

July 2002

**INITIAL ASSESSMENT OF  
MODIFICATION PROPOSAL P90 -  
Improving the Representation of  
Energy Balancing Actions in  
Cashout Prices**

Prepared by ELEXON Limited

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Version	Date	Reviewer	Signature	Responsibility
0.1	12/07/02	Justin Andrews		Change Delivery
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### b Distribution

Name	Organisation
Each BSC Party	Various
Each BSC Agent	Various
The Gas and Electricity Markets Authority	Ofgem
Each BSC Panel Member	Various
Energywatch	Energywatch
Core Industry Document Owners	Various

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## 1 SUMMARY

Modification Proposal P90 'Improving the Representation of Energy Balancing Actions in Cashout Prices' was submitted on 8 July 2002 by First Hydro Company. The Modification Proposal seeks to amend the calculation of Energy Imbalance Prices such that the Energy Imbalance Prices are more reflective of the energy balancing.

The Modification seeks to calculate Energy Imbalance Prices from price ordered stacks of all Bid Acceptances and all Transmission Company forward trade sales and all Offer Acceptances and Transmission Company forward trade purchases. After arbitrage tagging, the volume on the smaller stack is tagged off of the bigger stack to the level of the Balancing Reserve Limit (BRL).

The main Energy Imbalance Price is then a weighted average of the balancing actions (Bid – Offer Acceptances and Transmission Company forward trades) that comprise the Remaining Imbalance Volume (RIV). The BRL concept is retained for the reverse price at the level determined from time to time by the Authority.

An initial assessment of Modification Proposal P90 has identified the following potential areas of impact and issues to be considered. These are expanded further in section 10:

- The impact of Modification Proposal P90 on the BSC Agent Systems, specifically the Balancing Mechanism Reporting Agent (BMRA) and the Settlement Administration Agent (SAA);
- Impact on the Transmission Company systems, processes and documentation, including the Balancing Services Adjustment Data Methodology Statement;
- The interaction of this Modification Proposal with other Modification Proposals, such as Modification Proposals P12 (one hour Gate Closure), P74 (Single Cost-reflective Cash-out Price), P78 (Revised Definition of System Buy Price and System Sell Price) and P79 (Revised Rules for Default Energy Imbalance Pricing). The interaction of these Modifications with Modification Proposal P90 is explored in more detail in section 10;
- The impact of Modification Proposal P90 on the Settlement calculations and cashflows.

It is recommended that the Modification Proposal is progressed as follows:

- Modification Proposal P90 should be submitted to the Assessment Procedure, in accordance with Section F 2.6 of the BSC, in order to enable the Modification Group to assess the Modification;
- The Assessment Procedure should be undertaken by the Pricing Issues Modification Group (PIMG); and
- The Assessment Report should be submitted to the Panel for consideration at their meeting of 12 September 2002.

## 2 INTRODUCTION

This Report has been prepared by ELEXON Ltd. on behalf of the Balancing and Settlement Code Panel ('the Panel'), in accordance with the terms of the Balancing and Settlement Code ('BSC'). The BSC is the legal document containing the rules of the balancing mechanism and imbalance settlement process and related governance provisions. ELEXON is the company that performs the role and functions of the BSCCo, as defined in the BSC.

An electronic copy of this document can be found on the BSC website, at [www.elexon.co.uk](http://www.elexon.co.uk)

### **3 DESCRIPTION OF THE MODIFICATION PROPOSAL**

A copy of the Modification Proposal and the associated Annex, as submitted by its proposer, can be found at Annex 1 to this report.

#### **Description of the Proposed Modification**

All Offer Acceptances and Transmission Company forward trade purchases are stacked in price order at the price at which they were bought on a buy stack and all Bid Acceptances and Transmission Company forward trade sales in price order at the price at which they were sold on the sell stack.

After arbitrage tagging, the volume on the smaller stack is tagged off of the bigger stack to the level of the Balancing Reserve Limit. The balancing actions (Bid – Offer Acceptances and forward trades) on the larger stack that have remain untagged comprise the Remaining Imbalance Volume (RIV).

The main price is then derived from a weighted average of all of the trades that comprise the Remaining Imbalance Volume (RIV).

It should be noted that the proposed mechanism removes the requirement for the Continuous Acceptance Duration Limit (CADL) to be applied to Bid – Offer Acceptances, as the intent is to derive the energy balancing actions taken to alleviate the overall system imbalance, by stacking all system and energy balancing actions (Bid – offer Acceptances and forward trades) and undertaking the tagging set out above. The Energy Imbalance Prices are then set from the remaining energy imbalance actions.

#### **Justification for the Proposed Modification**

The Modification Proposal asserts that Energy Imbalance Prices are being polluted by trades taken by the Transmission Company to alleviate system constraints. Additionally, Transmission Company trades that are currently tagged as system trades, but which have a net impact on the energy balance, are not necessarily factored into the Energy Imbalance Prices. Therefore the Modification Proposal asserts that the current Energy Imbalance Prices are not necessarily reflective of the costs of energy balancing.

The Proposer asserts that P90 ensures that genuine system trades (that have a compensating opposite action) do not influence Energy Imbalance Prices, whilst ensuring that trades that impact energy balance are better represented in the Energy Imbalance Prices.

In addition, the Proposer asserts that P90 seeks to simplify the calculation of Energy Imbalance Prices, which they believe have become overly complicated, by removing any distinction between forward system and energy trades (including Pre Gate Closure BM Unit Transactions (PGBTs)). Instead Modification Proposal P90 deems the Remaining Imbalance Volume of all trades to have been taken for energy purposes.

The Proposer acknowledges that the smaller stack may still contain energy balancing actions and that therefore deeming the Remaining Imbalance Volume to have been taken for energy purposes will exclude these actions. The Proposer recognises that P90 is a compromise where the RIV results in the majority of energy balancing actions being reflected in Energy Imbalance Prices.

The Proposer believes that P90 removes the need for arbitrary rules for the treatment of system and energy balancing actions. The Proposer states that P90 ensures consistency of approach for all Bid- Offer Acceptances and Transmission Company forward trades. In doing so, it removes the possibility of Energy Imbalance Prices being set at an artificial level which is unreflective of the costs of energy balancing.

#### 4 IMPACT ON BSC SYSTEMS AND PROCESSES

BSC System / Process	Potential Impact of Proposed Modification
<p><b>Balancing Mechanism Activities</b></p>	<p>P90 requires amendment to the mechanism for notifying Transmission Company forward trades to include a facility for reporting all forward trades undertaken by the Transmission Company individually.</p> <p>This may require amendment to the definition of the Balancing Services Adjustment Data (BSAD), such that each individual forward trade is required to be reported. This requires amendment to the Balancing Mechanism Reporting Agent (BMRA) in terms of receipt and processing the individual forward trades, as the current BASD interface is capable of reporting only one value per variable.</p> <p>P90 affects the calculation of the Indicative System Buy Price and Indicative System Sell Price, as it amends the way in which the prices are calculated. Therefore BMRA is materially affected by the changes being proposed by this Modification. BMRA should be able to determine an indicative Remaining Imbalance Volume from the (new) BSAD and Bid – Offer Acceptances received, and should therefore be able to calculate and publish the indicative Energy Imbalance Prices.</p>
<p><b>Settlement</b></p>	<p>The SAA will be materially impacted by the requirement to amend the calculation of Energy Imbalance Prices, to determine the Remaining Imbalance Volume and then calculate and apply the resulting Energy Imbalance Prices.</p> <p>Under P90 there is no requirement for the Continuous Acceptance Duration Level, therefore it may be appropriate for CADL to be removed from the system, and the concept of priced and unpriced Bid – offer Acceptances removed.</p> <p>It is expected that this Modification will be implemented on a Settlement Day basis and this will mean that Settlement Runs for days prior to the implementation date will utilise the existing calculations, and Settlement Runs for Settlement Days post implementation will use the Settlement calculations implemented under the Modification. This leads to a period of overlap in usage of two differing Settlement calculations which will have to be carefully managed.</p>

BSC System / Process	Potential Impact of Proposed Modification
<b>Reporting</b>	<p>The BMRA requires amendment to the reporting of the BSAD, as additional data items / values for those data items are reported by the Transmission Company.</p> <p>The amendment to the indicative Energy Imbalance Price calculation will require an associated amendment to the reporting of the Indicative Energy Imbalance Prices on the BMRA.</p> <p>The Settlement Report (SAA-I014) may be affected by a requirement to report the Remaining Imbalance Volume, and additional BSAD data items, as well as to reflect the removal of the CADL and the associated distinction between priced and unpriced Bid – Offer Acceptances. The reporting of System Buy Price and System Sell Price can be retained unchanged.</p>

## 5 IMPACT ON OTHER SYSTEMS AND PROCESSES USED BY PARTIES

System / Process	Potential Impact of Proposed Modification
<b>BSC Parties</b>	<p>BSC Parties will be impacted by the amendment to the manner in which Energy Imbalance Prices, and therefore Energy Imbalance Cashflows are calculated, and therefore their systems and processes may require amendment to reflect this change, thus enabling the calculation and verification of their Settlement liabilities correctly.</p> <p>Any amendments to the Settlement Report (SAA-I014) will impact Parties, as Party Systems and processes will require amendment to support changes to the report. However, it should be noted that flow version numbering has been introduced on the Settlement Report and therefore parties can choose to retain the 'old' version until they are ready for the new, thus delaying the impact of changes.</p>
<b>Transmission Company</b>	<p>The Transmission Company will be impacted by the amendment to the manner in which Energy Imbalance Prices are calculated, and therefore their systems and processes may require amendment to reflect this change, thus enabling the verification of Settlement liabilities correctly.</p> <p>The Transmission Company processes and systems will also be impacted by the amendment to BSAD derivation, calculation and reporting. Although the amendment to BSAD is outside of the scope of this Modification Proposal, it is expected that any amendment to the BSAD be progressed in conjunction with this Modification Proposal to ensure a consistent approach. It should also be noted that a change</p>

System / Process	Potential Impact of Proposed Modification
	<p>to BSAD requires an associated change to the BSAD Methodology Statement.</p> <p>Any amendments to the Settlement Report (SAA-I014) will impact the Transmission Company, as systems and processes will require amendment to support changes to the report. However, it should be noted that flow version numbering has been introduced on the Settlement Report and therefore the Transmission Company can choose to retain the 'old' version until they are ready for the new, thus delaying the impact of changes.</p>

## 6 IMPACT ON DOCUMENTATION

### 6.1 Impact on Balancing and Settlement Code

BSC Section	Potential Impact of Proposed Modification
Q: Balancing Mechanism Activities	<p>The changes to the BSAD required to support Modification Proposal P90 will require an associated amendment to the Code to reflect receipt of any additional data items, or to reflect any new definition of BSAD.</p> <p>Section Q may also require amendment to reflect any changes to the way in which BSAD is published on the BMRA.</p> <p>Section Q will also require amendment to reflect the amendments to the way in which the Indicative Energy Imbalance Prices are calculated, including a new step to calculate the Indicative Remaining Imbalance Volume from the BSAD and Bid – Offer Acceptances received.</p>
T: Settlement and Trading Charges	<p>Given that P90 removes the requirement for the Continuous Acceptance Duration Level to be set, it may be appropriate to either remove references to it throughout the Code.</p> <p>Section T requires amendment to reflect the changes to the way in which the Energy Imbalance Prices are calculated and applied, as defined in section 3 of this IWA.</p>
V: Reporting	<p>Any amendments to the data that is reported on the BMRA (see the detail of the changes to Section Q) will require a consequential amendment to the reporting requirements outlined in Section V.</p>



BSC Section	Potential Impact of Proposed Modification
X: Definitions and Interpretation	<p>A new definition will be required for Remaining Imbalance Volume.</p> <p>New definition(s) may be required for BSAD / new data items reporting the individual trades and the amendments to the Indicative Energy Imbalance Price calculations.</p> <p>The definition of Balancing Reserve Level may require removal / amendment.</p>
X: ANNEX X-2 Technical Glossary	<p>A new definition will be required for Remaining Imbalance Volume.</p> <p>New definition(s) may be required for BSAD / new data items reporting the individual trades and the amendments to the Indicative Energy Imbalance Price calculations.</p> <p>The Continuous Acceptance Duration Level and associated definitions require removal.</p>

## 6.2 Impact on Code Subsidiary Documents

Code Subsidiary Document	Potential Impact of Proposed Modification
BSC Service Descriptions	<p>The BMRA Service Description may require amendment to reflect any amendments to the receipt, publishing or definition of BSAD.</p> <p>The SAA Service Description will require amendment to reflect the changes to the mechanism for calculating the Energy Imbalance Prices. The SAA Service Description may also require amendment to reflect the removal of CADL.</p>
Data Catalogues Reporting Catalogue	<p>If the Settlement Report is amended, then the amendments should be reflected in the NETA Data File Catalogue (NDFC) and the Reporting Catalogue.</p> <p>If BMRA reporting is amended, then the NDFC and Reporting catalogue will require an associated amendment to reflect these reporting requirements.</p>

### 6.3 Impact on Core Industry Documents

Core Industry Document	Potential Impact of Proposed Modification
Grid Code CUSC Ancillary Services Agreements	P90 requires an amendment to the definition and reporting of BSAD, therefore the Balancing Services Adjustment Data Methodology Statement will require amendment. Although the amendment to BSAD is outside of the scope of this Modification Proposal, it is expected that any amendment to the BSAD be progressed in conjunction with this Modification Proposal to ensure a consistent approach.

### 7 IMPACT ON OTHER CONFIGURABLE ITEMS

Item	Potential Impact of Proposed Modification
BSC Central Service Agent Documentation	<p>The amendments to the BMRA Service Description, and the BMRA functionality are required to be reflected in the BMRA User Requirements Specification, the BMRA System Specification and the BMRA Design Specification.</p> <p>The amendments to the SAA Service Description, and the SAA functionality are required to be reflected in the SAA User Requirements Specification, the SAA System Specification and the SAA Design Specification.</p> <p>If the Settlement Report (SAA-I014) is amended, then this should be reflected in the Interface Design Definition (IDD) document.</p>

## 8 IMPACT ON ELEXON

Area of Business	Potential Impact of Proposed Modification
ELEXON Systems	<p>ELEXON will be impacted by the amendment to the manner in which Energy Imbalance Prices, and therefore Energy Imbalance Cashflows are calculated, and therefore their systems (TOMAS) and processes may require amendment to reflect this change, thus enabling the calculation and verification of Settlement liabilities correctly.</p> <p>Any amendments to the Settlement Report (SAA-I014) will impact TOMAS and associated processes to support changes to the report. However, it should be noted that flow version numbering has been introduced on the Settlement Report and therefore ELEXON can choose to retain the 'old' version until they are ready for the new, thus delaying the impact of changes.</p>

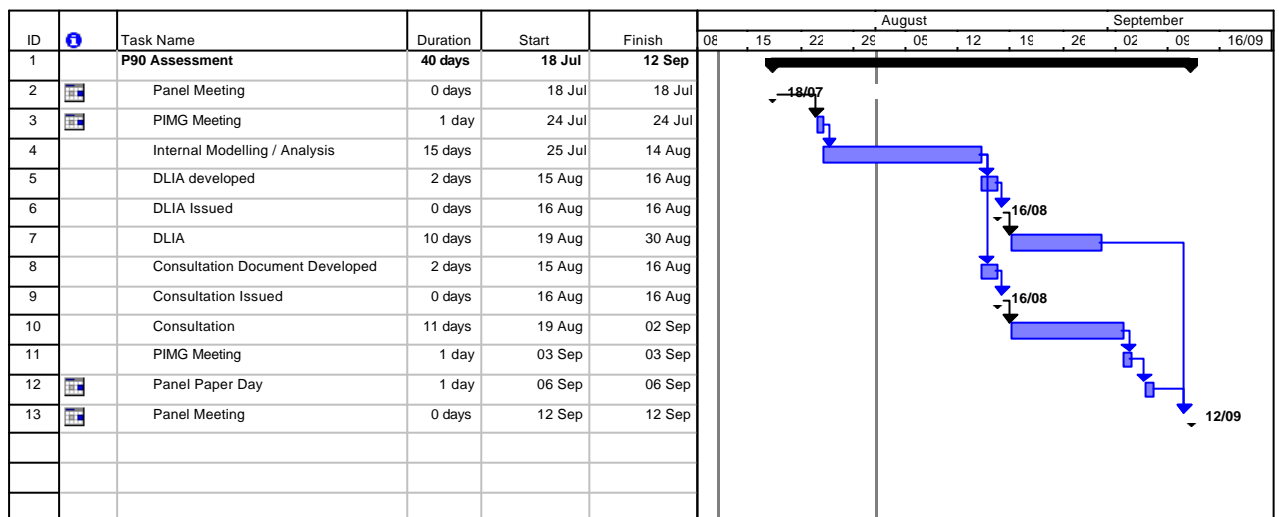
## 9 PROCESS AND TIMETABLE FOR PROGRESSING THE PROPOSAL

ELEXON believe that P90 is sufficiently well defined and that further work is required to assess the amendments required to support this Modification Proposal (based on the work undertaken on Modification Proposals P74 and P78).

Therefore ELEXON recommends that P90 be submitted to the Pricing Issues Modification Group (PIMG) for a two month Assessment Procedure. The PIMG should be actioned to provide the Assessment Report for consideration at the Panel meeting of 12 September 2002.

It is estimated that the progression of P90 through the Modification Process will require three Modification Group meetings and incur third party costs of £12,500 funded from the demand led budget in addition to core team staff costs. This estimate is based on current information and may be subject to change.

The proposed timetable for Modification Proposal P90 is provided below:



## 10 ISSUES

The following issues will need to be considered and addressed in progressing Modification Proposal P90:

- The impact of P90 on the Transmission Company systems, processes and documentation.

P90 requires an amendment to the BSAD definition and reporting and may require creation of new data items. The amendments to BSAD required to support P90 are beyond the vires of the BSC, and therefore of the Modification Group, therefore there is a dependency upon undertaking any consultation on the BSAD Methodology Statement and upon development and implementation of the changes to BSAD within the Transmission Company.

The impact on the Transmission Company can not be assessed by the Modification Group, however, the impacts should be understood such that any further ramifications on parties as a consequence of Transmission Company amendments can be assessed by parties. Any dependencies between the implementation of P90 and consequential changes to the Transmission Company should be identified in order to ensure a consistent approach to implementation;

- Interaction with existing Modification Proposals. There are a number of Modification Proposals which have a degree of interaction with P90. Namely:
  - Modification Proposal P12 'One Hour Gate Closure'. The implementation of Modification Proposal P12 has involved the Transmission Company implementing Pre-Gate Closure BM Unit Transactions (PGBTs). These are proposed for inclusion in the calculation of the Remaining Imbalance Volume and the derivation of the Energy Imbalance Prices, and therefore any analysis undertaken to determine the likely Energy Imbalance Prices should take into consideration these PGBTs.
  - Modification Proposal P74 'Single Cost-reflective Cash-out Price', raised by Electricity Direct on 4 April 2002. This Modification Proposal seeks to amend the application of Energy Imbalance Prices such that only a single price, dependent upon the Total System Energy Imbalance Volume, is applied. The Alternative Modification P74 uses a similar (but not the same) mechanism as P90 for determining a Net Imbalance Volume, from which a single Energy Imbalance Price is derived. This Modification Proposal is currently nearing the completion of the Assessment Procedure and it is expected that the Final Modification Report be provided to the Authority for decision following the Panel meeting of 15 August 2002; and
  - Modification Proposal P78 'Revised Definition of System Buy Price and System Sell Price', raised on 5 April 2002 by National Grid. This Modification Proposal seeks to amend the Energy Imbalance Price calculation such that the Net Imbalance Volume is calculated, from which the main price is derived. The reverse price is obtained from trading on the forwards and spot markets. The Alternative Modification P78 uses the same main price, but derives the reverse price from the first non Arbitrage Bid – Offer Acceptance / BSAD in the main stack. It should be noted that the Remaining Imbalance Volume calculation described for Modification Proposal P90 is similar, but not the same, as the main price calculation under both the Original and the Alternative Modification P78. Modification Proposal P78 is currently nearing the completion of the Assessment Procedure and it is expected that the Final Modification Report be provided to the Authority for decision following the Panel meeting of 15 August 2002.

Therefore there is a material interaction between Modification Proposal P90, Modification Proposal P74 and Modification Proposal P78, and although they are addressing similar issues, they are not the same, and should be assessed separately. However, the Assessment procedure for Modification Proposal P90 should take into consideration that of Modification Proposals P74 and P78.

- Modification Proposal P79 'Revised Rules for the Default Energy Imbalance Pricing' raised by London Electricity Group on 12 April 2002. Modification P79 seeks to amend the calculation of default Energy Imbalance Prices such that they are more robust than the current default rules. This Modification is currently completing the Definition Procedure, and the Definition Report for P79 is being presented to the Panel meeting of 18 July 2002, with a recommendation that it be submitted to the Assessment Procedure.

Therefore the assessment of P90 should take into consideration issues arising from other Modification Proposals, where appropriate;

- Assessment of whether P90 addresses the issues and would better facilitate achievement of the applicable BSC Objectives; and
- Assessment of the impact of P90 on the Settlement calculations and cashflows. If the Energy Imbalance Price calculation changes, then there will be ramifications on other Settlement

cashflows, such as the Residual Cashflow Reallocation Cashflow (RCRC). Therefore an assessment of Modification Proposal P90 should include the impact on the other aspects of Settlement, to ensure a consistent and cohesive set of Settlement calculations.

## ANNEX 1 – MODIFICATION PROPOSAL

<b>Modification Proposal</b>	<b>MP No: 90</b> <i>(mandatory by BSCCo)</i>
<b>Title of Modification Proposal</b> <i>(mandatory by proposer):</i> Improving the Representation Of Energy Balancing Actions in Cashout Prices	
<b>Submission Date</b> <i>(mandatory by proposer):</i> 08July 2002	
<b>Description of Proposed Modification</b> <i>(mandatory by proposer):</i> Cashout out prices are calculated from a stack of all Bid-Offer Acceptances and all NGC forward trades. All offers and forward buys are stacked in price order at the price at which they were bought on a buy stack and all bids and forward sells in price order at the price at which they were sold on the sell stack. After arbitrage tagging, the volume on the smaller stack is tagged off of the bigger stack to the level of the BRL. The main price is then a weighted average of the trades that comprise the Remaining Imbalance Volume (RIV). The BRL concept is retained for the reverse price at the level determined from time to time by the Authority. The attachment shows how the mechanism would work.	
<b>Description of Issue or Defect that Modification Proposal Seeks to Address</b> <i>(mandatory by proposer):</i> Cashout prices are being polluted by trades taken to alleviate constraints. Additionally, trades that are currently tagged as system trades and yet have a net impact on the energy balance are not necessarily factored into imbalance cashout prices. Cashout prices are not therefore representative of the costs of energy balancing.  This modification ensures that genuine system trades (that have a compensating opposite action) do not influence cashout prices whilst ensuring that trades that impact energy balance are better represented in imbalance cashout prices.  In addition, this modification seeks to simplify the calculation of cashout prices, which has become overly complicated, by removing any distinction between forward system and energy trades (including PGBTs). Instead it deems the RIV of all trades to have been taken for energy purposes. (The Proposer recognises that the smaller stack may still contain energy balancing actions and that deeming the RIV of all trades to be taken for energy purposes will exclude these actions; this mod is a compromise where the RIV results in the majority of energy balancing actions being reflected in imbalance cashout prices.)  The modification removes the need for non transparent judgments over the split between system and energy trades and the need for arbitrary rules for the treatment of short duration trades. The modification ensures consistency of approach for all Bid-Offer Acceptances and forward trades. In doing so, it removes the possibility of cashout prices being set at an artificial level which is unreflective of the costs of energy balancing.	
<b>Impact on Code</b> <i>(optional by proposer):</i>	
<b>Impact on Core Industry Documents</b> <i>(optional by proposer):</i>	
<b>Impact on BSC Systems and Other Relevant Systems and Processes Used by Parties</b> <i>(optional by proposer):</i>	

<b>Modification Proposal</b>	<b>MP No: 90</b> <i>(mandatory by BSCCo)</i>
<b>Impact on other Configurable Items</b> <i>(optional by proposer):</i>	
<p><b>Justification for Proposed Modification with Reference to Applicable BSC Objectives</b> <i>(mandatory by proposer):</i></p> <p>The modification better facilitates three of the four Applicable BSC Objectives:</p> <p>In simplifying the calculation of cashout prices and applying the treatment of 'system and energy trades' in a consistent manner, this modification proposal will promote efficiency in the implementation and administration of the balancing and settlement arrangements. Resulting prices and their constituent parts will be transparent, auditable and verifiable by all market participants. We regard these as important criteria for the setting of cashout prices.</p> <p>This modification will improve the transparency of trade reporting which will encourage the Transmission Company to operate the Transmission System in a more efficient, economic and coordinated manner.</p> <p>The modification will allow cashout prices to better reflect the costs of energy balancing. This will improve the economic signals to operate and invest in generation capacity. This will promote competition in the generation, sale and purchase of electricity whilst removing the current distortion resulting from the inclusion of constraints in cashout prices.</p>	
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<p><b>Attachments: YES</b></p> <p><b>If Yes, Title and No. of Pages of Each Attachment:</b></p> <p>Cashout price calculation</p>	



# Cashout price calculation

