Issue Report

Issue 92 'Reserve Scarcity Price Review'

Contents

1 Summary 2
2 Background 3
3 Issue Group's Discussions 4
4 Conclusions 8
Appendix 1: Issue Group Membership 10
Appendix 2: Glossary & References 11

About This Document

This document is the Issue 92 Group's Report to the BSC Panel. Elexon will table this report at the Panel's meeting on 11 November 2021.

There are three parts to this document:

- This is the main document. It provides details of the Issue Group's discussions and proposed solutions to the highlighted issue and contains details of the Workgroup's membership.
- Attachment A contains the Issue proposal form.
- Attachment B contains the Request for Information (RFI) responses.

Contact
Andrew Grace

020 7380 4304

andrew.grace@elexon.co.uk



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1 Summary

Background

Reserve Scarcity Pricing (RSP) was introduced as part of the Electricity Balancing Significant Code Review (SCR) via P305 'Electricity Balancing Significant Code Review Developments' to address several defects of the previous imbalance calculations.

Since the implementation of P305 in November 2015, the way the GB electricity system is balanced has changed significantly. Over the past five years the volume of renewables on the system has increased dramatically as has new and planned interconnection with Europe. During the summer of 2020 the Covid-19 pandemic led to the lowest system demand observed over a summer in the UK in around 60 years. Managing the system has become more challenging as demonstrated by rising Balancing Mechanism (BM) costs.

Conclusions

The Reserve Scarcity Price review provided an opportunity for National Grid Electricity System Operator (NGESO) to be proactive on a topic that may negatively impact market participants through creating potentially inaccurate and significant price signals. The Elexon Issue Group allowed them to include their stakeholders in the assessment of their concern and solution identification. To address the key margin methodology accuracy concerns, two IT change options were assessed:

1) New internal interface to Market Operation Data Interface System (MODIS) to allow them to include the non-BM Fast Reserve availabilities in the margin calculations; and

2) Manual parameter fix to (effectively) always include 500MW of non-BM Fast Reserve in the calculations.

They carried out an impact assessment and obtained a high level cost for the first option of a new internal interface to MODIS to allow them to include the non-BM Fast Reserve availabilities in the margin calculations. They also carried out more detailed analysis into the actual availability of non-BM Fast Reserve including during periods of tight margins, and the corresponding appropriateness of a quick fix to adjust the reserve levels used in the calculation.

These studies have shown that the cost of required system changes would be very high (>£1m) because of the additional new interfaces between systems required and the amount of associated development work.

Their conclusion is therefore that at this time, the high cost estimates far outweigh any benefits of these changes and do not represent good value to the Electricity System Operator (ESO) or for external customers.

Issue Group View

NGESO's conclusions and recommendations were shared with the Issue Group. No responses were received to query or clarify any points and therefore it was agreed the Issue should be closed with no changes raised.

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2 Background

RSP was introduced as part of the Electricity Balancing SCR via P305 to address several defects of the previous imbalance calculations. They excluded the costs borne by consumers during disconnection and voltage reduction and the previous method for pricing reserve costs into cash-out did not accurately reflect the real time value of the reserve, e.g. the value consumers would put on capacity in a tight system. Ofgem expected that P305 would incentivise the market to provide more flexibility (through price signals) when it was required.

Since P305 implementation in November 2015, the way the GB electricity system is balanced has changed significantly. Over the past five years the volume of renewables on the system has increased dramatically as has new and planned interconnection with Europe. During the summer of 2020 the Covid-19 pandemic led to the lowest system demand observed over a summer in the UK in around 60 years. Managing the system has become more challenging as can be demonstrated through the rising BM costs, especially over the past five years.

Due to the changing system conditions, it was felt that the RSP mechanism required a review. This review would consider the issues RSP intended to solve, how they have evolved and if/what scarcity mechanism is required to incentivise market participants to support the system in tight margin situations. The electricity system in the UK has evolved leading to scarcity situations in both demand and generation. RSP addresses only generation scarcity, however the impact on the signal to demand may also need to be considered.

Industry have also provided feedback and concerns over RSP. Additionally, analysis shows improvement potential for this mechanism. NGESO have reviewed recent situations where high Loss of Load Probability (LoLP) values have been published to understand the background system conditions. Findings included identifying certain components that aren't included in the current calculation, issues related to the timing of the day ahead run, and other aspects of the calculation that could be updated or improved. Customers may sometimes be confused about the misalignment of different scarcity signals such as the RSP, the Capacity Market Notice (CMN) and the Electricity Margin Notice (EMN).

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3 Issue Group's Discussions

Workgroup meeting 1

Issue 92 Workgroup meeting one was held 1 February 2021. The objectives of the meeting were to:

- Determine if the objectives of P305 are still valid and whether they still apply;
- Determine if the scarcity mechanism is still required, and if so, what it would look like; and
- Determine what costs should feed into the mechanism and how.

Issue Scope

Elexon and National Grid presented the background to RSP, looking at previous changes which have discussed cashout pricing. P305 was also examined in more detail. The Workgroup was also presented with analysis of how the energy market has changed since P305 was implemented in 2015.

The Workgroup raised the suggestion that the scope of the Issue Group be tightened to focus on RSP instead of asking about the problem statement of P305. Elexon clarified that the examination of the P305 problem statement strictly pertains to RSP, not to review the P305 problem statement in its entirety. The scope should also take into account what costs should be considered in relation to RSP, for example, availability pricing, fast reserve actions, and frequency reserve. Elexon and National Grid considered that, while aspects such as price distortion are caused by availability prices, Net Imbalance Volume (NIV) chasing, and invisibility of distributed generation impact the subject of cashout pricing. Therefore it was agreed that these issues fall outside the scope of this Issue Group.

The Workgroup noted that one important and useful function to be retained in any solution is to give a signal on period of tight margin, even if the mechanism does not re-price cashout prices. This could be achieved by retaining the LoLP calculation without retaining the RSP or the Value of Lost Load (VoLL) component. The Workgroup recognised that LoLP calculation currently has issues, and these would need to be addressed if the LoLP was retained. Alternatively, the DeRated Margin (DRM) could be used to provide this market signal.

Reserve Scarcity Pricing

The Workgroup agreed that RSP is very complicated. Ideally the mechanism should be as simple as possible, however there was acknowledgment that the mechanism is necessarily complex, and that any solution is likely to be complex. The Workgroup also noted that this complexity along with tagging and flagging activities, makes the RSP very hard to predict, and this means that Suppliers are unable to forecast when the RSP will re-price actions and when they will not. Therefore, RSP does not incentivise Suppliers to take balancing actions.

Several potential routes forward were discussed by the Workgroup including;

- Waiting until after the implementation of the day ahead (DA) Short Term Operating Reserve (STOR) auction in April 2021 to continue work on this Issue;
- Simply removing RSP as it is so complicated that few Suppliers can predict when it will impact prices and take action as a result; and

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- Issuing an industry consultation on this Issue to gather views from a wider range of industry participants to gage their views.

It is expected that DA STOR auctions will not remove the need for RSP, and therefore the issues with RSP will still be present and require a solution after April 2021. Additionally, several Workgroup Members articulated a need for a signal on tight margins, and completely removing RSP would not fulfil this. Therefore Elexon and National Grid proposed to issue a consultation to industry to gather wider views on this issue, and to use the next Workgroup meeting to compose questions for the consultation.

Workgroup meeting 2

Issue 92 Workgroup meeting two was held on 18 March 2021. The objectives of the meeting were to:

- Recap the discussion had at the first meeting, discuss options for progression of Issue 92 and raising any other options members may have;
- Discuss the Request for Information (RFI) consultation:
    - Agree the purpose of the consultation;
    - Review the questions to be included, adding any additional questions the Issue Group deem appropriate; and
    - Setting out and agreeing the proposed timeline for the RFI consultation.

Request for Information

Options for the recommendation from Issue 92 were presented, and it was noted that the responses to the RFI would be used to help choose between these options. The options for recommendation were:

- Retain the existing RSP mechanism as it is now (information and price signal), and correct the known issues with the DRM / LoLP calculation;
- Remove RSP and the link to cashout, but retain DRM and LoLP as useful market information signals;
- Remove both RSP and DRM/LoLP;
- Replace RSP with an alternative;
- Link the DRM and CMN margin calculations; and
- Wait and see how the new DA STOR market and/or Reserve Reform, Trans European Replacement Reserve Exchange (TERRE), Manually Activated Reserve Initiative (MARI) etc. evolve.

The Issue Group noted that availability payments, NIV tagging, and invisibility of distributed generation cannot be excluded from the scope as they have material impacts on Imbalance pricing.

It was noted that Distribution System Operators (DSOs) do not send data to National Grid, meaning National Grid's margin calculations are not completely accurate. It was suggested that the Issue Group could recommend that this problem be raised as a separate change with National Grid.

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The Issue Group acknowledged that improving margin signal calculations would be very beneficial. However, the group highlighted that in order for the calculations to be useful, they should be integrated into one signal, and there should be an additional consultation on where the signal is published.

The Issue Group pointed out that the Issue recommendation must deliver a useful price signal that has a consistent impact on cashout prices at the correct time. A useful price signal was defined as one which encourages activity that avoids demand control actions, comes ahead of tight margins, and is consistently applied.

Workgroup meeting 3

Issue 92 Workgroup meeting three was held on 2 June 2021. The objectives of the meeting were to:

- Review Industry RFI Responses; and
- Proposer to make recommendations.

Industry RFI Responses

The Workgroup discussed the five responses received to the RFI. They noted that there was a number of confidential responses due to the nature of the questions as it was unlikely parties would share their trading strategies.

The Proposer concluded that the current mechanism isn't working as intended; however re-designing a new mechanism would not be guaranteed to work either. Any new mechanism needed to be consistent with other market signals.

Workgroup Members confirmed the RSP is unpredictable and rare (only affecting a handful of Settlement periods in the last five years) so did not necessarily impact trading strategy.

The Proposer noted that ESO are going to use the new Frequency Risk and Control Report (FRCR) methodology to set the right balance between frequency risks and costs to the consumer to ensure the network is effectively and appropriately protected from frequency events for future years. This will determine how frequency risks are managed. The use of new response products such as Dynamic Containment will take into account the reduced impact of Rate of Change of Frequency (RoCoF) losses due to the relay setting changes for RoCoF and Vector Shift from the Accelerated Loss of Mains Change Programme (ALoMCP) programme. We will still be securing the largest BMU-only infeed losses, so there may not be a direct impact on the RSP calculation.

A Workgroup Member noted that the Workgroup had not agreed to get rid of RSP, and felt that it should be retained until something better was available.

Proposer Feedback

- The Proposer confirmed they had raised the Issue for the following reasons:
    - Concerned about impact on customers;
    - High cash out prices were experienced by the market in March 2020 without the NGESO control room experiencing a corresponding tight margin situation; and
    - They had changes in mind to improve the process and wanted industry input.

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- The Workgroup discussion had made them less certain on cutting the link between RSP and cash-out.
- They were inclined to make the existing margin signal as consistent as possible as this has proved to be a useful economic signal.
- They were also concerned that RSP, as currently implemented, creates more risks around inaccurate price signals than economic benefits.
- Any improvements made to the process are likely to trigger less often if current margin calculation issues are fixed.
- There is no guarantee if RSP was redesigned that it would provide a better signal due to the pace of change within the industry.

National Grid agreed to confirm opportunity cost and cost benefit analysis of implementing a change to RSP – how long would a change take, what would the cost be and where this sits with other priorities in order to provide recommendations to the Issue group (see below).

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4 Conclusions

Conclusions

The RSP review provided an opportunity for NGESO to be proactive on a topic that may negatively impact market participants through creating potentially inaccurate and significant price signals. The Elexon Issue Group allowed them to include their stakeholders in the assessment of their concern and solution identification. To address the key margin methodology accuracy concerns, two IT change options were assessed.

1) **New internal interface to MODIS to allow them to include the non-BM Fast Reserve availabilities in the margin calculations**

   They carried out an impact assessment and obtained a high level cost for the first option of a new internal interface to MODIS to allow them to include the non-BM Fast Reserve availabilities in the margin calculations. They also carried out more detailed analysis into the actual availability of non-BM Fast Reserve including during periods of tight margins, and the corresponding appropriateness of a quick fix to adjust the reserve levels used in the calculation.

These studies have shown that the cost of required system changes would be very high (>£1m) because of the additional new interfaces between systems required and the amount of associated development work.

Their conclusion is therefore that at this time, the high cost estimates far outweigh any benefits of these changes and do not represent good value to the ESO or for external customers. They are proposing not to proceed with this at the current time. The spending was not considered to be justifiable in the context of the benefits to the industry and in addition, any changes would not be ready in time for this coming winter and proceeding with the work would jeopardise other important IS work which is already underway for delivery in this current financial year 2021-22. The possibility of such a knock-on impact was a key concern of the Issue Group.

2) **Manual parameter fix to (effectively) always include 500MW of non-BM Fast Reserve in the calculations**

   With regard to a second option of a manual parameter fix to effectively always include 500MW of non-BM Fast Reserve in the calculations, their analysis of the non-BM Fast Reserve volumes has shown that typically much less volume is available at times of tight margin than the 500MW expected (which is normally available at other times), and often less than 100MW. This suggests that (because non-BM Fast Reserve capacity is not currently included in the calculation) the reduction in capacity during times of tight margin is much less significant to the results of the margin calculation than at other times (when typically closer to 500MW is available). They therefore do not think it would be appropriate to adjust the internal system parameter as previously discussed, as this adjustment is likely to lead to an optimistic calculation when the margin is low.

Recommendations

NGESO recommends that that the first option of a new MODIS interface is not recommended from a cost benefit, timescale and impact perspective, and option two of a manual parameter fix would not achieve the benefits that we were expecting in terms of improvements in accuracy to the margin calculation.

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They recognise the views of the Issue Group regarding the relative priority of any development work to other key work already in progress. They believe because of the issues of cost and impact on other work mentioned above, there is not an easy technical solution to improve the accuracy of the RSP signal or the harmonisation of EMNs and CMNs for this coming winter. They intend to focus more on improving customer communications and explaining the reasons for differences between the margin signals (e.g. different thresholds etc.). This would include clearly communicating the level of risk associated with when EMNs and CMNs are issued, or LoLP / RSP are high, and the different scenarios when margin signals might be triggered or issued together or otherwise.

Issue Group View

NGESO's conclusions and recommendations were shared with the Issue Group. No responses were received to query or clarify any points raised and therefore it was agreed the Issue should be closed with no changes raised.

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Appendix 1: Issue Group Membership

Issue Group membership and attendance

Issue 92 Group Attendance				
Name	Organisation	1 Feb 2021	18 Mar 2021	2 June 2021
Claire Kerr	Elexon *(Chair)*	☎	☎	☎
Nicholas Brocklesby	Elexon *(Lead Analyst)*	☎	☎	✖
Jeremy Caplin	Elexon *(Design Authority)*	☎	☎	☎
Emma Tribe	Elexon *(Subject Matter Expert)*	☎	☎	✖
Andrew Grace	Elexon *(Lead Analyst)*	✖	✖	☎
Katharina Birkner	National Grid ESO *(Proposer)*	☎	☎	☎
Richard Price	National Grid ESO *(Proposer)*	☎	☎	☎
Emma Burns	Cornwall Insight	☎	✖	☎
Philip Campbell	Flextricity	☎	☎	☎
Andrew Colley	SSE	☎	✖	☎
Richard Devenport	EDF	✖	☎	☎
Alessandra DeZottis	Sembcorp	✖	☎	☎
Robin Dunne	Ofgem	✖	✖	☎
Libby Glazebrooke	Engie	☎	✖	✖
Ryan Goddard	Welsh Power	✖	☎	☎
Philip Hewitt	Enappsys	☎	☎	✖
Paraic Higgins	ESB	☎	☎	☎
Lauren Jauss	RWE	☎	☎	✖
Sarah Keay-Bright	Catapult	☎	✖	✖
Bill Reed	RWE	☎	☎	✖
Phil Russell	Independent Cosnultant	✖	☎	✖
Ian Tanner	Sembcorp	☎	✖	✖
Marcello Torres	Drax	☎	✖	✖
Lisa Waters	Waters Wye	☎	☎	☎

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Appendix 2: Glossary & References

Acronyms

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

Acronyms	
Acronym	Definition
ALoMCP	Accelerated Loss of Mains Change Programme
BM	Balancing Mechanism
BMU	Balancing Mechanism Unit
BSC	Balancing and Settlement Code
CMN	Capacity Market Notice
DA	Day Ahead
DRM	DeRated Margin
EMN	Electricity Market Notice
FRCR	Frequency Risk and Control Report
LOLP	Loss of Load Probability
MARI	Manually Activated Reserve Initiative
MODIS	Market Operation Data Interface System
NGESO	National Grid Electricity System Operator
NIV	Net Imbalance Volume
RFI	Request for Information
RoCoF	Rate of Change of Frequency
RSP	Reserve Scarcity Price
SCR	Significant Code Review
STOR	Short Term Operating Reserve
TERRE	Trans European Replacement Reserve Exchange
VoLL	Value of Lost Load
WG	Workgroup

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
2	Electricity Balancing SCR	https://www.ofgem.gov.uk/electricity/wholesale-market/market-efficiency-review-and-reform/electricity-balancing-significant-code-review

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External Links		
Page(s)	Description	URL
2	P305	https://www.elexon.co.uk/mod-proposal/p305/

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