Stage 01: Initial Written Assessment

P304 'Reduction in PAR from 500MWh to 250MWh'

This modification has been raised to progress changes to the Price Average Reference value following the Electricity Balancing Significant Code Review, and proposes to reduce the PAR value from 500MWh to 250MWh ahead of winter 2014/15.

ELEXON recommends P304 is progressed to the Assessment Procedure for an assessment by a Workgroup

This Modification is expected to impact:

- BSC Parties

What stage is this document in the process?

01 Initial Written Assessment

02 Definition Procedure

03 Assessment Procedure

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About This Document

This document is an Initial Written Assessment (IWA), which ELEXON will present to the Panel on 12 June 2014. The Panel will consider the recommendations and agree how to progress P304.

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 currently 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 on the Transmission System. This can cause problems as electricity cannot be stored economically in large quantities and generation must always balance out consumer demand.

For any given Settlement Period (each half hour), Parties may trade with each other up to Gate Closure, which occurs one hour prior to that Settlement Period. Parties aim to balance their position for a given Settlement Period by Gate Closure so that the amount of energy they bought and sold ahead of time matches the amount of energy they generate or consume in real time. 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 Parties' in an imbalanced position for that Settlement Period.

To balance the Transmission System the Transmission Company acts as System Operator (SO) and assesses the amount of generation contracted 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. It 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 will compare the amount of energy each Party contracted with its metered volumes for the Settlement Period, accounting for any accepted Bids and Offers. 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 Balancing Mechanism. This is described in Balancing Services Adjustment Data 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 contributed to the overall system imbalance. These Parties will therefore face the costs of the balancing actions accepted by the System Operator to resolve energy imbalance on the system. Equally, the Reverse Price is applied to any Party whose imbalance helped to reduce the overall system imbalance. Therefore, these Parties will face the costs it would have incurred had it traded out its position near Gate Closure.

Further information on imbalance prices can be found on the BSC website.

Imbalance Pricing Guidance Note

More detail on imbalance prices and how they are calculated can be found in our Imbalance Pricing Guidance Note.

What is the Price Average Reference volume?

When a participant is out of balance in the same direction as the overall system (therefore exacerbating the overall imbalance) they face the Main Price.

The Price Average Reference (PAR) volume is used to tag NIV tagged balancing actions, so that the PAR volume (MWh) of most expensive energy balancing actions is volume weighted to set the Main Energy Imbalance Price (or cash-out 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 reduced to the most expensive 100MWH of actions under BSC Modification P194 'Revised Derivation of the 'Main' Energy Imbalance Price' and subsequently changed to 500MWh of actions under P205 'Increase in PAR level from 100MWh to 500MWh'. This level of 500MWh has since been maintained.

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.

What is Ofgem's rationale for reform?

In its Final Policy Decision, Ofgem lays out its rationale for why reform of imbalance prices is needed. In it, it notes that the actions of the Transmission Company in balancing the system in real time is the basis for the calculation of imbalance prices, and considers that a number of factors currently dampen these prices:

- Prices are calculated using an average of the most expensive (to the Transmission Company) 500MWh of Bids or Offers taken to balance the system, rather than the most marginal action;
- Prices do not include the costs to consumers of involuntary demand disconnections (blackouts) and voltage reductions (brownouts);
- The way reserve capacity is costed does not allow imbalance prices to rise to reflect tight margins; and

Additionally, the current dual imbalance price system creates unnecessary balancing costs, disadvantaging in particular smaller Parties.

Ofgem considers that the shortcomings with the current arrangements mean that the market does not sufficiently value flexibility (the ability to ramp generation or demand up or down quickly in response to changing market conditions). As a consequence, market participants have insufficient incentives to provide flexible capacity (such as flexible generation, demand response services and storage) to meet demand. Shortcomings may also make it more likely that Interconnectors export at times of system stress or import less than under more efficient arrangements. As the share of intermittent generation grows, flexibility will only become more important for security supply.

Ofgem believes that imbalance price arrangements and the government's planned Capacity Market (CM) have distinct but complementary roles in seeking to ensure electricity security of supply. The CM is intended to address longer term capacity adequacy by providing capacity providers with a secure revenue stream for their investment. Reform of imbalance prices complements this by providing efficient signals of the value of flexibility, influencing the type of capacity coming forward. In addition, imbalance prices have the potential to reduce the cost of procuring capacity in the CM auction.

What is the issue?

The existing imbalance arrangements have the effect of dampening imbalance price signals, meaning that they do not provide sufficient indication to the market of the value of flexible capacity when margins are tight. As a result, imbalance price signals have failed to create appropriate incentives for investment in flexible capacity (such as flexible generation, Demand Side Response (DSR) services and storage).

A leading cause of this price dampening is the level of PAR, which is currently set at 500MWh. Deriving a weighted average from a volume of 500MWh creates an imbalance price which does not reflect the marginal cost of balancing energy for a given Settlement Period. This is especially true at times of system stress when differences between the costs of accepted balancing actions are greatest.

The EBSCR Final Policy Decision sets out a package of reforms to the existing imbalance arrangements designed to improve the efficiency of imbalance price signals to the market. These reforms have been targeted for implementation by winter 2015/16 and are captured in BSC Modification P305 'Electricity Balancing Significant Code Review Developments'. In order to improve the strength of the imbalance price signals for the intervening period, in particular winter 2014/15, and to help parties to transition to more marginal pricing, P304 proposes to reduce the PAR volume to 250MWh by November 2014. A PAR volume of 250MWh will reduce the extent to which the cost of the marginal action is diluted by averaging and will provide a relatively stronger price signal ahead of the package of EBSCR reforms anticipated for winter 2015/16.

2 Solution

Proposed solution

National Grid raised P304 'Reduction in PAR from 500MWh to 250MWh' on 30 May 2014. This Modification proposes changes to BSC Section T 'Settlement and Trading Charges' to introduce a reduction in the PAR volume from 500MWh to 250MWh.

Under the P304 proposed solution, a central system parameter change will be made as part of business-as-usual operations. Therefore, central costs and effort would relate only to the necessary code changes required to implement this solution, requiring minimal costs and lead time to implement.

We do not anticipate mandatory system impacts on participants to implement this Modification as the imbalance process, in which PAR is used, are calculated centrally. Participants systems will only be impacted if they have elected to store or use the value of PAR within their systems (e.g. to calculate the system prices themselves) which they would do voluntarily.

Reducing the PAR volume will improve the strength of imbalance price signals during 2014/15. This will in turn help industry participants' transition to a more marginal pricing and will reduce the extent to which the cost of the marginal action is diluted.

Other related EBSCR Modifications

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 a package of reforms in place.

Alongside P304, National Grid raised P305 'Electricity Balancing Significant Code Review Developments' on 30 May 2014. This Modification has been raised to progress a package of changes that have come out of the EBSCR, as follows:

- Further reduction in the PAR value following P304 (50MWh from Winter 2015/16, then 1MWh from Winter 2018/19) and changes to the Replacement PAR (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.

Applicable BSC Objectives

The Proposer believes that P304 will better facilitate:

- **Applicable BSC Objective (b)** by making the main imbalance price signal more cost reflective, strengthening the incentive on market participants to balance their positions ahead of Gate Closure. This should reduce the balancing actions required to be taken by the System Operator.

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]

- **Applicable BSC Objective (c)** as strengthening the energy imbalance price signal should incentivise market participants to trade in order to balance their positions ahead of Gate Closure. This will increase liquidity in the forward market and benefit competition by encouraging investment in flexible capacity (flexible generation, demand participation and other technologies).

Implementation approach

P304 is targeted for implementation on **6 November 2014**, as part of the November 2014 BSC Systems Release. This is due to the timescales indicated by Ofgem in its Final EBSCR Policy Decision, and views expressed by the industry to Ofgem for an early PAR reduction before winter 2014/15.

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 P304. 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.

Are the proposed solutions the most appropriate way forward?

As part of its Final Policy Review document, Ofgem published its draft business rules outlining its proposed changes to the BSC to implement its proposals. Within this document, Ofgem outlines a potential route to implement the EBSCR conclusions, noting that these implementation proposals in the draft business rules are not binding. The Workgroup is invited either to develop these implementation proposals or propose alternative implementation processes, so long as they deliver the policies outlined in the Final Policy Decision and the Authority's direction to the Transmission Company to raise P304.

The Workgroup should therefore consider if Ofgem's proposed implementation solutions in the business rules are the most appropriate route to implement the EBSCR or whether there are amendments or alternative implementation approaches that could be taken.

What is the most appropriate Implementation Date?

Ofgem is seeking that P304 be targeted for implementation as part of the November 2014 BSC Systems Release. The Workgroup will need to assess the approach and lead time required to implement P304 and determine if this is a viable Implementation Date.

Areas to consider

The table below summarises the areas we believe a Modification Workgroup should consider as part of its assessment of P304:

Areas to Consider
Is the proposed solution the most appropriate way to implement the EBSCR conclusions in relation to the PAR value?
What is the most appropriate Implementation Date for P304?
What changes are needed to BSC documents, systems and processes to support P304 and what are the related costs and lead times?
Are there any Alternative Modifications?
Does P304 better facilitate the Applicable BSC Objectives than the current baseline?

4 Proposed Progression

Next steps

We believe that P304 should go into an Assessment Procedure so that a Workgroup can consider the areas outlined in Section 3.

Workgroup membership

We recommend that the P304 Workgroup should comprise of experts on the imbalance prices and their calculation methodologies, members of the EBSCR's Technical Working Group (TWG) and any other relevant experts and interested parties.

What is the Technical Working Group?

The Technical Working Group was a workgroup of industry experts set up under the EBSCR. Its members provided external views and input to the technical details of the proposals as the EBSCR progressed.

Timetable

Due to the timescales indicated by Ofgem in its Final EBSCR Policy Decision, and views expressed by the industry to Ofgem for an early PAR reduction before winter 2014/15, we recommend a two month Assessment Procedure. Therefore, the Assessment Report will be presented to the Panel at its meeting on 14 August 2014.

We believe that the Workgroup will need to undertake the activities shown in the table below, which includes a 15 Working Day Assessment Consultation. The timetable below allows for this and for the Workgroup to fully consider the areas highlighted in the Terms of Reference.

Proposed Progression Timetable for P304	
Event	Date
Present Initial Written Assessment to Panel	12 Jun 14
Workgroup Meeting	W/B 16 Jun 14
Assessment Consultation	30 Jun 14 – 18 Jul 14
Workgroup Meeting	W/B 21 Jul 14
Present Assessment Report to Panel	14 Aug 14
Report Phase Consultation	14 Aug 14 – 29 Aug 14
Present Draft Modification Report to Panel	11 Sep 14
Issue Final Modification Report to Authority	12 Sep 14

5 Likely Impacts

Impact on BSC Parties and Party Agents
We do not anticipate direct impacts on participants to implement this Modification as the imbalance prices, in which PAR is used, are calculated centrally. Participants systems will only be impacted if they have elected to store or use the value of PAR within their systems (e.g. to calculate the system prices themselves) which they would do voluntarily. Participants may also be indirectly impacted by the effects of the reduced PAR value on imbalance prices.

Impact on Transmission Company
We do not anticipate there to be an impact on the Transmission Company due to the implementation of P304.

Impact on BSCCo	
Area of ELEXON	Potential Impact
Release Management	ELEXON will be required to implement this Modification.

Impact on BSC Agent/service provider contractual arrangements	
BSC Agent/service provider contract	Potential Impact
SAA	The SAA will set the value of PAR within central systems to 250MWh effective from the P304 Implementation Date. This value will apply to all Settlement Days from this date onwards.

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

6 Recommendations

We invite the Panel to:

- **AGREE** that P304 progresses to the Assessment Procedure;
- **AGREE** the proposed Assessment Procedure timetable;
- **AGREE** the proposed membership for the P304 Workgroup; and
- **AGREE** the Workgroup's Terms of Reference.

Appendix 1: Glossary & References

Glossary of defined terms

Acronyms and other defined terms used in this document are listed in the table below.

Glossary of Defined Terms	
Acronym	Definition
BSAA	Balancing Service Adjustment Actions
CM	Capacity Market
DSR	Demand Side Response
EBSCR	Electricity Balancing Significant Code Review
EU	European Union
IWA	Initial Written Assessment
PAR	Price Average Reference
NIV	Net Imbalance Volume
RPAR	Replacement Price Average Reference
RSP	Reserve Scarcity Pricing
SAA	Settlement Administrator 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
4	Imbalance pricing information page of BSC Website	http://www.elexon.co.uk/reference/credit-pricing/imbalance-pricing/
4	P194 page of the BSC Website	http://www.elexon.co.uk/mod-proposal/p194-revised-derivation-of-the-main-energy-imbalance-price/
4, 6, 7	P305 page of the BSC Website	http://www.elexon.co.uk/mod-proposal/p305/
4	Main EBSCR page of Ofgem's website	https://www.ofgem.gov.uk/electricity/wholesale-market/market-efficiency-review-and-reform/electricity-balancing-significant-code-review

External Links		
Page(s)	Description	URL
4	Ofgem's Project Discovery Report	https://www.ofgem.gov.uk/ofgem-publications/40354/projectdiscoveryfebcondocfinal.pdf
4, 7	Ofgem's Final EBSCR Policy Decision	https://www.ofgem.gov.uk/publications-and-updates/electricity-balancing-significant-code-review-final-policy-decision
7	P304 page of the BSC Website	http://www.elexon.co.uk/mod-proposal/p205-increase-in-par-level-from-100mwh-to-500mwh/