P316 'Introduction of a single marginal cash-out price'

This Modification seeks to introduce a single marginal imbalance price (cash-out price), in place of the dual imbalance prices currently in use, and to reduce both the Price Average Reference (PAR) and Replacement Price Average Reference (RPAR) values.

The Proposer believes that P316 will increase the certainty of a single marginal price being implemented in a timely manner and ahead of winter 2015/16.

ELEXON recommends P316 is progressed to the Assessment Procedure for an assessment by a Workgroup

This Modification is expected to impact:

- ELEXON
- Balancing Mechanism Reporting Agent (BMRA)
- Settlement Administration Agent (SAA)
- BSC Parties

ELEXON

What stage is this document in the process?

01 Initial Written Assessment

02 Definition Procedure

03 Assessment Procedure

04 Report Phase

Contents

About This Document

This document is an Initial Written Assessment (IWA), which ELEXON will present to the Panel on 13 November 2014. The Panel will consider the recommendations and agree how to progress P316.

Any questions?

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1 Why Change?

What are imbalance prices?

Imbalance prices, which are known as 'cash-out' prices, are a key part of the wholesale electricity trading arrangements in Great Britain.

Under the current arrangements, market participants that require electricity for their customers (Suppliers) enter into contracts with organisations that produce electricity (generators). However, contracts between these participants are not always exactly delivered in real time causing an imbalance between energy generation and demand on the Transmission System. This can cause problems as electricity cannot easily be stored economically in large quantities and generation must always match consumer demand in real time if a stable system is to be maintained.

For any given Settlement Period (each half hour), Parties may trade with each other up to Gate Closure, which occurs one hour prior to the start of that Settlement Period. Parties aim to balance their position for a given Settlement Period by Gate Closure to ensure that the amount of energy generated and bought matches the amount of energy consumed and sold. However, there are circumstances where this does not happen. For example, if a generator experiences an unexpected outage that does not allow them to generate their projected amount of energy, or if a Supplier over or under estimates the amount of energy their customers actually use. This leaves the Party in an imbalanced position for that Settlement Period.

To balance energy on the Transmission System the Transmission Company, acting as System Operator (SO), assesses the amount of generation and the amount of demand expected for each Settlement Period. If required, the SO will take balancing actions[1] to balance the system so that the total amount generated matches the total amount consumed. The SO does this by issuing Bids and Offers via the Balancing Mechanism or Balancing Service Adjustment Actions (BSAA)[2] to participants (usually generators) to increase or decrease the amount of energy they need to produce (or consume) to ensure the system is balanced. The SO will do this prior to and throughout the Settlement Period to ensure the system is balanced at all times.

Following the end of a Settlement Period, ELEXON (using the BSC Systems) will compare the amount of energy each Party contracted with its metered volumes for the Settlement Period, accounting for any accepted Bids and Offers and other applicable balancing service volumes. Any surplus or shortfall that the Party has is called the imbalance volume and is paid for using the relevant imbalance price:

- If the Party is **short** (it consumed more energy than it had bought or sold more energy than it had generated) then it pays for its shortfall at the **System Buy Price** (SBP).
- If the Party is **long** (it generated more energy than it had sold or bought more energy than it had consumed) then it is paid for its surplus at the **System Sell Price** (SSP).

[1] A balancing action is an instruction to a Party, in accordance with agreed rules, to either increase or decrease generation, or increase or decrease demand. Parties must also submit details of their contracts to the BSC Systems.

[2] Balancing Service Adjustment Actions (BSAA) are the technical services that the System Operator purchases outside the Balancing Mechanism. This is described in Balancing Services Adjustment Data (BSAD) Methodology Statement.

There are two methods for calculating the imbalance price:

- The **Main Price** is based on the costs of energy balancing actions incurred to the Transmission Company for that Settlement Period.
- The **Reverse Price** is based on the short term market price of wholesale electricity traded on the power exchanges for that Settlement Period.

The method (Main Price or Reverse Price) which is to be applied to an imbalance price (SBP or SSP) for each Settlement Period is determined by whether the system as a whole was long (Net Imbalance Volume (NIV) is zero or negative) or short (NIV is positive) for that Settlement Period:

- If the system is long, the SSP will be the Main Price and the SBP will be the Reverse Price.
- If the system is short, the SBP will be the Main Price and the SSP will be the Reverse Price.

As a result, the Main Price is applied to any Party whose imbalance was in the same direction to, and is considered to have contributed to the overall system imbalance. These Parties will therefore face the costs of the balancing actions accepted by the SO to resolve energy imbalance on the system. Conversely, the Reverse Price is applied to any Party whose imbalance was in the opposite direction to the net imbalance, and is considered to have helped to reduce the overall system imbalance. Therefore, these Parties might face the costs they would have incurred had they traded out their imbalance position on the power exchanges near Gate Closure.

Further information on imbalance prices can be found on the imbalance pricing page of our website.

What is the Price Average Reference volume?

The Price Average Reference (PAR) volume is used in the Main Price calculation. It is a volume of actions in the dominant direction from which a weighted average is calculated.

PAR captures the most expensive actions remaining after a series of "tagging" operations have been conducted by the SO. The tagging process eliminates the most expensive actions in the dominant direction that have a matching volume to any in the reverse direction. The PAR volume (MWh) for the most expensive energy balancing actions remaining is the volume used to set the Main Price.

Originally under the current arrangements, imbalance prices were calculated as an average of all actions taken by the SO to balance the system. This was subsequently changed to the most expensive 500MWh of actions under P205 'Increase in PAR level from 100MWh to 500MWh' in November 2006. This level of 500MWh has since been maintained.

Further information on PAR can be found on the imbalance pricing page of our website.

Replacement Price Average Reverence

The Replacement Price Average Reverence (RPAR) value is a set volume of the most expensive priced actions remaining at the end of the Main Price calculations, and is currently 100MWh. The volume-weighted average of these actions, known as the Replacement Price, is used to provide a price for any remaining unpriced actions prior to PAR Tagging.

What is the Electricity Balancing Significant Code Review?

In August 2012, Ofgem launched the Electricity Balancing Significant Code Review (EBSCR) to address long-standing concerns on electricity balancing arrangements raised in its 2010 Project Discovery Report. In particular, Ofgem expressed concerns that imbalance prices are not creating the correct signals to allow the market to balance, leading to increased risks to future security of supply.

Ofgem completed its review of the electricity balancing arrangements and published its Final Policy Decision on 15 May 2014. The final decision document lays out Ofgem's conclusions and builds on the extensive analysis and stakeholder engagement conducted during the EBSCR.

P304 and P305

Ofgem published its Final Policy Decision on the EBSCR on 15 May 2014 and directed National Grid (as the Transmission Company) to raise the relevant Modifications to put the package of reforms in place.

National Grid raised P305 'Electricity Balancing Significant Code Review Developments' to progress a package of changes that came out of the EBSCR, as follows:

- further reduction in the PAR value (50MWh from winter 2015/16, then 1MWh from winter 2018/19) and changes to the RPAR volume which is currently set at 100MWh;
- a single imbalance price, calculated using the main price calculation;
- the introduction of Reserve Scarcity Pricing (RSP); and
- the introduction of Value of Lost Load (VoLL) pricing for Demand Control actions.

National Grid also raised P304 'Reduction in PAR from 500MWh to 250MWh' which proposed a reduction in the PAR value to 250MWh. However, this Modification has since been rejected by the Authority along with related Modification P314 'Reduction in PAR from 500MWh to 350MWh'.

What is the Issue?

P316 seeks to implement a single marginal imbalance price, which consists of two key elements of the balancing arrangements reform identified by Ofgem in its EBSCR, with effect from on or after the 1 September 2015. The Proposer notes that P316 interacts with P305 and that while the other elements of regime reform that P305 seeks to introduce (a reserve pricing function and the pricing of demand control measures into the imbalance price) are desirable, the potential solutions are complex which may preclude early implementation of P305 (at least in time for winter 2015/16).

The Proposer believes that P316 will increase the certainty of a single marginal price being implemented in a timely manner and ahead of winter 2015/16.

Significant Code Review Modifications

BSC Section F 5.3 states that:

- The Authority may direct the Transmission Company to raise an SCR Modification Proposal; and
- that the Authority's SCR Conclusions (if any) or direction in respect of the SCR Modification Proposal **shall not** fetter the views of the relevant Workgroup, the voting rights of the Panel or the recommendation of the Modification Report in respect of such an SCR Modification Proposal.

2 Solution

Proposed solution

RWE Supply and Trading GmbH raised P314 'Introduction of a single marginal cash-out price' on 4 November 2014. This Modification seeks to introduce a single marginal imbalance price by:

- reducing the PAR and RPAR values; and
- introducing a single imbalance price.

Reduction in the PAR and RPAR values

This Modification proposes a reduction in the PAR value to 1MWh to create an imbalance price which is reflective of the marginal cost of balancing energy for a given Settlement Period.

In order to align this Modification with the EBSCR, and to mitigate any risk due to the value of RPAR being greater than the value of PAR, this Modification also proposes a reduction in the RPAR value to 1MWh.

Introduction of a single imbalance price

This Modification proposes that a single imbalance price be applied in place of the dual imbalance prices currently in use. Both the SBP and SSP will be retained, but they will be set equal to each other, with that single price being calculated using the Main Price methodology.

The NIV (Transmission System imbalance) will determine whether the main pricing method is based on the SBP or SSP calculations, as follows:

- if the NIV is negative, the single energy imbalance price will be determined according to the existing Main Pricing methodology for calculating the System Sell Price, with the SBP being set equal to the SSP;
- if the NIV is positive, the single energy imbalance price will be determined according to the existing Main Pricing methodology for calculating the System Buy Price, with the SSP being set equal to the SBP; or
- if NIV is equal to zero or no energy bids or offers are taken in a single half hour the default single price shall be the market reference price, calculated on the basis of the current methodology.

Applicable BSC Objectives

The P316 Proposer believes that this Modification would better facilitate Applicable BSC Objectives (b) and (c), for the reasons set out below (which they note reflect the justification for Modification P305):

- **Objective (b)**:
    - The proposed changes to the imbalance price calculation will make prices more reflective of the value to consumers of balancing, particularly during

What are the Applicable BSC Objectives?

(a) The efficient discharge by the Transmission Company of the obligations imposed upon it by the Transmission Licence

(b) The efficient, economic and co-ordinated operation of the National Electricity Transmission System

(c) Promoting effective competition in the generation and supply of electricity and (so far as consistent therewith) promoting such competition in the sale and purchase of electricity

(d) Promoting efficiency in the implementation of the balancing and settlement arrangements

(e) Compliance with the Electricity Regulation and any relevant legally binding decision of the European Commission and/or the Agency [for the Co-operation of Energy Regulators]

(f) Implementing and administrating the arrangements for the operation of contracts for difference and arrangements that facilitate the operation of a capacity market pursuant to EMR legislation

times of very tight system margins. In doing so, market participants will be incentivised to make more efficient balancing and investment decisions. This should result in a reduction in the total costs (to the SO and market) of maintaining a balanced system, whilst presenting savings on the costs of delivering secure electricity supplies in the future.

  - Making imbalance prices sharper will signal the commencement of reforms designed to better reflect the value of flexible plant in the balancing arrangements. It may therefore contribute to deferring the mothballing of flexible plant and help counteract potential tightening of margins.

- **Objective (c)**:

  - Reflecting the value that actions deliver supports effective competition by aligning competitive incentives of market participants with the interests of the consumer. A single marginal cash out price eliminates distortions in the arrangements that currently impede value reflectivity, thereby supporting effective competition that drives value for the consumer.

  - Strengthening the energy imbalance price signal, through PAR reform should incentivise market participants to trade to balance their positions ahead of Gate Closure. This should increase liquidity in the forward market and benefit competition by encouraging investment in flexible capacity (flexible generation, demand participation and other technologies).

  - The inclusion of a single imbalance price removes the existing inefficient price spread and for many market participants, in particular smaller parties who are less likely to drive the system length. This should reduce net imbalance costs and therefore help to mitigate the potential imbalance risk faced by market participants.

  - The single marginal imbalance price may alter the incentives for parties to enter the market. The reforms address existing inefficiencies which limit the potential for some parties, in particular those offering services that facilitate flexibility and balance (such as Demand Side Response (DSR) or storage), to participate in the wholesale electricity market.

Implementation approach

P316 seeks to implement a single marginal imbalance price with effect from, or shortly after, 1 September 2015.

The Proposer notes the interactions between this Modification and P305. They believe that the complexity of the P305 solution (which includes all elements of the EBSCR reformed regime) may preclude early implementation of the Modification (at least in time for winter 2015/16) and therefore the implementation of a single marginal imbalance price.

3 Areas to Consider

In this section we highlight areas which we believe the Panel should consider when making its decision on how to progress this Modification Proposal, and which a Workgroup should consider as part of its assessment of P316. We recommend that the areas below form the basis of a Workgroup's Terms of Reference, supplemented with any further areas specified by the Panel.

In practice, we believe the assessment of P316 will largely be based on the relevant work and considerations under the P305 Assessment Procedure, supplemented and developed by the P316 Workgroup as necessary.

Areas to consider

The table below summarises the areas we believe a Modification Workgroup should consider as part of its assessment of P316:

Areas to Consider
Is the proposed solution the most appropriate way to implement the EBSCR conclusion in relation to a single imbalance price and a marginal imbalance price?
Consider the Workgroup analysis and assessment of P305: • does any additional work need to be completed to appropriately assess P316?
What is the most appropriate Implementation Date for P316?
What changes are needed to BSC documents, systems and processes to support P316 and what are the related costs and lead times?
Are there any Alternative Modifications?
Does P316 better facilitate the Applicable BSC Objectives than the current baseline?

4 Proposed Progression

Next steps

We recommend that P316 is progressed to an Assessment Procedure for consideration by a Workgroup.

The Proposer is not requesting that P316 is progressed as a Self-Governance Modification Proposal. We agree that it does not meet the Self-Governance Criteria (as defined in BSC Annex X-1).

Workgroup membership

We recommend that the P316 Workgroup should comprise of members of the P305 Workgroup as well as any other relevant experts and interested parties.

Timetable

We recommend that P316 undergoes a three month Assessment Procedure, allowing the Modification to be progressed in line with P305, presuming that the P305 Assessment Procedure is extended by two months at the November 2014 Panel meeting. This means the Workgroup will submit the Assessment Report to the Panel at its meeting on 12 February 2015 (though it will be submitted sooner, if possible). The Draft Modification Report would then be submitted to the Panel meeting on 12 March 2015, and the Final Modification Report subsequently submitted to the Authority for decision.

We believe that the Workgroup will need to undertake the following activities, which allows the Workgroup to fully consider the areas highlighted in the Terms of Reference:

- 3 Workgroup Meetings;
- industry and BSC Service Provider Impact Assessments; and
- an Assessment Consultation.

These activities are in practice likely to be coordinated with the remainder of the P305 Assessment Procedure, so no provisional timetable is provided here.

5 Likely Impacts

Impact on BSC Parties and Party Agents	
Party/Party Agent	Potential Impact
BSC Parties/Agents	We do not anticipate a direct impact on BSC Parties or Party Agents and P316 should not require any mandatory effort in implementing P316. All aspects of calculating imbalance prices are done centrally so participants' systems should only be impacted if they have elected to replicate any of these processes or related parameters within their systems, which is optional.

Impact on Transmission Company
We do not anticipate there to be a direct impact on the Transmission Company in implementing this Modification.

Impact on BSCCo	
Area of ELEXON	Potential Impact
ELEXON will be impacted through the implementation of the new arrangements and the corresponding document changes as well as ensuring that any business-as-usual processes are adapted accordingly.	

Impact on BSC Systems and processes	
BSC System/Process	Potential Impact
Any impacts on BSC Systems, processes and BSC Agents will be determined as part of the assessment of this Modification.	

Impact on Code	
Code Section	Potential Impact
Section T	Changes will be required to implement this Modification.
Section V	Changes may be required to implement this Modification.

6 Recommendations

We invite the Panel to:

- **AGREE** that P316 progresses to the Assessment Procedure;
- **AGREE** the proposed Assessment Procedure timetable;
- **AGREE** the proposed membership for the P316 Workgroup; and
- **AGREE** the Workgroup's Terms of Reference.

Appendix 1: Glossary & References

Acronyms

Acronyms used in this document are listed in the table below.

Glossary of Defined Terms	
Acronym	Definition
BMRA	Balancing Mechanism Reporting Agent
BSAA	Balancing Services Adjustment Actions
BSAD	Balancing Services Adjustment Data
DSR	Demand Side Response
EBSCR	Electricity Balancing Significant Code Review
IWA	Initial Written Assessment
NIV	Net Imbalance Volume
PAR	Price Average Reference
RPAR	Replacement Price Average Reference
RSP	Reverse Scarcity Price
SAA	Settlement Administration Agent
SBP	System Buy Price
SO	System Operator
SSP	System Sell Price
VoLL	Value of Lost Load

External links

A summary of all hyperlinks used in this document are listed in the table below.

All external documents and URL links listed are correct as of the date of this document.

External Links		
Page(s)	Description	URL
3	BSAD Methodology Statement	http://www2.nationalgrid.com/UK/Industry-information/Electricity-transmission-operational-data/Codes-principles-methodologies/Methodologies/
4	Imbalance pricing information webpage	http://www.elexon.co.uk/reference/credit-pricing/imbalance-pricing/
4	P205 page of ELEXON website	http://www.elexon.co.uk/mod-proposal/p205-increase-in-par-level-from-100mwh-to-500mwh/

External Links		
Page(s)	Description	URL
5	EBSCR webpage	https://www.ofgem.gov.uk/electricity/wholesale-market/market-efficiency-review-and-reform/electricity-balancing-significant-code-review
5	Final EBSCR Policy Decision	https://www.ofgem.gov.uk/publications-and-updates/electricity-balancing-significant-code-review-final-policy-decision
5	P305 webpage	http://www.elexon.co.uk/mod-proposal/p305/
5	P304 webpage	http://www.elexon.co.uk/mod-proposal/p304/
5	P314 webpage	http://www.elexon.co.uk/mod-proposal/p314/