 mechanism description document.

P137 proposes to implement two new types of tagging to be undertaken prior to building the stacks in preparation for NIV Tagging:

BM Unit Undo Tagging

This mechanism nets off balancing actions (pre and post Gate Closure) taken on the same BM Unit. The P137 documentation asserts that under the current system, opposing actions on the same BM Unit could result in the most expensive (to the system) acceptances being NIV Tagged out, even though

they were taken for energy balancing purposes as the result of an unexpected shortfall / surplus of generation. The Proposer of P137 believes that the current mechanism could lead to a serious understatement of the marginal cost, for example where there has been an unexpected generation shortage, and the Transmission Company has used all available operating reserve and has 'blown through' the offer stack.

The Proposer of P137 asserts that this approach will continue to remove the highest priced Offers in the case of genuine locational constraints (where the Offers and Bids are accepted on different BM Units in different locations), and where Bids and Offers have been accepted on different BM Units in order to create operating reserves or for downward regulation. Furthermore, the Proposer asserts that this approach will better reflect the underlying economics at times of shortage since the 'undo' Offers are likely to be towards the bottom of the price stack.

BSAD Offsetting Tagging

P137 requires that BSAD trades be treated equivalently with Bid – Offer Acceptances, and therefore P137 proposes that the undo tagging applied to acceptances on BM Units be applied to BSAD trades (non BM Unit specific – these are dealt with via BM Unit undo tagging). The Proposer of P137 asserts that (non BM Unit specific) BSAD trades pre Gate Closure cannot have been taken for locational reasons, or for the purposes of creating operating reserve, and therefore it is inappropriate that the BSAD trade volume contributes to the removal of more expensive purchases via the application of the NIV Tagging process. Therefore P137 proposes to remove any offsetting non locational forward energy trade volumes from the reverse stack prior to NIV Tagging.

Consultation Question:	Do you support the principle of BM Unit Undo Tagging and BSAD Offsetting Tagging as a part of the NIV derivation?
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Question 10 (P136) and 8 (P137) (Additional Tagging) Response Summary:

Resp:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
P136	Y	-	N	N	N	N	N	-	-	-	N	-	Y	N	N	N/A	-	Y	N	Y	N
P137	Y	-	N	N	N	N	N	-	-	-	N	-	Y	N	N	Y	-	Y	N	Y	N

The majority of responses do not support the implementation of the additional tagging (BM Unit Undo Tagging and BSAD Offsetting Tagging) proposed by P137 within P137 or P136.

The main rationale for this lack of support, provided by a number of responses, is the increased complexity that the additional tagging adds to the Energy Imbalance Price methodology. Two responses that support the principle of the additional tagging, but raise concerns that the benefits from the additional tagging may be outweighed by the additional complexity.

Three responses disagree with the principle of the additional tagging. Two responses indicate that the additional tagging may be tagging out genuine trades that were taken due to a change in circumstances and which therefore should not be tagged out. One response (response 14) indicates that BM Unit Undo Tagging will not give the net effect of offsetting trades on the same BM Unit in terms of the price. It will give the net effect in terms of the volume, but at an overstated price (the response provides a worked example to support this assertion).

One response indicates that BM Undo Tagging may simply be required as circumstances change, and furthermore, an undo action could be fulfilled by a Bid – Offer Acceptance that is not the lowest priced Offer or highest priced Bid, but under the proposal such an action is not tagged. The same response

indicates a lack of support for the BSAD Offsetting Tagging, as it asserts that the tagging mechanism implies that either the cheapest offers or most expensive Bids in the reverse stack are the undo trades associated with Transmission Company forward trades, which may not be the case, and this tagging methodology appears arbitrary in determining whether Bid – Offer Acceptances should contribute to the Energy Imbalance Price.

Another response that does not support the principle of the additional tagging asserts that BM Unit Undo Tagging makes an implicit assumption that undo's on a BM Unit cannot be related to resolution of an energy imbalance. The response indicates disagreement with this assumption and asserts that it is not clear that such actions are constraint related and expresses the view that such actions should be NIV Tagged. In relation to BSAD Offsetting Tagging, the same response indicates disagreement with the assertion of the Proposer of P137 that BSAD trades pre-Gate Closure cannot ever have been taken for system reasons and the response asserts that there is no reason to exclude these BSAD trades from contributing to 'normal' NIV Tagging.

Of those responses that support the principle of the additional tagging mechanisms, one response indicates that such additional tagging will provide a better reflection of a marginal Energy Imbalance Price for electricity balancing.

Another response asserts that offsetting volumes on individual BM Units or for non-locational energy trades are associated either with the creation of reserve or with errors in forecasting the level of imbalance. The response asserts that leaving these volumes in the reverse stack is likely to result in excessive tagging from the main stack. In particular, at times of shortage – even if the Transmission Company has “blown” through the offer stack offsetting and undo volumes could result in tagging out of the highest priced actions and therefore understate the marginal cost of imbalance.

PSMG Additional Points and Conclusions in respect of the additional tagging in the Energy Imbalance Price for P136 and P137

The PSMG noted the arguments set out by the consultation responses in respect of the BM Unit Undo Tagging and BSAD Offsetting Tagging. The PSMG noted that these tagging mechanisms are a fundamental part of P137, and therefore made no comment in respect of the tagging and P137.

However, the PSMG considered the tagging in respect of P136 to determine whether it is appropriate to apply these additional mechanisms in P136. It was noted that P136 does not reference these sorts of tagging mechanisms and therefore it is not appropriate to propose the inclusion of them in P136. Therefore the PSMG agreed that the additional tagging be limited to P137.

3 IMPACT ON BSC SYSTEMS AND PARTIES

An assessment has been undertaken in respect of BSC Systems and Parties and the following have been identified as potentially being impacted by the Proposed Modification P136 and Proposed Modification for P137. It should be noted that the impacts are the same for either Modification, unless explicitly stated otherwise.

3.1 Overview

3.1.1 Proposed Modification P136

In summary, development and implementation of P136 will incur costs of approximately **£1,562,000**. This encompasses BSC Central Service Agent development and implementation costs of **£890,000**, plus (standalone) project overhead costs of **£449,490**. The annual maintenance cost for Proposed Modification P136 will be **£120,000 p.a.**

This excludes ELEXON effort of approximately **750 man days**, and additional ELEXON costs of:

- **£89,000** (10% of the change specific cost for the BSC Auditor effort);
- **£89,000** (10% of the change specific cost for any variation in the solution during development); and
- **£44,500** (5% of the change specific costs for the test environment).

Due to the complexity and materiality of the amendments for P136 there is an additional 20% tolerance associated with these figures.

A lead time of approximately **40 to 45 weeks** is required.

Therefore, provisional discussions indicate that if:

- P136 is to be delivered in the **November 2004** (3 November 2004 Implementation Date) BSC Systems Release, an Authority determination is required by **31 January 2004**; and
- P136 is to be delivered in the **February 2005** (22 February 2005 Implementation Date) BSC Systems Release, an Authority determination is required by **5 April 2004**.

3.1.2 Proposed Modification P137

In summary, development and implementation of P137 will incur costs of **£2,051,040**. This encompasses BSC Central Service Agent development and implementation costs of **£1,220,000**, plus (standalone) project overhead costs of **£525,540**. The annual maintenance cost for P137 will be **£170,500 p.a.**

This excludes ELEXON effort of approximately **750 man days**, and additional ELEXON costs of:

- **£122,000** (10% of the change specific cost for the BSC Auditor effort);
- **£122,000** (10% of the change specific cost for any variation in the solution during development); and
- **£61,000** (5% of the change specific costs for the test environment).

Due to the complexity and materiality of the amendments for P137 there is an additional 20% tolerance associated with these figures.

A lead time of approximately **45 weeks** is required.

Therefore, provisional discussions indicate that if:

- P137 is to be delivered in the **November 2004** (3 November 2004 Implementation Date) BSC Systems Release, an Authority determination is required by **5 January 2004**; and
- P137 is to be delivered in the **February 2005** (22 February 2005 Implementation Date) BSC Systems Release, an Authority determination is required by **5 April 2004**.

3.2 BSCCo

BSCCo is impacted by the requirement to amend the Market Monitoring system (TOMAS) to reflect the amendments to the Energy Imbalance Price calculation and to receive the amended BSAD interface and Settlement Report.

BSCCo is also impacted by the requirement to include either P136 or P137 in a BSC Systems Release.

The impact assessments are provided in Annex 6 in full, however, in summary:

1. The ELEXON CVA Programme estimates a resource requirement of between 509 and 709 man days for the delivery and implementation of either P136 or P137 (noting a tolerance of 50% on these estimates). Therefore for the purposes of reflecting the requirement, it is assumed that P136 or P137 will incur CVA Programme resource of **600 man days**;
2. ELEXON Market Monitoring estimates a resource requirement of **81 man days for P136** and **87 man days for P137** (TOMAS amendments, amendment to the file receiver, documentation changes and testing);
3. ELEXON Assurance estimates a resource requirement of 50 to 70 man days for the systems assurance and ELEXON audit of the delivery of either P136 or P137, plus 2 man days for amendments to the Business Process Model and the Obligations Register. Therefore for the purposes of reflecting the requirement, it is assumed that P136 or P137 will incur Assurance resource of **62 man days**; and
4. The following ELEXON departments have indicated that there is **no impact** from the implementation of either P136 or P137; ELEXON Finance, ELEXON Governance and Regulatory Affairs and ELEXON Strategic Commercial Services.

Therefore the total ELEXON resource requirements are in the region of **750 man days** for either P136 or P137. It is envisaged that an additional **15 to 20 weeks** would be required to be added to the BSC Central Service Agent development and implementation time for testing purposes.

3.3 BSC Systems

3.3.1 Proposed Modification P136

The Detailed Level Impact Assessment for P136 is provided in Annex 5 in full, and is summarised in this section.

The following table details the impacts on the BSC Systems from the implementation of P136:

System / Process	Potential Impact of Proposed Modification
Registration	No Impact
Contract Notification	No Impact
Credit Checking Systems	No Impact
Balancing Mechanism Activities	Impacted by the amendment to the BSAD variables for P136, and the amendment to the Indicative Energy Imbalance Price derivation.
Collection and Aggregation of Metered Data	No Impact
Supplier Volume Allocation	No Impact
Settlement	Impacted by the amendment to the BSAD variables for P136, and the amendment to the Energy Imbalance Price derivation.
Clearing, Invoicing and Payment	No Impact
Reporting	The Balancing Mechanism Reporting Agent (BMRA) is impacted by the amendments to the BSAD variables, as the reporting of these will

System / Process	Potential Impact of Proposed Modification
	<p>require amendment.</p> <p>The Settlement Administration Agent (SAA) is impacted by the amendments to the BSAD variables, as these will require amendment to the Settlement Report (SAA – I014).</p>

The BSC Central Service Agent provided a Detailed Level Impact Assessment which provided costs and timescales for a number of options that the PSMG were considering at the time of obtaining the impact assessment. The following table summarises the costs and timescales for each of the options that comprises the solution for P136, as defined by the PSMG.

It should be noted that the costs quoted are change specific, and therefore do not encompass the project overheads associated with the change. This is because the amendments required to implement P136 are unlikely to be undertaken as a standalone release (which the project overhead quoted in the impact assessment are for), and therefore the overheads will be spread over all changes included in the relevant BSC Systems Release.

As can be seen from the table above, the two impacted BSC Systems are the BMRA and the SAA, and the costs and timescales quoted are for amendment to these two systems.

The numbers in the 'Option' column tie back to those provided by the BSC Central Service Agent in its impact assessment, and it should be noted that the options required to give effect to P136 have been 'cherry picked' from the full list. Only those options required for P136 are included in the table.

Option	Description	Timescale (Weeks)	Change Specific Cost	Annual Maintenance Cost (p.a.)
Base	P136	5	£92,197	£12,908
1	Disaggregated BSAD (incl. EUC)	6	£386,182	£48,531
5	Load new BSAD (incl. EUC) (not included in 1 to 4)	6	£141,542	£19,816
6	Publish on BMRA new (system and) energy BSAD (excl. EUC)	3	£83,080	£11,631
10	Publish EUC (flat list and against each relevant BM Unit)	3	£77,820	£10,895
12	Settlement Report to include disaggregated BSAD	1	£54,170	£7,584
13	Settlement Report to include EUC	1	£54,170	£7,584

Therefore it can be seen that the implementation of the functionality required to give effect to P136 within the BSC Systems will:

1. Incur BSC Central Service Agent development and implementation costs of **£889,161**;
2. Incur an annual maintenance cost of **£118,949 per annum**; and
3. Require a BSC Central Service Agent development time of **25 weeks**.

3.3.2 Proposed Modification P137

The Detailed Level Impact Assessment for P137 is provided in Annex 5 in full, and is summarised in this section.

The following table details the impacts on the BSC Systems from the implementation of P137:

System / Process	Potential Impact of Proposed Modification
Registration	No Impact
Contract Notification	No Impact
Credit Checking Systems	No Impact
Balancing Mechanism Activities	Impacted by the amendment to the BSAD variables for P137, and the amendment to the Indicative Energy Imbalance Price derivation.
Collection and Aggregation of Metered Data	No Impact
Supplier Volume Allocation	No Impact
Settlement	Impacted by the amendment to the BSAD variables for P137, and the amendment to the Energy Imbalance Price derivation.
Clearing, Invoicing and Payment	No Impact
Reporting	<p>The Balancing Mechanism Reporting Agent (BMRA) is impacted by the amendments to the BSAD variables, as the reporting of these will require amendment.</p> <p>The Settlement Administration Agent (SAA) is impacted by the amendments to the BSAD variables, as these will require amendment to the Settlement Report (SAA – I014).</p>

The BSC Central Service Agent provided a Detailed Level Impact Assessment which provided costs and timescales for a number of options that the PSMG were considering at the time of obtaining the impact assessment. The following table summarises the costs and timescales for each of the options that comprises the solution for P137, as defined by the PSMG.

It should be noted that the costs quoted are change specific, and therefore do not encompass the project overheads associated with the change. This is because the amendments required to implement P137 are unlikely to be undertaken as a standalone release (which the project overhead quoted in the impact assessment are for), and therefore the overheads will be spread over all changes included in the relevant BSC Systems Release.

As can be seen from the table above, the two impacted BSC Systems are the BMRA and the SAA, and the costs and timescales quoted are for amendment to these two systems.

The numbers in the 'Option' column tie back to those provided by the BSC Central Service Agent in its impact assessment, and it should be noted that the options required to give effect to P137 have been 'cherry picked' from the full list. Only those options required for P137 are included in the table.

Option	Description	Timescale (weeks)	Change Specific Cost	Annual Maintenance Cost
Base	P137	5	£100,122	£14,017
1	BM Unit Undo Tagging, BSAD Offset Tagging, disaggregated BSAD (incl. EUC)	11	£639,992	£89,599
3	Load new BSAD (incl. EUC) (not included in 1 or 2)	6	£141,542	£19,816
4	Publish on BMRA new (system and) energy BSAD (excl. EUC)	3	£83,080	£11,631
8	Publish EUC (flat list and against each relevant BM Unit)	3	£77,820	£10,895
9	Dummy BM Units for Non BM delivered standing reserve	1	£67,127	£9,398
10	Settlement Report to include disaggregated BSAD	1	£54,170	£7,584
11	Settlement Report to include EUC	1	£54,170	£7,584

Therefore it can be seen that the implementation of the functionality required to give effect to P137 within the BSC Systems will:

1. Incur BSC Central Service Agent development and implementation costs of **£1,218,023**;
2. Incur an annual maintenance cost of **£170,524 per annum**; and
3. Require a BSC Central Service Agent development time of **31 weeks**.

3.4 Transmission Company

The Transmission Company Analysis (provided in full in Annex 4), indicates that the amendments to the Transmission Company systems and processes to support the changes to BSAD are material, and the Transmission Company indicates a lead time of **10 months** for the changes.

3.5 Parties and Party Agents

P136 and P137 have similar / the same impact on BSC Parties. BSC Parties will be impacted by:

1. The amendment to the Energy Imbalance Price calculation. If BSC Parties verify trading charges, then there will be an impact on any such processes / systems for such verification;
2. The amendment to the BSAD variables and the reporting on the BMRA. BSC Parties will be impacted by the amendment to the on screen reporting, and to the format of the relevant TIBCo messages to report the amended BSAD; and
3. The amendment to the Settlement Report (SAA – I014) to report the amended BSAD.

It is not expected that there be any impact on Party Agents from the implementation of either P136 or P137.

4 IMPACT ON CODE AND DOCUMENTATION

In summary, the following documents are impacted by the implementation of either P136 or P137 (the impacts are the same for both Modifications):

1. The Code, Sections Q, T and X, Annex X-2;
2. The BMRA and SAA Service Descriptions;
3. The Reporting Catalogue;
4. The NETA Data File Catalogue;
5. The BMRA User Requirements Specification (and BMRA system documentation, the BMRA System Specification and the BMRA Design Specification);
6. The SAA User Requirements Specification (and SAA system documentation, the SAA System Specification and the SAA Design Specification);
7. The Interface Design and Definition document (IDD) Parts 1 and 2;
8. The ELEXON Business Process Model;
9. The ELEXON Obligations Register;
10. The (Transmission Company owned) BMRA and SAA Interface Specification; and
11. The (Transmission Company owned) Balancing Services Adjustment Data Methodology Statement.

4.1 Balancing and Settlement Code

The legal drafting for Proposed Modification P136 and Proposed Modification P137 is provided in Annex 1 (1a and 1b, respectively).

The following table sets out the amendments to the Code required to give effect to either P136 or P137 (as the impacts are the same):

Code Section	Potential Impact of Proposed Modification P136 / P137
Q 'Balancing Mechanism Activities'	Section Q, 6.3 requires amendment to detail the changes to BSAD variables.
T 'Settlement and Trading Charges'	Section T, 4 and Annex T-1 and T-2 require amendment to detail the amendments to the Energy Imbalance Price calculation.
X Annex X-2 'Technical Glossary'	Annex X-2 requires amendment to changes the existing BSAD definitions and to create new definitions.

4.2 Code Subsidiary Documents

The following table sets out the amendments to the Code Subsidiary documents required to give effect to either P136 or P137 (as the impacts are the same):

Document	Potential Impact of Proposed Modification P136 / P137
BMRA Service Description	The BMRA Service Description requires amendment to detail the amendments to the BSAD variables (and use of) and the changes to the Energy Imbalance Price calculation.

Document	Potential Impact of Proposed Modification P136 / P137
SAA Service Description	The SAA Service Description requires amendment to detail the amendments to the BSAD variables (and use of) and the changes to the Energy Imbalance Price calculation.
The Reporting Catalogue	The Reporting Catalogue requires amendment to detail the changes to the reporting of the BSAD variables on BMRA and in the Settlement Report.
NETA Data File Catalogue	The NETA Data File Catalogue requires amendment to detail the changes to the reporting of the BSAD variables on BMRA and in the Settlement Report.

4.3 Impact on Other ELEXON Configurable Items

The following table sets out the amendments to the other ELEXON configurable items required to give effect to either P136 or P137 (as the impacts are the same):

Document	Potential Impact of Proposed Modification P136 / P137
BMRA User Requirements Specification (and system documentation)	The BMRA documentation requires amendment to detail the amendments to the BSAD variables (and use of) and the changes to the Energy Imbalance Price calculation.
SAA User Requirements Specification (and system documentation)	The SAA documentation requires amendment to detail the amendments to the BSAD variables (and use of) and the changes to the Energy Imbalance Price calculation.
Interface Design and Definition document (Parts 1 and 2)	The IDD requires amendment to detail the changes to the receipt of BSAD variables, the reporting of the BSAD variables on BMRA and in the Settlement Report.
ELEXON Business Process Model	The ELEXON BPM requires amendment to reflect the amendments to the Settlement calculations.
ELEXON Obligations Register	The ELEXON Obligations Register requires amendment to reflect the amendments to the Settlement calculations.

4.4 Impact on Core Industry Documents and supporting arrangements

The following table sets out the amendments to Core Industry Documents required to give effect to either P136 or P137 (as the impacts are the same):

Document	Potential Impact of Proposed Modification P136 / P137
Balancing Services Adjustment Data Methodology Statement	A supplemental agreement to the Grid Code, requires amendment to reflect the amended formulation and reporting of BSAD variables.
BMRA and SAA Interface Specification	A Transmission Company owned interface definition document requires amendment to reflect the amended reporting of BSAD variables to the BSC Central Service Agent.

5 SUMMARY OF CONSULTATIONS: INITIAL CONSULTATION

Consultation question	Respondent agrees	Respondent disagrees	Opinion unexpressed
Do you believe Proposed Modification P136 better facilitates the achievement of the Applicable BSC Objectives?	2	14	-
Do you believe Proposed Modification P137 better facilitates the achievement of the Applicable BSC Objectives?	2	14	-
Does P136 raise any issues that you believe have not been identified so far and that should be progressed as part of the Assessment Procedure?	See below	See below	
Does P137 raise any issues that you believe have not been identified so far and that should be progressed as part of the Assessment Procedure?	See below	See below	
Are there any further comments on P136 that you wish to make?	See below	See below	
Are there any further comments on P137 that you wish to make?	See below	See below	

5.1 Modification Group's summary of the consultation responses

5.1.1 P136 and P137 Initial Assessment Consultation Responses Summary

Sixteen responses (56 Parties, 3 non Parties) were received in respect of the initial assessment consultation on P136 and P137.

Of these respondents the vast majority do not believe P136 or P137 to better facilitate the Applicable BSC Objectives.

To summarise the responses:

5.1.2 Rationale for not supporting Either P136 or P137

1. Current pricing methodology has not run through the winter peak, but seems to provide the correct signals, as shown in recent circumstances this summer when NISMs were called;
2. The P78 decision letter indicates that P78 will deliver the correct mechanism, particularly in respect of operational concerns;
3. Both P136 and P137 introduce market risk regarding increased potential for generation to be withheld;
4. Marginal main imbalance price will over recover the cost of balancing the system, decreasing efficiency of the market. Parties exposed to the main price are charged the marginal price, whereas in reality the cost of balancing is lower than the margin, and over recovery occurs. Over recovery means that RCRC will be high, allowing a small number of Parties to benefit from artificially high imbalance prices, reducing competition;

5. Parties will be incentivised to hold their own reserve by going long, thus reducing efficiency in operating the market (objective 3(b));
6. Increased volatility of prices from marginal pricing is a barrier to entry;
7. Marginal pricing increases the costs of Parties unmanageable risks, increasing probability of going out of business;
8. Marginal pricing gameable and leads to volatile pricing (this was why marginal approach under the Pool (SMP) was abandoned);
9. P137 is likely, as a result of the treatment of option fees, to significantly increase the volatility of SBP. Although P137 proposes a different treatment of option fees to that in place prior to implementation of P3, it would effectively reinstate the pre P3 situation which was undesirable because of the unwarranted extra risk;
10. Marginal pricing supported in principle, however, P136 and P137 may not accurately reflect the costs of energy balancing – until a methodology can be defined that reflects resource cost associated with energy balancing, marginal pricing will not be better at facilitating the Applicable BSC Objectives; and
11. Neither P136 nor P137 will encourage parties to trade / balance ahead of Gate Closure, both will encourage parties to trade to a different position ahead of Gate Closure. Parties trade to a position set by their forecast of production and consumption. This includes margin to cover the risk of the forecast being wrong, such margin being set in part by the risk of being wrong, and in part of the consequential cost of that risk. The current arrangements provide more than adequate incentive for all parties to trade actively to match their respective requirements. Creating an artificially high penalty for imbalance will not encourage trading, but will simply mean that parties trade to a significantly long position, which is likely to be less balanced than before.

5.1.3 Rationale for supporting Either P136 or P137

1. Sends stronger long term signals to the market on the costs of failing to contract sufficiently where the system is under stress, thus providing positive investment signals to the market to encourage building of new generation and the continued presence of peaking plant contributing to security of supply;
2. In applying marginal prices to the main price; when the system is long the potential for a negative, or at least lower System Sell Price will enhance incentives to balance and not to go long, as is now the case;
3. P137 explicitly improves on the tagging methodology and targets the expected utilisation of standing reserve to better reflect the Settlement Period costs of balancing the system; and
4. The development of better pricing signals should provide more information to the forward markets, and encourages the efficient allocation of resources. This will promote increased security of supply and competition between BSC parties.

5.1.4 Issues Raised:

1. What is the most appropriate balance between incentives on Parties to have a long position (to cover inaccuracies in demand forecasting and avoid marginal price) versus Transmission Company Licence obligations to energy balance the system in real time (taking into account the products available to the TC, the potential for innovation in these products (demand side participation) and the potential for significant gains following adoption of a marginal pricing approach)? (Response 1);

2. Evidence that the benefits proposed to be delivered by P78 have failed to be achieved (especially since current arrangements have not run through a winter peak) (Response 1);
3. Effects on small generation / renewables from adoption of marginal pricing (Response 1);
4. One element of P136 that, taken in isolation, would be beneficial, namely disaggregated BSAD, improving transparency in the pricing and facilitating more accurate operation of the cashout calculations (Response 3);
5. Effects on credit cover arrangements and on CAP would need to be considered (response 3);
6. The ability for ex post amendments to the Energy Imbalance Prices raises concerns. Thus further consideration of the stability of imbalance prices is required. This is present for P136, but is exacerbated by P137 due to the further levels of complexity introduced by the different tagging mechanisms (Response 5);
7. Treatment of standing reserve option fees under P137 raises the issue as to standing reserve being called when the system is not short of energy, but in response to certain events on the system such as plant trip, P137 could result in high prices at random times, undermining pricing signals (response 5);
8. Marginal price will decrease security of supply, as plant may be withheld to cover trip. Thus the issue of post Gate Closure plant loss needs to be addressed, to ensure that generation is encouraged to provide spare capacity and to balance at Gate Closure (Response 6);
9. P137 treatment of option fees artificially increases SBP (through the increased BPA) and brings in the problems identified in P135 in relation to high imbalance prices (i.e. encourages plant to be withheld in case of trip, and does not encourage less reliable plant to make capacity available) (Response 6);
10. P137 treatment of option fees; the options are bought by the TC as they do not know when they are going to be called. Given this then the value of the option is equal for all periods in which it can be called and would be a distortion to allocate its costs to when it is actually called, i.e. need to reflect the fact that the option is of value at all times it could be called not just when it is called;
11. P137 treatment of option fees introduces a cross subsidy. Currently the fee is paid out by the TC per Settlement Period to guarantee continued security of supply. If a Settlement Period goes past without having to utilise the generation (and pay out a utilisation fee), then it is gone, and all network users have had the benefit of the 'insurance' that the holding of that standing reserve has provided. To then not charge for that Settlement Period, but lump those charges into a future Settlement Period when standing reserve is utilised, wrongly charges those network users in the future Settlement Period (Response 12);
12. The NETA structure was designed around weighted average imbalance prices. It is inappropriate to make such a fundamental change without fully reviewing which other design aspects may need to be modified. One example of this is the timing of gate closure. If marginal pricing were implemented then it is expected as a minimum that Gate Closure would need to be reduced to the start of each respective Settlement Period. The rationale for this is it would mean Parties would only be exposed to one Settlement Period in which they were not able to respond to changing market conditions (Response 13);
13. The TC has not specified the scope of BSAD changes that will be required to implement this modification. The BSAD variables which feed into cashout prices can and do have a major effect on cashout prices. The mechanics of how these variables are calculated by the TC is outside the scope of P136, all central systems sees are the numbers put forward by the TC. Whilst we support the introduction of marginal pricing as per mod 136, we have concerns that at this stage of the process

we don't know what we are 'signing up for' in terms of changes to BSAD, thus BSAD and its associated documents should be brought within the governance of the BSC to allow a holistic process for changes to cashout prices (Response 7);

14. Whether the likely impact of marginal pricing will affect the TC's normal operations (when the system is not under stress) in providing energy balance to the system, on the assumption that the TC will have to manage the significantly long position of the market. Whether such a (long-term) long position by all participants has any effect on the operation of the transmission system when security of supply is an issue, and whether exposing parties to very high prices at times of system stress will change the security of the transmission system, or simply over-recover costs from out of balance parties (response 8);
15. What is likely to be the impact of the modification on BSC participants' behaviour as regards the bid and offer prices they submit, and to what extent does will the modification increases the efficiency of a BSC participant's "bid/offer" process: i.e. does it provide market participants with a better view of the likely supply-demand balance prior to bids and offers being made (Response 15);
16. The requirement to reflect the fact that end customers, if exposed directly to imbalance prices, would choose to reduce demand at times of high prices: consideration should be given in determining the value, which is attributed to different customer groups, which reflects the price at which they would choose to reduce demand if they were directly exposed to such a price: consideration should be given to the number of such "values" required for an efficient solution and the different options available to determine what these values are (Response 15);
17. Should all participants in the balancing mechanism be paid/pay at SBP or SSP for accepted offers and bids respectively, rather than simply imbalances being charged at SBP and SSP (Response 15);
18. P136 appears a more partial solution. The assessment should consider whether there is some risk that a partial solution may introduce more distortions than it is attempting to remove (Response 16); and
19. P137 attempts to cover a range of constraints in the current price discovery process. In this respect it is more robust than P136, but there are possibly other issues, such as NGT's market behaviour that are relevant to price discovery, although these are outside of the scope of the BSC (Response 16).

5.1.5 Comments made

1. Impacts on the following areas of business (specifically in respect of a small new entrant niche Supplier) (Response 1):
 - Forecasting more difficult, increasing risk premiums and prices passed onto customers. This affects ability to compete on an equal basis with larger / more balanced / more predictable portfolios.
 - Significant credit implications, as difficult to predict the correct level of credit cover required. Potential for high imbalance prices over a number of Settlement Periods could lead to bankruptcy for smaller players if exposed to these prices;
 - Prompt pricing / timeliness of price reporting important;
 - Impossible to forecast impact on RCRC; and
 - Creates barriers to entry as a consequence of increased market risk.
2. Current mechanism is an efficient and effective approach and it is more appropriate to amend BSAD than to adopt a marginal pricing methodology. It is proposed that the artificial cap on the

- current imbalance price is associated with the inclusion of BSAD, as the current BSAD methodology obscures the underlying cost of balancing the system (specifically option fee averaging). Targeting BSAD payments to Settlement Periods where the service is likely to be utilised sends more appropriate signals for forward contracting. Thus the current methodology should be enhanced by better cost targeting of BSAD, which will encourage Parties to trade ahead of Gate Closure;
3. Merit in stability of the trading arrangements; changes to EIPs may be right, but should be delayed allowing a better assessment of the sort of changes following a winter with P78; If the rules are changed too readily, even a beneficial change may have limited effect as investors would not give weight to its effects, being uncertain as to stability / endurance;
 4. The market requires confidence that the prices reporting in imbalance cash out are cost reflective and provide appropriate signals, thus energy purchased forwards by the TC (and reported as energy BSAD) should not feed into the NIV or the main imbalance price calculation;
 5. Treatment of option fees under P137 introduces an estimated variable into cash out prices, thus further work is required to establish the impact of such prices on cash out and whether such cash out produces prices that are more cost reflective;
 6. An alternative that encourages generators to offer potential spare capacity is required, specifically in respect of post Gate Closure plant loss, for example short fall treated as system balancing and removed from the price calculation, or generators allowed to self balance after Gate Closure;
 7. Far better tools are available to the TC to manage the Transmission System, which would better meet objective 3(b), in particular, under NETA the demand side has progressively lost access to market mechanisms that help in managing the Transmission System;
 8. The assessments appear only to concentrate on the narrow aspect of price, with an inbuilt belief that the more cost reflective the price the better the result – has this been proven? A wider look at the impact of volatile prices should be considered, especially since virtually all mods to date have been orientated around reducing unnecessary price volatility;
 9. Within the consultation document there are a number of key issues. One of these is the possibility for a non-delivered acceptance to set the imbalance price. Under this partial marginal pricing modification the effect of tagging may result in a non-delivered acceptance setting the energy imbalance price. It is not believed that it is appropriate for a non-delivered acceptance to set the imbalance price for parties out of balance, as this does not reflect the cost of energy balancing;
 10. Some of the defects identified in P137 in terms of the current treatment of tagging, the treatment of option fees and non BM Unit standing reserve contracts are acknowledged, and it would be much more appropriate to be addressing these issues rather than fundamentally changing the underlying pricing mechanism. Resolution of this issue with increased transparency of TC actions would provide both a materiality and information signal to the industry. The combination of which would allow BSC Parties to be able to respond rather than just imposing substantial and arbitrary imbalance prices; and
 11. The Modification Group should give consideration as to what data should be analysed and presented to BSC participants to assist in their assessment of the modification proposal. In particular, we suggest that a full analysis of aggregate bid/offer behaviour over the past [twelve months] should be undertaken (Response 15).

5.2 Comments and views of the Modification Group

The PSMG considered the issues raised and comments made in respect of the initial consultation on P136 and P137 and believe that the issues have been addressed in the deliberations on the assessment

issues. Therefore the PSMG believe that section 2 covers all of the points raised by respondents to the initial consultation and thus no further comments and views are expressed here.

6 SUMMARY OF CONSULTATIONS: SECOND CONSULTATION

The following table presents the second consultation in respect of P136 and P137 as a consolidated summary of the responses for both P136 and P137. This is because the views of the respondents did not change materially (if at all) between the two Modifications, and therefore it seems inefficient to present two identical tables.

Consultation question	Respondent agrees	Respondent disagrees	Opinion unexpressed
Do you agree with the definition of the marginal price proposed by the PSMG for P136 / P137? If not, what definition of the marginal price would you propose?	8	8	5
Would you prefer to have the NIV derived in real time from all possible balancing actions with estimates of non firm volumes, or would you prefer to have the NIV derived in real time with only firm volumes?	7 (Firm)	10 (Estimate)	4
Of the three options set out in regards to the stability of the Energy Imbalance Price, which do you favour, and why? ((a) allow changes to the Energy Imbalance Price over time, (b) freeze the balancing action data at real time, (c) freeze the Energy Imbalance Price at real time)	6 (a) 5 (b) 5 (c) 1 no preference	-	4
Do you support the approach of allowing error correction of BSAD under exceptional circumstances only?	10	6	5
Noting the Transmission Company BSAD consultation, what utilisation of BSAD would you prefer to see for P136 (including the treatment of option fees)?	See section 2	See section 2	See section 2
Do you support the proposed approach (being considered as a potential alternative to P136) whereby BSAD is removed from the Energy Imbalance Price calculation in entirety?	5 (2 not sure)	11 (1 not sure)	5
Do you support the usage of option fees (as currently reflected in the Buy and Sell Price Price Adjustment variables (BPA and SPA)) set out by P137?	6	9	6 (1 N/A)
Do you wish to propose a different treatment of BSAD for P136 / P137?	See section 2	See section 2	See section 2
In your opinion, and given the technical complexity involved, is it appropriate for a non delivered Bid – Offer Acceptance (or BSAD balancing action) to set the marginal Energy Imbalance Price?	10	7	4

Consultation question	Respondent agrees	Respondent disagrees	Opinion unexpressed
Do you support the principle of BM Unit Undo Tagging and BSAD Offsetting Tagging as a part of the NIV derivation?	5 (1 P137 only)	10	7 (1 N/A, P136)
What effect, in your opinion, will P136 / P137 have on Applicable BSC Objective 3(b), particularly with respect to incentives to balance and any consequential effect on security of supply?	Better 4	Worse 13	2 +1 no change
What effect, in your opinion, will P136 / P137 have on Parties behaviour in the Balancing Mechanism, specifically with reference to Bid – Offer pricing strategies?	Better 2	Worse 10	5 +3 no change and 1 N/A
What effect, in your opinion, will P136 / P137 have on the cost reflectivity of the (main) Energy Imbalance Price, and in turn what impact do you believe this will have on the targeting of the costs incurred in energy balancing the system at those in imbalance?	Better 4	Worse 14	3
In your opinion, will P136 / P137 have an impact on the prices emerging from the forwards and spot markets, if so why? If not, why not?	Better 5	Worse 10	2 +4 no change
What effect, in your opinion, will P136 / P137 have on the incremental costs incurred by certain types of Party, and what consequential effect will this have on the costs passed back to consumers?	See section 2	See section 2	See section 2
In your opinion, do P136 / P137 change the level of exposure to risk? In your opinion, how does this consequentially impact risk management?	Better 2	Worse 13	4 + 2 no change
What effect, in your opinion, will P136 / P137 have on the RCRC, if any, and what influence do you think this will have on the (balancing) behaviour of Parties?	Better -	Worse 7	2 + 8 no change + 4 Yes's (no effect on Parties)
In your opinion, is Credit Cover under P136 / P137 any more of an issue than under the current arrangements?	14 (yes)	5 (no)	2
In your opinion, what will the likely impact of P136 / P137 be on certain types of Party (for example, large portfolio player, single site generator, small Supplier)?	See section 2	See section 2	See section 2
What effect, in your opinion, will P136 / P137 have (overall) in relation to Applicable BSC	Better	Worse	2

Consultation question	Respondent agrees	Respondent disagrees	Opinion unexpressed
Objective 3(c)?	4	15	
Do P136 / P137 better facilitate the Applicable BSC Objectives overall?	4 (yes)	17 (no)	
Does P136 / P137 raise any issues that you believe have not been identified so far and that should be progressed as part of the Assessment Procedure?	See section 2	See section 2	See section 2
Are there any further comments on P136 / P137 that you wish to make?	See section 2	See section 2	See section 2

6.1 Modification Group's summary of the consultation responses

Since the consultation responses in respect of the second Assessment consultation on P136 and P137 are intrinsically linked with the assessment of P136 and P137, the consultation response summaries are provided against the deliberations of the PSMG in section 2.

6.2 Comments and views of the Modification Group

Since the consultation responses in respect of the second Assessment consultation on P136 and P137 are intrinsically linked with the assessment of P136 and P137, the consultation response summaries are provided against the deliberations of the PSMG in section 2, followed by the PSMG conclusions in respect of each of the questions / issues. Therefore the PSMG believe that section 2 covers all of the points raised by respondents to the second consultation and thus no further comments and views are expressed here.

7 TRANSMISSION COMPANY ANALYSIS

7.1 Modification Proposal P136

Q	Question	Response
1	Please outline any impact of the Proposed Modification (and, if applicable, any Alternative Modification) on the ability of the Transmission Company to discharge its obligations efficiently under the Transmission Licence and on its ability to operate an efficient, economical and co-ordinated transmission system.	We believe that the Proposed Modification will better facilitate the Transmission Company in its ability to discharge its obligations efficiently under the Transmission Licence.
2	Please outline the views and rationale of the Transmission Company as to whether the Proposed Modification (and, if applicable, any Alternative Modification) would better facilitate achievement of the Applicable BSC Objectives.	We believe this Modification Proposal better facilitates BSC Applicable Objective c), by enhancing the incentives to balance and increasing the level of competition by encouraging Parties to trade ahead of Gate Closure. We also believe that the Proposal meets BSC Applicable Objective b) in benefiting the operation of the Transmission System when security of supply is an issue. This is achieved via a marginal approach to the calculation of imbalance prices which ensures that the appropriate signals are provided to the forward markets with the result that it will incentivise

		participants to achieve a balanced position at Gate Closure.
3	Please outline the impact of the Proposed Modification (and, if applicable, any Alternative Modification) on the computer systems and processes of the Transmission Company, including details of any changes to such systems and processes that would be required as a result of the implementation of the Proposed Modification (and, if applicable, any Alternative Modification).	We are currently carrying out an assessment of the full impact of the required changes to our systems and processes arising from this modification. It is our intention to complete our review to coincide with the requirements of the Assessment Consultation. In addition to the BSC requirements, we are also undertaking an associated BSAD consultation. Until the results of this consultation is complete and views of the Authority have been provided we feel it would be premature to express a view on the complete nature of the changes required to the systems and processes of the Transmission Company. We will however, work with Elexon as far as we can to ensure that this dual consultative process is aligned to meet appropriate timescale requirements.
4	Please provide an estimate of the development, capital and operating costs (broken down in reasonable detail) which the Transmission Company anticipates that it would incur in, and as a result of, implementing the Proposed Modification (and, if applicable, any Alternative Modification).	We do not believe that we can provide an estimate of the costs involved in changing our systems until we know the outcome of the ongoing BSAD consultation and the implementation option has been chosen.
5	Please provide details of any consequential changes to Core Industry Documents that would be required as a result of the implementation of the Proposed Modification (and, if applicable, any Alternative Modification).	Not applicable.
6	Any other comments on the Proposed Modification (and Alternative Modification if applicable).	On implementation issues we would like to highlight that our current view is that we would require at least 10 months notice to implement the required changes for this modification. However, this estimate is dependent upon the outcome of the current BSAD consultation. As indicated in our response on Question 3 we hope to work with Elexon to agree a mutually acceptable implementation date for P136 and the associated BSAD changes should they be approved.

7.2 Modification Proposal P137

Q	Question	Response
1	Please outline any impact of the Proposed Modification (and, if applicable, any Alternative Modification) on the ability of the Transmission Company to discharge its obligations efficiently under the Transmission Licence and on its ability to operate an efficient, economical and co-ordinated transmission system.	We believe that the Proposed Modification will better facilitate the Transmission Company in its ability to discharge its obligations efficiently under the Transmission Licence.
2	Please outline the views and rationale of the Transmission Company as to whether the Proposed Modification (and, if	We believe this Modification Proposal better facilitates BSC Applicable Objective c), by enhancing the incentives to balance and increasing

	applicable, any Alternative Modification) would better facilitate achievement of the Applicable BSC Objectives.	the level of competition by encouraging Parties to trade ahead of Gate Closure. We also believe that the Proposal meets BSC Applicable Objective b) in benefiting the operation of the Transmission System when security of supply is an issue. This is achieved via a marginal approach to the calculation of imbalance prices which ensures that the appropriate signals are provided to the forward markets with the result that it will incentivise participants to achieve a balanced position at Gate Closure.
3	Please outline the impact of the Proposed Modification (and, if applicable, any Alternative Modification) on the computer systems and processes of the Transmission Company, including details of any changes to such systems and processes that would be required as a result of the implementation of the Proposed Modification (and, if applicable, any Alternative Modification)	We are currently carrying out an assessment of the full impact of the required changes to our systems and processes arising from this modification. It is our intention to complete our review to coincide with the requirements of the Assessment Consultation. In addition to the BSC requirements, we are also undertaking an associated BSAD consultation. Until the results of this consultation is complete and views of the Authority have been provided we feel it would be premature to express a view on the complete nature of the changes required to the systems and processes of the Transmission Company. We will however, work with Elexon as far as we can to ensure that this dual consultative process is aligned to meet appropriate timescale requirements
4	Please provide an estimate of the development, capital and operating costs (broken down in reasonable detail) which the Transmission Company anticipates that it would incur in, and as a result of, implementing the Proposed Modification (and, if applicable, any Alternative Modification).	We do not believe that we can provide an estimate of the costs involved in changing our systems until we know the outcome of the ongoing BSAD consultation and the implementation option has been chosen.
5	Please provide details of any consequential changes to Core Industry Documents that would be required as a result of the implementation of the Proposed Modification (and, if applicable, any Alternative Modification).	Not applicable.
6	Any other comments on the Proposed Modification (and Alternative Modification if applicable).	On implementation issues we would like to highlight that our current view is that we would require at least 10 months notice to implement the required changes for this modification. However, this estimate is dependent upon the outcome of the current BSAD consultation. As indicated in our response on Question 3 we hope to work with Elexon to agree a mutually acceptable implementation date for P137 and the associated BSAD changes should they be approved.

8 DOCUMENT CONTROL

8.1 Authorities

Version	Date	Author	Reviewer	Change Reference
0.1	06/11/03	Mandi Francis	Justin Andrews	
0.1	06/11/03	Mandi Francis	PSMG	
0.2	10/11/03	Mandi Francis	PSMG	
0.2	10/11/03	Mandi Francis	Justin Andrews	
1.0	10/11/03	Change Delivery	BSC Panel	

ANNEX 1 DRAFT LEGAL TEXT

a Text for Proposed Modification P136

Pending Drafting.

b Text for Proposed Modification P137

Pending Drafting.

ANNEX 3 CONSULTATION RESPONSES

a Initial Assessment Consultation Responses

Consultation issued 16/09/03

See attached document 'P136_P137AR Annex 3a.pdf' for the responses

Representations were received from the following parties:

No	Company	File Number	No. BSC Parties Represented	No. Non-Parties Represented
1.	Gaz de France	P136-P137_ASS1_001	1	0
2.	ConocoPhillips	P136-P137_ASS1_002	2	0
3.	EDF Energy	P136-P137_ASS1_003	9	0
4.	Corus Group	P136-P137_ASS1_004	0	1
5.	Innogy	P136-P137_ASS1_005	9	0
6.	Scottish Power	P136-P137_ASS1_006	6	0
7.	Edison Mission Energy	P136-P137_ASS1_007	1	0
8.	Ineos Chlor Limited	P136-P137_ASS1_008	2	1
9.	BizzEnergy Ltd	P136-P137_ASS1_009	1	0
10.	Powergen	P136-P137_ASS1_010	14	0
11.	Alcan Smelting and Power UK	P136-P137_ASS1_011	0	1
12.	Scottish and Southern	P136-P137_ASS1_012	4	0
13.	British Gas Trading	P136-P137_ASS1_013	1	0
14.	InterGen UK Ltd	P136-P137_ASS1_14	4	0
15.	Teeside Power Ltd	P136-P137_ASS1_015	1	0
16.	Entergy Koch Trading Ltd	P136-P137_ASS1_016	1	0

b Second Assessment Consultation Responses

Consultation issued 21 October 2003

See attached document 'P136_P137AR Annex 3b.pdf'

Representations were received from the following parties:

No	Company	File Number	No. BSC Parties Represented	No. Non-Parties Represented
1.	First Hydro	P136_137_ASS_01	1	0
2.	BOC Gases	P136_137_ASS_02	0	1
3.	South Coast Power Ltd	P136_137_ASS_03	1	0
4.	Slough Energy	P136_137_ASS_04	4	0
5.	GdF Marketing	P136_137_ASS_05	1	0
6.	ScottishPower	P136_137_ASS_06	6	0
7.	RWE	P136_137_ASS_07	9	0
8.	InterGen UK Ltd	P136_137_ASS_08	4	1
9.	Alcan Power and Smelting UK	P136_137_ASS_09	0	1
10.	Corus Group Plc	P136_137_ASS_10	0	1
11.	ConocoPhillips	P136_137_ASS_11	2	0
12.	Energy Intensive Users Group	P136_137_ASS_12	0	
13.	British Gas Trading	P136_137_ASS_13	5	0
14.	Powergen	P136_137_ASS_14	14	0
15.	EdF Energy	P136_137_ASS_15	9	0
16.	National Grid	P136_137_ASS_16	1	0
17.	energywatch	P136_137_ASS_17	0	
18.	Entergy-Koch Trading Europe Ltd	P136_137_ASS_18	1	0
19.	Atlantic Electric and Gas Ltd	P136_137_ASS_19	1	0
20.	Barclays Capital	P136_137_ASS_20	1	0
21.	Scottish and Southern Energy	P136_137_ASS_21	4	0

ANNEX 4 NOT USED

ANNEX 5 BSC AGENT IMPACT ASSESSMENTS

a Modification Proposal P136

See attached document 'P136_P137AR Annex 5a.pdf'

b Modification Proposal P137

See attached document 'P136_P137AR Annex 5b.pdf'

ANNEX 6 BSCCO IMPACT ASSESSMENTS

c ELEXON Design Authority

MP/CP No.	P136	Title:	Marginal Definition of the 'main' Energy Imbalance Price					
	P137		Revised Calculation of System Buy Price and System Sell Price					
Assessor Name	John Lucas		Assessor Team	Design Authority		Date	06.08.03	
Stage of Assessment	Initial		Document Assessed			Proposal Form (and attached paper)		
Likely Impacted Departments:								
CVA Programme	✓	SVA Programme		IT		Legal	✓	
Governance	✓	Comms		Finance		Strategic Comm. Servs		
Commercial and SVAA Operations.		CVA Operations	✓	Market Monitoring	✓	Customer Services Management		
Assurance	✓	P6		Other (please specify)				
Likely ELEXON Activities:								
Procurement Activity Required		MRA CP Required		Special Project / Working Group Required		Legal Guidance Required	✓	
BSC System Related Changes:								
	BMRA	CDCA	CRA	ECVAA	FAA	SAA	TAA	TLFA
Software	✓					✓		
Code Subsidiary Documents	✓					✓		

Other Configurable Items	✓						✓		
	SVAA	PARMS	EAC/AA	MIDP	NHHDA	BSC Website	NGC	TOMAS	
Software							✓	✓	
Code Subsidiary Documents							✓	✓	
Other Configurable Items							✓	✓	
Non-BSC System Related Changes:									
BPM	✓	NDFC	✓	Reporting Catalogue	✓	SVA Data Catalogue		Communications Reqs Document	
IDD Part 1	✓	IDD Part 2	✓	EPFAL IDD Part 1		EPFAL IDD Part 2		Market Indicator Definition Statement	
Service Descriptions		BSC Auditor		Certification Agent		Profile Administrator		Teleswitch Agent	
BSC Code Sections	P136 will impact Sections T and Q (and associated definitions in Section X).								
Core Industry Documents									
BSCPs									
PSL									
SSL									
COPs									
Impacted Participants:									
BSC Parties	✓	Non BSC Parties		BSC Party Agents		BSC Agents	✓		
Core Industry Document Owners				BSC Panel					
Related Mods, CPs or other Projects:-									
<p>Modification Proposal P135 addresses a similar defect to P136, but is intended as a short-term solution that can be implemented more quickly.</p> <p>Modification Proposal P137 addresses a similar defect to P136, and should be progressed in parallel.</p>									

Design Authority Comments, Issues or Risks:-

P136 identifies possible changes to the BSAD interface from NGC to BMRA/SAA, but does not indicate what these changes are. This issue will need to be resolved by the Modification Group. Input may be required from ELEXON legal to clarify the extent to which BSAD issues (e.g. disaggregation of forward trades) can be considered in the context of a BSC Modification Proposal on marginal pricing.

The Modification Group will also need to clarify the rules for 'defaulting' the reverse price if no Market Index Price Data is available. Should the reverse price be defaulted to a marginal price under these circumstances, or to an average price (as currently)?

This initial impact assessment assumes no impact on the BSC Website, although this will need to be confirmed once the Modification Group has clarified the detail of the proposed solution.

d ELEXON CVA Programme

Assessor Name	Phil Clinch	Assessor Team	CVA Programme	Date	15 October 2003
1. Does this Impact your Department?		Yes			
2. System Impacts?	Yes				
Description: BMRS SAA TOMAS					
Total Resources (man days) (Development)				Lead time	
3. Process Impacts?	No				
Description:					
Total Resources (man days) (Development)				Lead time	
4. Documentation Impacts?	Yes				
Description: BMRA URS, Service Description, SS, MSS and OSM SAA URS, Service Description, SS, MSS and OSM Neta Data File Catalogue Reporting Catalogue IDD Part 1 IDD Part 2					
Total Resources (man days) (Development)				Lead time	
5. Operational Impacts?	No				
Description:					
Ongoing Resources (man days per annum) (Post-implementation)					
6. Impact on Interfaces with BSC Agents, BSC Parties, BSC Party Agents and other ELEXON Departments?				Yes	
Description: There will be a major impact on the interface between NGC and the central Services Provider and between NGC and TOMAS					
7. Any other Comments or Assumptions made:					
The requirements for P136 and P137 are similar as far as implementation by the CVA Programme is concerned and a single assessment has been made for both modifications. As P137 is a more complex version of P136 it is assumed that only one of the Modifications would be approved for implementation.					

<p>The detail of the requirements has not yet been specified or agreed and a number of options for implementation have been proposed. The CVA Programme estimate for each Modification is 509 man-days for the simpler options and 709 man-days for the more complex requirements. At this stage there is a tolerance of plus or minus 50% on these figures.</p> <p>The implementation is high risk as both Modifications propose a major change to the pricing calculation. The changes are of medium to high complexity.</p>	
<p>Overall Lead Time for Project: Either Modification would be a major component of a scheduled CVA Programme Release</p>	

e ELEXON Assurance

Assessor Name	Clive Cushen	Assessor Team	For Assurance Dept.	Date	04/08/2003
1. Does this Impact your Department?		Yes			

2. System Impacts?	See below				
Description:					
Assurance Dept (Disputes) is working with Service Delivery(Market Monitoring) to specify and develop calculators to support the Post-Final Extra Settlement Determination process. These calculators will need to be reflect any Settlement Day based changes to the pricing rules. Please ensure that there is an impact statement from Market Monitoring on this area.					
Total Resources (man days) (Development)				Lead time	
3. Process Impacts?	Yes				
Description:					
No impact on Trading Disputes process					
No impact expected on the Post-final ESD process being developed as it will be generic					
No impact on Performance Assurance or BSC Audit processes					
No impact on P6 processes as this rule change is outside the Settlement Day window relevant to P6					
Estimate of Delivery assurance & Elexon Audit by Systems Assurance Team = 10 man days					
Total Resources (man days) (Development)		10		Lead time	
				0	
4. Documentation Impacts?	Yes				
Description:					
Obligations Register – estimated at 0.5 man days					
ELEXON view of BPM – estimated at 1 man day					
No impact anticipated on ESD documentation as it will be generic					
Total Resources (man days) (Development)		1.5		Lead time	
				2 weeks	

5. Operational Impacts?	No	
Description: Assume that this MP will not increase the level of Trading Disputes		
Ongoing Resources (man days per annum) (Post-implementation)		
6. Impact on Interfaces with BSC Agents, BSC Parties, BSC Party Agents and other ELEXON Departments?		
Description:		
7. Any other Comments or Assumptions made:		
1. This MP should be assessed as High business risk by Elexon as it has a material impact on Settlement.		
2. Delivery would be via the CVA Programme. PwC will be performing the Development audit for the relevant BSC Agents, and Systems Assurance will be performing the Development Audit for ELEXON.		
Overall Lead Time for Project		

Assessor Name	Richard Smith	Assessor Team		Assurance		Date	14/10/03
1. Does this Impact your Department?					Yes		

2. System Impacts?	Yes	
Description: See previous IA from Clive Cushen concerning ESD Calculator		
Total Resources (man days) (Development)		Lead time
3. Process Impacts?	Yes	
Description: This IA is for both P136 & P137. Systems Assurance will provide ~50 – 70 man days (depending on the final solution) of effort to the CVA Programme toward the delivery of these modifications.		
Total Resources (man days) (Development)	50-70	Lead time
4. Documentation Impacts?		
Description: Obligations Register ~ 1 man day BPM ~ 1 man day		
Total Resources (man days) (Development)	2	Lead time
5. Operational Impacts?		

Description:	
Ongoing Resources (man days per annum) (Post-implementation)	
6. Impact on Interfaces with BSC Agents, BSC Parties, BSC Party Agents and other ELEXON Departments?	
Description:	
7. Any other Comments or Assumptions made:	
Overall Lead Time for Project	

f ELEXON Service Delivery (Market Monitoring)

Assumptions

1. No new Price Derivation Codes will be created for these modifications;
2. No changes will be made to the TOMAS data published on the web site;
3. This work will be completed as part of an ELEXON CVA Programme Release, not a separate project, which would require much greater contribution from MMR;
4. No time has been included for Project liaison, any Auditor requirements or preparation for or participation in Integration Testing, SIT or PPT;
5. 5 person-days Management resource will be required per approved modification to oversee these changes within MMR;
6. Impacted documentation is listed but no time is included in estimates for carrying out revisions;
7. Detailed, final file formats for the amended BSAD flow and SAA I014 will be available prior to the start of Development.

Provisional IA estimates have increased because:

- The assumption that the SAA I014 would be unimpacted has proven to be false;
- The NGC File Converter impacts are now included.

P136 Marginal Definition of the 'main' Energy Imbalance Price

Impacts: TOMAS Software including NGC File Converter (Development 10 days, testing **20 days** (including regression), plus TOMAS LWI, TOMAS Data Catalogue, TOMAS System Design, TOMAS Requirements Catalogue (**15 days**). MDM Software (Development **8 days**, testing **18 days** including regression) and documentation (**5 days**).

P137 Revised Calculation of System Buy Price and System Sell Price

Impacts: TOMAS Software including NGC File Converter (Development **12 days**, testing **24 days** (including regression), plus TOMAS LWI, TOMAS Data Catalogue, TOMAS System Design, TOMAS Requirements Catalogue (**15 days**). MDM Software (Development **8 days**, testing **18 days** including regression) and documentation (**5 days**).

g ELEXON Finance

No Impact.

h ELEXON Governance and Regulatory Affairs

No Impact

i ELEXON Strategic Commercial Services

No Impact

ANNEX 7 P136 AND P137 TERMS OF REFERENCE**j Modification Proposal P136 Terms of Reference**

See attached document 'P136_P137AR Annex 7a.pdf'

k Modification Proposal P137 Terms of Reference

See attached document 'P136_P137AR Annex 7b.pdf'

ANNEX 8 DETAILED TECHNICAL SOLUTION FOR P136 AND P137**a Modification Proposal P136 Requirements Specification**

See attached document 'P136_P137AR Annex 8a.pdf'

b Modification Proposal P137 Requirements Specification

See attached document 'P136_P137AR Annex 8b.pdf'

ANNEX 9 WORKED EXAMPLES OF P136, P137 AND P78

The following Settlement Periods were chosen at random. For each Settlement Period the Energy Imbalance Price was derived for the current mechanism (all Settlement Periods are pre P78), the P136 mechanism (using simple disaggregated BSAD) and the P137 mechanism.

- 1. 26 April 2002, SP 35;**
- 2. 29 July 2002, SP 29;**
- 3. 17 September 2002, SP 40;**
- 4. 10 December 2002, SP 35; and**
- 5. 10 March 2003, SP 40.**

For each Settlement Period, the Transmission Company provided:

- Disaggregated Energy BSAD;
- System BSAD (including volumes associated with System to System volumes and estimates of the frequency response volumes);
- BM Units delivering Standing Reserve in the Balancing Mechanism; and
- Non Balancing Mechanism Standing Reserve.

It should be noted that currently, information surrounding the delivery of standing reserve is commercially sensitive to the Transmission Company. Furthermore, the expected utilisation cost, required by P137 for Balancing Mechanism and non Balancing Mechanism delivered standing reserve (to be reflected in the Bid – Offer Acceptance Price / instruction price) is, as well as being commercially sensitive, unavailable at this time, as a consequence of the formula for deriving the expected utilisation cost not being 'firm'. Therefore the examples detailed cannot provide any detail in this respect.

On this basis, worked through examples are provided for only two of the five Settlement Periods, 17 September 2002 and 10 March 2003 (as these do not have any called off standing reserve). These should provide sufficient detail regarding the mechanism to enable an understanding of the way the Energy Imbalance Prices were derived. For the remaining three Settlement Periods, the Energy Imbalance Price for each mechanism is derived and reported, along with a set of statistics in relation to the Settlement Period. For each Settlement Period:

1. All Bid – Offer Acceptances were listed;
2. All De Minimis Acceptances were removed;
3. All CADL Acceptances were removed, and the total volume derived (for adding back into the NIV Derivation); and
4. Arbitrage was undertaken (current mechanism only on the Bid – Offer Acceptances, P136 and P137 on Bid – Offer Acceptances and energy BSAD).

In the following worked examples:

In terms of the disaggregated energy BSAD:

- EBV^n_j is the Energy Buy Volume for a specific trade, and EBC^n_j is the Energy Buy Price for that trade
- ESV^n_j is the Energy Sell Volume for a specific trade and ESC^n_j is the Energy Sell Price for that trade

It should be noted that system BSAD has not changed, SBVA is the (unpriced) System Buy Price Volume Adjustment, and SSVA is the (unpriced) System Sell Price Volume Adjustment.

TQUAB is the Total Period Unpriced Accepted Bid Volume for the Settlement Period (i.e. the total volume of Bids removed by the application of the Continuous Acceptance Duration Limit).

TQUAO is the Total Period Unpriced Accepted Offer Volume for the Settlement Period (i.e. the total volume of Offers removed by the application of the Continuous Acceptance Duration Limit).

For the avoidance of doubt, the Energy Imbalance Price for the P136 mechanism was derived by using a simple disaggregated energy BSAD derivation. In terms of the treatment of the Option fees, it should be noted that for the example Settlement Periods, adding in an expected utilisation cost into the Bid – Offer Acceptance price for standing reserve would have made no difference to the resulting Energy Imbalance Price.

It should be noted that under the final mechanisms for both P136 and P137, frequency response volumes will not form part of the system BSAD. However, the volumes have been left in these worked examples, as this information was what was provided as part of the second assessment consultation.

Settlement Period Summaries

a 26 April 2002 Settlement Period 35

Current Mechanism	P136	P137
No CADL Acceptances	No CADL Acceptances	No CADL Acceptances
No Arbitrage	No Arbitrage	No Arbitrage
57.125 MWh of Standing Reserve (in stack in price order)	57.125 MWh of Standing Reserve (in stack at the top, i.e. expected utilisation cost in Acceptance Price)	57.125 MWh of Standing Reserve (in stack at the top, i.e. expected utilisation cost in Acceptance Price)
N/A	No non Balancing Mechanism delivered standing reserve	No non Balancing Mechanism delivered standing reserve
System BSAD, SBVA 8.501 MWh	System BSAD, SVA -62.365 MWh Incl: -70.865 MWh of frequency response	System BSAD, SVA -62.365 MWh Incl: -70.865 MWh of frequency response
Energy BSAD, ESVA -100MWh @ £14.15 / MWh	Energy BSAD, ESV four -25MWh trades in stack in price order	Energy BSAD, ESV four -25MWh trades in stack in price order
N/A	N/A	No BM Unit Tagging
N/A	N/A	BSAD Offsetting Tagging: 100MWh from bottom of the buy stack, and ESV -100MWh from reverse (sell) stack
Buy stack: 354.795 MWh	Buy stack: 346.294 MWh	Buy stack: 246.294 MWh
Sell Stack: -247.947 MWh	Sell Stack: -310.312 MWh	Sell Stack: -210.312 MWh
NIV: 106.848 MWh	NIV: 35.982 MWh	NIV: 35.982 MWh
Energy Imbalance Price: £24.417 (SBP: £21.197 from NIV, £3.22 from BPA)	Energy Imbalance Price: £20.73 (SBP, no BPA added)	Energy Imbalance Price: £50.00 (SBP, no option fee added)
No standing reserve Offers in the NIV	No standing reserve Offers in the NIV	No standing reserve Offers in the NIV

b 29 July 2002 Settlement Period 29

Current Mechanism	P136	P137
No CADL Acceptances	No CADL Acceptances	No CADL Acceptances
No Arbitrage	Arbitrage Tagged 50 MWh from each of the Buy and Sell Stack	No Arbitrage
84 MWh of Standing Reserve (in stack in price order)	84 MWh of Standing Reserve (in stack at the top, i.e. expected utilisation cost in Acceptance Price)	84 MWh of Standing Reserve (in stack at the top, i.e. expected utilisation cost in Acceptance Price)
N/A	1.05 MWh of non Balancing Mechanism delivered standing reserve in stack at the top	1.05 MWh of non Balancing Mechanism delivered standing reserve in stack at the top
No System BSAD	System BSAD, SSVA -9.129 MWh All attributable to frequency response	System BSAD, SSVA -9.129 MWh All attributable to frequency response
Energy BSAD, ESVA -225MWh @ £14.83 / MWh	Energy BSAD, ESV eight trades (total volume -225MWh) in stack in price order	Energy BSAD, ESV eight trades (total volume -225MWh) in stack in price order
N/A	N/A	No BM Unit Tagging
N/A	N/A	BSAD Offsetting Tagging: 225 MWh from bottom of the buy stack, and ESV -225 MWh from reverse (sell) stack
Buy stack: 658.128 MWh	Buy stack: 659.178 MWh	Buy stack: 434.178 MWh
Sell Stack: -298.780 MWh	Sell Stack: -307.909 MWh	Sell Stack: -82.909 MWh
NIV: 359.348 MWh	NIV: 351.269 MWh	NIV: 351.269 MWh
Energy Imbalance Price: £41.633 (SBP: £38.413 from NIV, £3.22 from BPA)	Energy Imbalance Price: £75.00 (SBP, no BPA added)	Energy Imbalance Price: £85.00 plus the expected utilisation cost (SBP, no BPA added)
No standing reserve Offers in the NIV	No standing reserve Offers in the NIV	The marginal Offer is the only standing reserve Offer in the NIV

c 17 September 2002 Settlement Period 40

Current Mechanism	P136	P137
CADL Acceptances of 6.826 MWh added into top of buy stack	CADL Acceptances of 6.826 MWh added into top of buy stack	CADL Acceptances of 6.826 MWh added into top of buy stack
No Arbitrage	No Arbitrage	No Arbitrage
No Standing reserve in stacks	No Standing reserve in stacks	No Standing reserve in stacks
N/A	No non Balancing Mechanism delivered standing reserve	No non Balancing Mechanism delivered standing reserve
System BSAD, SBVA 469.088 MWh	System BSAD, SBVA 422.935 MWh Incl: -46.153 MWh of frequency response	System BSAD, SBVA 422.935 MWh Incl: -46.153 MWh of frequency response
Energy BSAD, ESVA -317.5MWh @ £16.50 / MWh	Energy BSAD, ESV twelve trades (total volume -317.5 MWh) in stack in price order	Energy BSAD, ESV twelve trades (total volume -317.5 MWh) in stack in price order
N/A	N/A	No BM Unit Tagging
N/A	N/A	No BSAD offsetting Tagging
Buy stack: 638.440 MWh	Buy stack: 584.353 MWh	Buy stack: 584.353 MWh
Sell Stack: -761.019 MWh	Sell Stack: -753.085 MWh	Sell Stack: -753.085 MWh
NIV: -122.579 MWh	NIV: -168.732 MWh	NIV: -168.732 MWh
Energy Imbalance Price: £16.50 (SSP: all from NIV, no SPA)	Energy Imbalance Price: £15.75 (SSP, no SPA added)	Energy Imbalance Price: £15.75 (SSP, no SPA added)
No standing reserve in the NIV	No standing reserve in the NIV	No standing reserve in the NIV

d 10 December 2002 Settlement Period 35

Current Mechanism	P136	P137
CADL Acceptances of 29.492 MWh added into top of buy stack	CADL Acceptances of 29.492 MWh added into top of buy stack	CADL Acceptances of 29.492 MWh added into top of buy stack
Arbitrage Tagged 13.926 MWh from each of the Buy and Sell Stack	Arbitrage Tagged 13.926 MWh from each of the Buy and Sell Stack	Arbitrage Tagged 13.926 MWh from each of the Buy and Sell Stack
521.425 MWh of standing reserve in the stacks in price order	521.425 MWh of standing reserve in the stacks in price order (at the top of the stack)	521.425 MWh of standing reserve in the stacks in price order (at the top of the stack)
N/A	117.330 MWh non Balancing Mechanism delivered standing reserve in stack in price order	117.330 MWh non Balancing Mechanism delivered standing reserve in stack in price order
System BSAD, SBVA 110.00 MWh (from a PGBT)	System BSAD, SBVA 45.057 MWh Incl: -64.943 MWh of frequency response	System BSAD, SBVA 45.057 MWh Incl: -64.943 MWh of frequency response
Energy BSAD, EBVA 100 MWh @ £360 / MWh	Energy BSAD, EBV 100 MWh @ £360 / MWh for a PGBT	Energy BSAD, EBV 100 MWh @ £360 / MWh for a PGBT
N/A	N/A	BM Unit Tagging: -6.667 MWh from T_LITTD2 -3.688 MWh from T_EGGPS2 1.760 MWh from T_EGGSP3 -3.688 MWh from T_EGGPS4
N/A	N/A	No BSAD offsetting Tagging
Buy stack: 997.846 MWh	Buy stack: 1050.233 MWh	Buy stack: 1034.430 MWh
Sell Stack: -28.021 MWh	Sell Stack: -28.021 MWh	Sell Stack: -12.218 MWh
NIV: 969.825 MWh	NIV: 1022.212 MWh	NIV: 1022.212 MWh
Energy Imbalance Price: £328.494 (SBP: £325.394 from NIV, plus SPA of £3.10)	Energy Imbalance Price: £10,000 (SBP, no BPA added)	Energy Imbalance Price: £10,000 (SBP, no BPA added)
All of the standing reserve is in the NIV	All of the standing reserve is in the NIV	All of the standing reserve is in the NIV
111.471 MWh of system balancing remains in the NIV	46.528 MWh of system balancing remains in the NIV	62.331 MWh of system balancing remains in the NIV

e 10 March 2003 Settlement Period 40

Current Mechanism	P136	P137
CADL Acceptances of 30.083 MWh added into top of buy stack	CADL Acceptances of 30.083 MWh added into top of buy stack	CADL Acceptances of 30.083 MWh added into top of buy stack
No Arbitrage	No Arbitrage	No Arbitrage
No Standing reserve in stacks	No Standing reserve in stacks	No Standing reserve in stacks
N/A	No non Balancing Mechanism delivered standing reserve	No non Balancing Mechanism delivered standing reserve
No system BSAD	System BSAD, SBVA 10.232 MWh Incl: all attributable to frequency response	System BSAD, SBVA 10.232 MWh Incl: all attributable to frequency response
Energy BSAD, ESVA -300 MWh @ £17.388 / MWh	Energy BSAD, ESV three trades (total volume -300 MWh) in stack in price order	Energy BSAD, ESV three trades (total volume -300 MWh) in stack in price order
N/A	N/A	BM Unit Tagging: 12.833 MWh from T_RYHPS-1
N/A	N/A	No BSAD offsetting Tagging
Buy stack: 159.010 MWh	Buy stack: 169.242 MWh	Buy stack: 156.409 MWh
Sell Stack: -738.489 MWh	Sell Stack: -738.489 MWh	Sell Stack: -725.656 MWh
NIV: -579.497 MWh	NIV: -569.247 MWh	NIV: -569.247 MWh
Energy Imbalance Price: £14.427 (SSP: all from NIV, no SPA)	Energy Imbalance Price: £9.90 (SSP, no SPA added)	Energy Imbalance Price: £9.82 (SSP, no SPA added)
No standing reserve in the NIV	No standing reserve in the NIV	No standing reserve in the NIV

f 17 September 2002, Settlement Period 40**Current Mechanism****No Arbitrage Tagging;**

Net Energy BSAD volume (ESVA) of **-317.50 MWh**, with a price derived (volume weighted average) as **£16.50 / MWh**;

NIV Tagging removes 638.440 MWh from the main (sell) stack, so that the Energy Imbalance Price is set by the -122.579 MWh of balancing action **ESVA** remaining in the NIV.

No Sell Price Price Adjustment (SPA) for the Settlement Period.

Energy Imbalance Price – System Sell Price: £16.50 / MWh**Buy Stack**

Balancing Action	Volume (MWh)	Price (£ / MWh)	
SBVA	469.088		Removed by NIV Tagging
TQUAO	6.826		Removed by NIV Tagging
T_HMRPS-1	1.050	69.000	Removed by NIV Tagging
T_HMRPS-3	1.200	69.000	Removed by NIV Tagging
T_FERR-4	5.833	43.000	Removed by NIV Tagging
T_FERR-4	139.417	38.000	Removed by NIV Tagging
T_TESI-1	5.592	25.000	Removed by NIV Tagging
T_HMRPS-5	1.500	23.800	Removed by NIV Tagging
T_SHBA-2	4.117	20.000	Removed by NIV Tagging
T_KILNS-1	2.067	18.000	Removed by NIV Tagging
T_ROCK-1	1.750	14.000	Removed by NIV Tagging
Total Vol:	638.440		

The Net Imbalance Volume is **- 122.579 MWh**.

In this Settlement Period, **638.440 MWh** has to be tagged from the 'top' of the Sell stack:

Sell Stack

Balancing Action	Volume (MWh)	Price (£ / MWh)	
ESVA	-122.579	16.500	Remaining in the NIV, sets the Energy Imbalance Price
ESVA	194.921	16.500	Removed by NIV Tagging
T_ABTH7	15.458	8.100	Removed by NIV Tagging
E_DERW-1	27.542	8.050	Removed by NIV Tagging
T_IRNPS-1	10.000	8.000	Removed by NIV Tagging
T_SEAB-2	62.000	7.850	Removed by NIV Tagging
E_PETEM1	27.417	7.750	Removed by NIV Tagging
T_SEAB-1	121.000	7.750	Removed by NIV Tagging
T_ABTH7	11.370	7.550	Removed by NIV Tagging
T_ABTH7	3.630	7.550	Removed by NIV Tagging
T_DIDC2	17.333	7.050	Removed by NIV Tagging
T_DIDC1	20.833	7.000	Removed by NIV Tagging

Balancing Action	Volume (MWh)	Price (£ / MWh)	
T_RYHPS-1	-38.833	7.000	Removed by NIV Tagging
T_DRAXX-1	-22.958	-45.000	Removed by NIV Tagging
T_DRAXX-3	-22.958	-45.000	Removed by NIV Tagging
T_DRAXX-4	-12.289	-45.000	Removed by NIV Tagging
T_DRAXX-4	-8.794	-45.000	Removed by NIV Tagging
T_DRAXX-6	-21.104	-45.000	Removed by NIV Tagging
Total Vol:	-761.019		

P136 and P137

The Energy Imbalance Price calculation for P136 and P137 in this Settlement Period is the same, as there is **no BM Unit Undo Tagging**, and **no BSAD Offsetting Tagging** (no BSAD in the reverse stack (the buy stack)).

Arbitrage Tagging removes 7.934 MWh from the bottom of the Buy stack (3 Acceptances) and from the bottom of the Sell stack (7.934 MWh from balancing action ESV11);

NIV Tagging removes 584.353 MWh from the main (sell) stack, so that the marginal price is set by the -9.166 MWh of balancing action **ESV4** remaining in the NIV.

Energy Imbalance Price – System Sell Price for P136 and P137: £15.75 / MWh

Buy Stack

Balancing Action	Volume (MWh)	Price (£ / MWh)	
			This reflects -46.153 MWh of frequency response (not in current mechanism)
SBVA	422.935	Unpriced	Removed by NIV Tagging
TQUAO	6.826	Unpriced	Removed by NIV Tagging
T_HMRPS-1	1.050	69.000	Removed by NIV Tagging
T_HMRPS-3	1.200	69.000	Removed by NIV Tagging
T_FERR-4	5.833	43.000	Removed by NIV Tagging
T_FERR-4	139.417	38.000	Removed by NIV Tagging
T_TESI-1	5.592	25.000	Removed by NIV Tagging
T_HMRPS-5	1.500	23.800	Removed by NIV Tagging
T_SHBA-2	4.117	20.000	Removed by Arbitrage Tagging
T_KILNS-1	2.067	18.000	Removed by Arbitrage Tagging
T_ROCK-1	1.750	14.000	Removed by Arbitrage Tagging
Total Vol:	584.353		

The Net Imbalance Volume is **- 168.732 MWh**.

In this Settlement Period, **584.353 MWh** has to be tagged from the 'top' of the Sell stack:

Sell Stack

Balancing Action	Volume (MWh)	Price (£ / MWh)	
ESV11	-7.934	21.650	Removed by Arbitrage Tagging
ESV11	-17.066	21.650	Remaining volume of ESV11 after Arbitrage Tagging
ESV1	-25.000	19.450	
ESV12	-17.500	16.000	
ESV3	-25.000	15.900	
ESV10	-25.000	15.800	
ESV2	-50.000	15.750	
ESV4	-9.166	15.750	NIV of -168.732 MWh Marginal Action for P136 and P137
ESV4	-15.834	15.750	Removed by NIV Tagging
ESV5	-25.000	15.750	Removed by NIV Tagging
ESV6	-25.000	15.700	Removed by NIV Tagging
ESV8	-25.000	15.650	Removed by NIV Tagging
ESV9	-25.000	15.650	Removed by NIV Tagging
ESV7	-25.000	15.550	Removed by NIV Tagging
T_ABTH7	-15.458	8.100	Removed by NIV Tagging
E_DERW-1	-27.542	8.050	Removed by NIV Tagging
T_IRNPS-1	-10.000	8.000	Removed by NIV Tagging
T_SEAB-2	-62.000	7.850	Removed by NIV Tagging
E_PETEM1	-27.417	7.750	Removed by NIV Tagging
T_SEAB-1	-121.000	7.750	Removed by NIV Tagging
T_ABTH7	-15.000	7.550	Removed by NIV Tagging
T_DIDC2	-17.333	7.050	Removed by NIV Tagging
T_DIDC1	-20.833	7.000	Removed by NIV Tagging
T_RYHPS-1	-38.833	7.000	Removed by NIV Tagging
T_DRAXX-1	-22.958	-45.000	Removed by NIV Tagging
T_DRAXX-3	-22.958	-45.000	Removed by NIV Tagging
T_DRAXX-4	-12.289	-45.000	Removed by NIV Tagging
T_DRAXX-4	-8.794	-45.000	Removed by NIV Tagging
T_DRAXX-6	-21.104	-45.000	Removed by NIV Tagging
Total Vol:	-753.085		

g 10 March 2003, Settlement Period 40**Current Mechanism****No Arbitrage Tagging;**

Net Energy BSAD volume (ESVA) of **-300.0 MWh**, with a price derived (volume weighted average) as **£17.388 / MWh**;

NIV Tagging removes 159.010 MWh from the main (sell) stack, so that the Energy Imbalance Price is set by the balancing actions remaining in the NIV.

No Sell Price Price Adjustment (SPA) for the Settlement Period

Energy Imbalance Price – System Sell Price: £14.427 / MWh**Buy Stack**

Balancing Action	Volume (MWh)	Price (£ / MWh)	
T_QUA0	30.083		Removed by NIV Tagging
T_EGGPS-2	105.333	39.950	Removed by NIV Tagging
T_RYHPS-1	12.833	30.000	Removed by NIV Tagging
T_TESI-1	5.667	23.750	Removed by NIV Tagging
T_TESI-2	5.094	23.750	Removed by NIV Tagging
Total Vol:	159.010		

The Net Imbalance Volume is **- 579.479 MWh**.

In this Settlement Period, **159.010 MWh** has to be tagged from the 'top' of the Sell stack:

Sell Stack

Balancing Action	Volume (MWh)	Price (£ / MWh)	
ESVA	-300.000	17.388	NIV: A volume weighted average of these balancing actions set the Energy Imbalance Price: Sum (volume * price) / volume
I_ISG-SPOW1	-92.457	12.500	
T_COTPS-2	-1.311	11.500	
T_COSO-1	-79.382	11.010	
T_HMRPS-3	-2.492	10.750	
T_RYHPS-1	-24.500	10.750	
E_SHOS-1	-13.250	10.550	
E_DERW-1	-18.500	10.300	
T_SHBA-1	-20.667	10.280	
T_KEAD-1	-16.688	9.900	
T_KEAD-1	-2.679	9.900	
T_DRAXX-3	-7.553	9.820	
T_DRAXX-3	-23.399	9.820	
T_FERR-2	-14.216	9.550	Removed by NIV Tagging
T_HMRPS-2	-2.875	9.500	Removed by NIV Tagging
T_TILB-8	-1.333	9.420	Removed by NIV Tagging
T_TILB10	-1.333	9.410	Removed by NIV Tagging

Balancing Action	Volume (MWh)	Price (£ / MWh)	
T_DIDC1	-6.600	9.380	Removed by NIV Tagging
T_DIDC4	-6.200	9.360	Removed by NIV Tagging
T_DIDC2	-6.600	9.350	Removed by NIV Tagging
T_DRAXX-4	-48.002	-45.000	Removed by NIV Tagging
T_DRAXX-6	-48.452	-45.000	Removed by NIV Tagging
Total Vol:	-738.489		

P136 Mechanism

No Arbitrage Tagging;

NIV Tagging removes 169.242 MWh from the main (sell) stack, so that the marginal price is set by the -16.688 MWh of balancing action **T_KEAD-1** remaining in the NIV.

Energy Imbalance Price – System Sell Price for P136: £9.90 / MWh

Buy Stack

Balancing Action	Volume (MWh)	Price (£ / MWh)	
SBVA	10.232		Frequency response volume Removed by NIV Tagging
TQUAO	30.083		Removed by NIV Tagging
T_EGGPS-2	105.333	39.950	Removed by NIV Tagging
T_RYHPS-1	12.833	30.000	Removed by NIV Tagging
T_TESI-1	5.667	23.750	Removed by NIV Tagging
T_TESI-2	5.094	23.750	Removed by NIV Tagging
Total Vol:	169.242		

The Net Imbalance Volume is **- 569.247 MWh**.

In this Settlement Period, **169.242 MWh** has to be tagged from the 'top' of the Sell stack:

Sell Stack

Balancing Action	Volume (MWh)	Price (£ / MWh)	
ESV3	-75.000	17.500	
ESV2	-200.000	17.400	
ESV1	-25.000	16.950	
I_ISG-SPOW1	-92.457	12.500	
T_COTPS-2	-1.311	11.500	
T_COSO-1	-79.382	11.010	
T_HMRPS-3	-2.492	10.750	
T_RYHPS-1	-24.500	10.750	
E_SHOS-1	-13.250	10.550	
E_DERW-1	-18.500	10.300	
T_SHBA-1	-20.667	10.280	
T_KEAD-1	-16.688	9.900	NIV of -569.247 MWh

Balancing Action	Volume (MWh)	Price (£ / MWh)	
			Marginal Action for P136
T_KEAD-1	-2.679	9.900	Removed by NIV Tagging
T_DRAXX-3	-30.952	9.820	Removed by NIV Tagging
T_FERR-2	-14.216	9.550	Removed by NIV Tagging
T_HMRPS-2	-2.875	9.500	Removed by NIV Tagging
T_TILB-8	-1.333	9.420	Removed by NIV Tagging
T_TILB10	-1.333	9.410	Removed by NIV Tagging
T_DIDC1	-6.600	9.380	Removed by NIV Tagging
T_DIDC4	-6.200	9.360	Removed by NIV Tagging
T_DIDC2	-6.600	9.350	Removed by NIV Tagging
T_DRAXX-4	-48.002	-45.000	Removed by NIV Tagging
T_DRAXX-6	-48.452	-45.000	Removed by NIV Tagging
Total Vol:	-738.489		

P137 Mechanism

No Arbitrage Tagging;

BM Unit Undo Tagging removes an Offer Acceptance on T_RYHPS 1 of 12.833 MWh, and tags an equal amount of a Bid Acceptance, leaving a Bid volume of -11.667 MWh (out of the initial acceptance volume of -24.5 MWh).

No BSAD Offsetting Tagging;

NIV Tagging removes 156.409 MWh from the main (sell) stack, so that the marginal price is set by the -10.154 MWh of balancing action **T_DRAXX -3** remaining in the NIV.

Energy Imbalance Price – System Sell Price for P137: £9.82 / MWh

Buy Stack

Balancing Action	Volume (MWh)	Price (£ / MWh)	
SBVA	10.232		Frequency response volume Removed by NIV Tagging
TQUAO	30.083		Removed by NIV Tagging
T_EGGPS-2	105.333	39.950	Removed by NIV Tagging
T_RYHPS-1	12.833	30.000	Removed by BM Unit Undo Tagging
T_TESI-1	5.667	23.750	Removed by NIV Tagging
T_TESI-2	5.094	23.750	Removed by NIV Tagging
Total Vol:	156.409		This volume does not include the BM Unit Undo Tagged action, as this is removed before the NIV stack is compiled

The Net Imbalance Volume is **- 569.247 MWh**.

In this Settlement Period, **156.409 MWh** has to be tagged from the 'top' of the Sell stack:

Sell Stack

Balancing Action	Volume (MWh)	Price (£ / MWh)	
ESV3	-75.000	17.500	
ESV2	-200.000	17.400	
ESV1	-25.000	16.950	
I_ISG-SPOW1	-92.457	12.500	
T_COTPS-2	-1.311	11.500	
T_COSO-1	-79.382	11.010	
T_HMRPS-3	-2.492	10.750	
T_RYHPS-1	-12.833	10.750	Removed by BM Unit Undo Tagging
T_RYHPS-1	-11.667	10.750	Remaining after BM Unit Undo Tagging
E_SHOS-1	-13.250	10.550	
E_DERW-1	-18.500	10.300	
T_SHBA-1	-20.667	10.280	
T_KEAD-1	-19.367	9.900	
T_DRAXX-3	-10.154	9.820	NIV of -569.247 MWh Marginal Action for P137
T_DRAXX-3	-20.798	9.820	Removed by NIV Tagging
T_FERR-2	-14.216	9.550	Removed by NIV Tagging
T_HMRPS-2	-2.875	9.500	Removed by NIV Tagging
T_TILB-8	-1.333	9.420	Removed by NIV Tagging
T_TILB10	-1.333	9.410	Removed by NIV Tagging
T_DIDC1	-6.600	9.380	Removed by NIV Tagging
T_DIDC4	-6.200	9.360	Removed by NIV Tagging
T_DIDC2	-6.600	9.350	Removed by NIV Tagging
T_DRAXX-4	-48.002	-45.000	Removed by NIV Tagging
T_DRAXX-6	-48.452	-45.000	Removed by NIV Tagging
Total Vol:	-725.656		This volume does not include the BM Unit Undo Tagged action, as this is removed before the NIV stack is compiled