ELEXON

259/05 DE MINIMIS ACCEPTANCE THRESHOLD (DMAT) REVIEW

Imbalance Settlement Group

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Summary

The De Minimis Acceptance Threshold (DMAT) is a pricing parameter used to identify and remove balancing actions with a volume smaller than a set value from the Energy Imbalance Price calculation. DMAT is set to 0.1MWh and is reviewed from time to time in accordance with the BSC.

This review suggests that the current value, 0.1MWh, should not be changed. The Imbalance Settlement Group (ISG) is invited to note the content of the analysis and agree that Elexon will conduct the next scheduled review in two years' time.

1. Background Information

1.1 The De Minimis Acceptance Threshold (DMAT) removes balancing actions smaller than a set value, currently 0.1MWh, from the Energy Imbalance Price calculation. DMAT has been subject to eight parameter reviews since its implementation. The review in 2018 resulted in a change in the DMAT for the first time, with the value decreasing from 1MWh to 0.1MWh. The change was effective from 1 April 2019.

1.2 The parameter was introduced in 2001 following the implementation of [BSC Modification P10 'Eliminating Imbalance Price Spikes Caused By Truncating Effects'](#). This was an urgent modification raised to deal with rounding errors between National Grid and Settlement Administration Agent (SAA) systems, which were causing spurious Bid Offer Acceptances (BOAs) and had resulted in price spikes.

1.3 Data passed to settlement is specified to the nearest minute, and as a whole number of megawatts. Spurious BOAs can still occur when BOA instructions coincide with the ramping up or down of a BMU. **Figure 1** illustrates how this can occur for an example BOA. The figure shows the Bid Offer Pairs (BOP) above (BOP+1) and below (BOP-1) the Final Physical Notification (FPN).
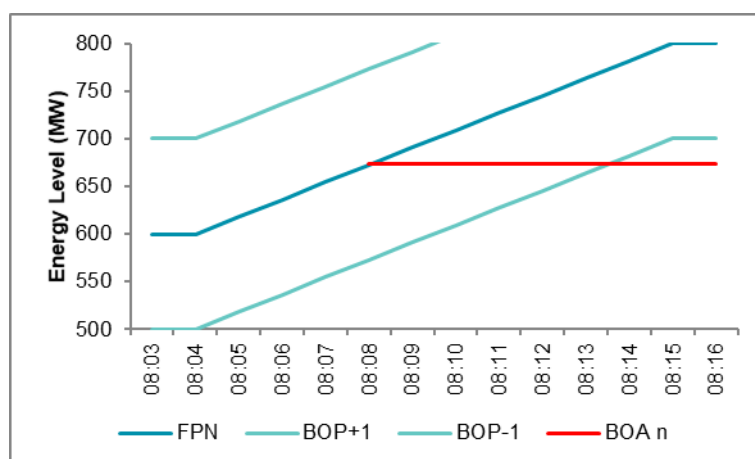

Figure 1: Example BOA instruction during a BMU ramping up

1.4 In this example, the System Operator instructs the BMU to remain at 673MW at 08:08 by a BOA. Settlement Systems calculate the FPN at 08:08 as 672.72MW. This is calculated by linear interpolation between the two instructed levels at 08:04 and 08:15. There is a positive 0.28MW difference between the BOA and FPN at 08:08 this difference results in a spurious Offer of 0.005MWh.

1.5 Spurious BOAs produced because of the level of granularity of Settlement Systems will naturally have a small volume. A difference of 1MW between an FPN and a BOA for a minute would result in an erroneous volume of 0.017MWh.

1.6 As no rounding of acceptance volumes takes place during the price calculation, this suggests that a non-zero DMAT is a sensible precaution.

2. BSC Modifications impacting the DMAT

2.1 BSC Modification P344 brought in Wider Access provisions, enabling participants to aggregate activity at several sites into one Balancing Mechanism (BM) Unit, which they can use to trade in the UK balancing market. More detail has been provided in Section 4 on the volume of BOAs seen for Virtual Lead Parties (VLPs).

3. Analysis of DMAT Tagged actions

3.1 Analysis covers the period 1 April 2016 to 30 September 2022. For each year, the assessed period runs from April to March. 2022/23 data is for the first 6 months of the 2022/23 year, up to the end of September 2022.

3.2 **Graph 1, 2** and **3** compare the historic volumes and numbers of BOAs and Balancing Services Adjustment Actions (BSAAs).

3.3 **Graph 1** shows that the percentage of BOA and BSAA volume removed by DMAT Tagging has decreased following the reduction of DMAT from 1MWh to 0.1MWh. 0.065% of BOA volume was removed by DMAT Tagging in 2018/2019, but following the decrease to 0.1MWh, 0.00154% was removed in 2019/20. In the review period 2021/2022, 0.00183% was removed and in the first six months of the 2022/2023 review period, 0.00195%.

3.4 When looking at the percentage of BOAs and BSAAs removed (secondary y-axis of Graph 1), a DMAT of 0.1MWh has seen 1.08% and 1.12% of BOA actions removed by DMAT Tagging in 2021/22 and 2022/23 respectivley. This is a decrease from 4.20% in 2018/19. The percentage of BSAA actions removed has decreased from 9.38% in 2018/19, to 0.19% in 2021/22 and 0.03% in 2022/23 so far.
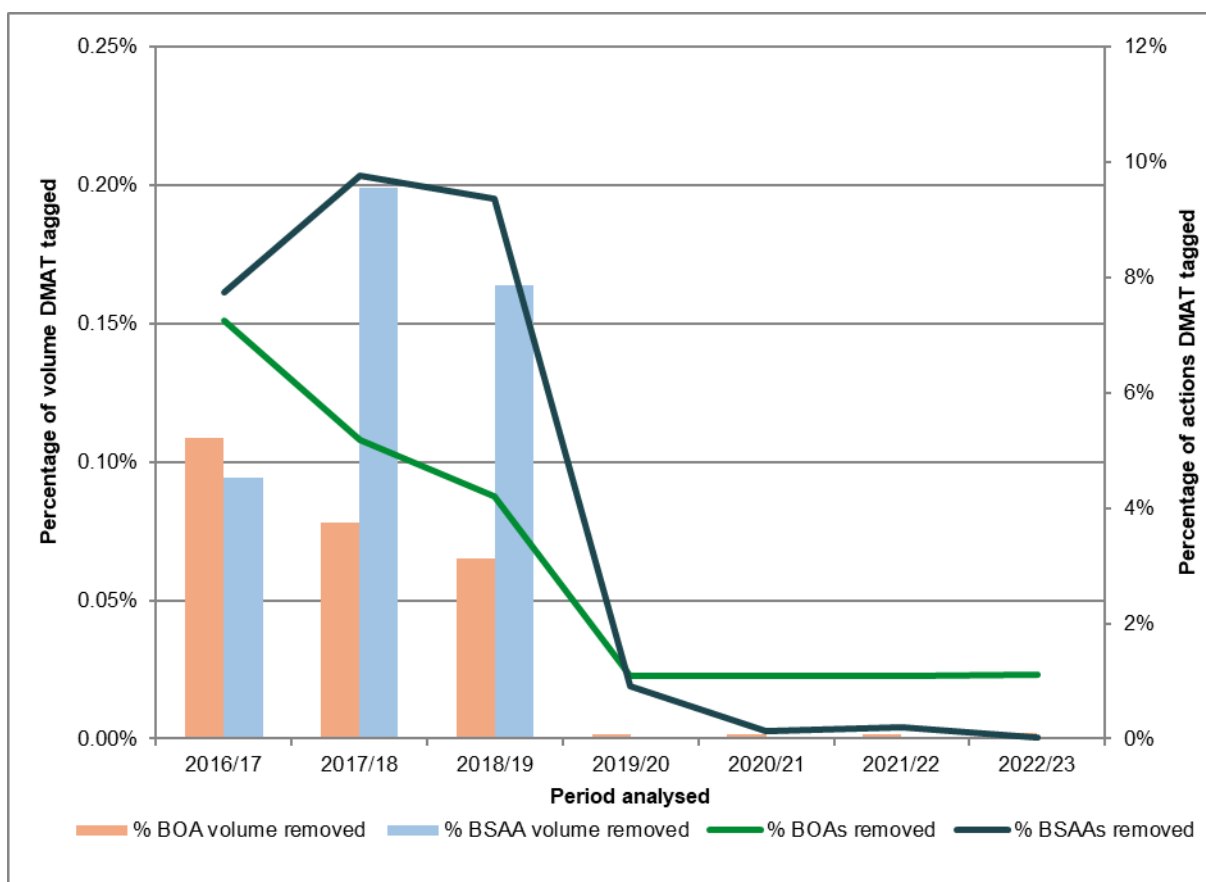
**Graph 1. Percentage of BOA and BSAA volumes and actions removed**

3.5 **Graph 2** shows the number and average absolute volume of DMAT tagged actions in each year.

3.6 The number of DMAT tagged BOAs was 11,258 in 2019/20 following the reduction of DMAT to 0.1MWh, down from 36,985 actions in 2018/19. In 2021/22 and so far in 2022/23, 11,046 and 5,218 BOAs have been DMAT Tagged respectively.

3.7 The number of BSAAs decrease to 273 in 2021/22, whilst 25 BSAAs have been DMAT Tagged in 2022/23 up to the end of September 2022.

3.8 Since the decrease in DMAT in April 2019, the average volume of a DMAT BOA or BSAA has fallen to 0.03MWh. The total volume of DMAT BOA and DMAT BSAA actions removed in 2021/22 was 343MWh, with 173MWh being removed so far in 2022/23. This is compared to a total of 20,312MWh in 2018/19.
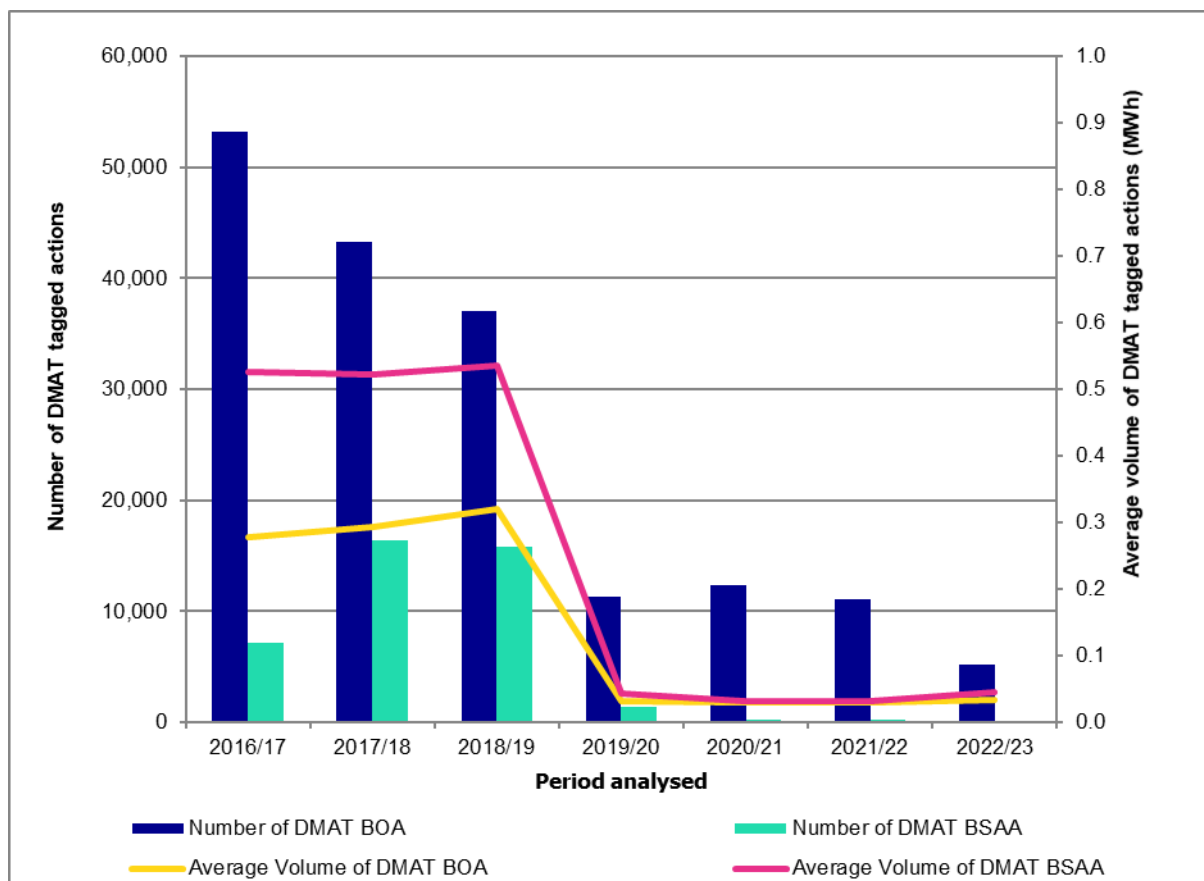

Graph 2. Number and average volume of DMAT Tagged BOA and BSAA

3.9 **Graph 2** can be compared with **graph 3,** which shows that since 2016/17 the number of BOAs has increased year on year until this the 2021/22 Review Period. In 2021/22 there were 1,018,353 BOAs, an 11% decrease from 2020/21. Over the same period the number of BSAA utilised decreased by 20%.

3.10 In the six months of 2022/23 data so far, there have been over 465,004 BOAs and 80,290 BSAAs.

3.11 The average absolute volume of a BSAA has decreased to 32MWh for both 2021/22 and 2022/23, compared to 54MWh for 2019/20. These are the lowest average BSAA volumes since 2018/19 (31MWh).
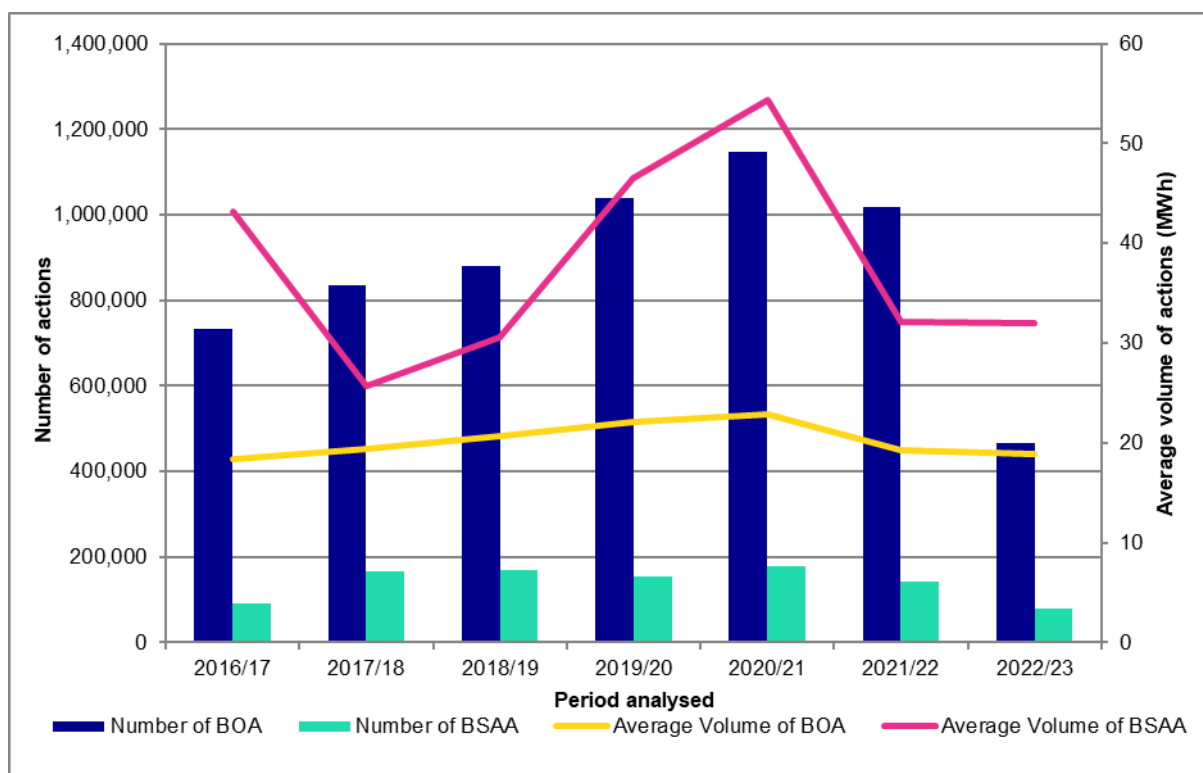
Graph 1. Number and average volume of BOA and BSAA

3.12 **Graph 4** shows the distribution of volumes of DMAT tagged actions between April 2019 and September 2022. April 2016 to March 2019 have not been included in this graph due to the change in DMAT from 1 April 2019.
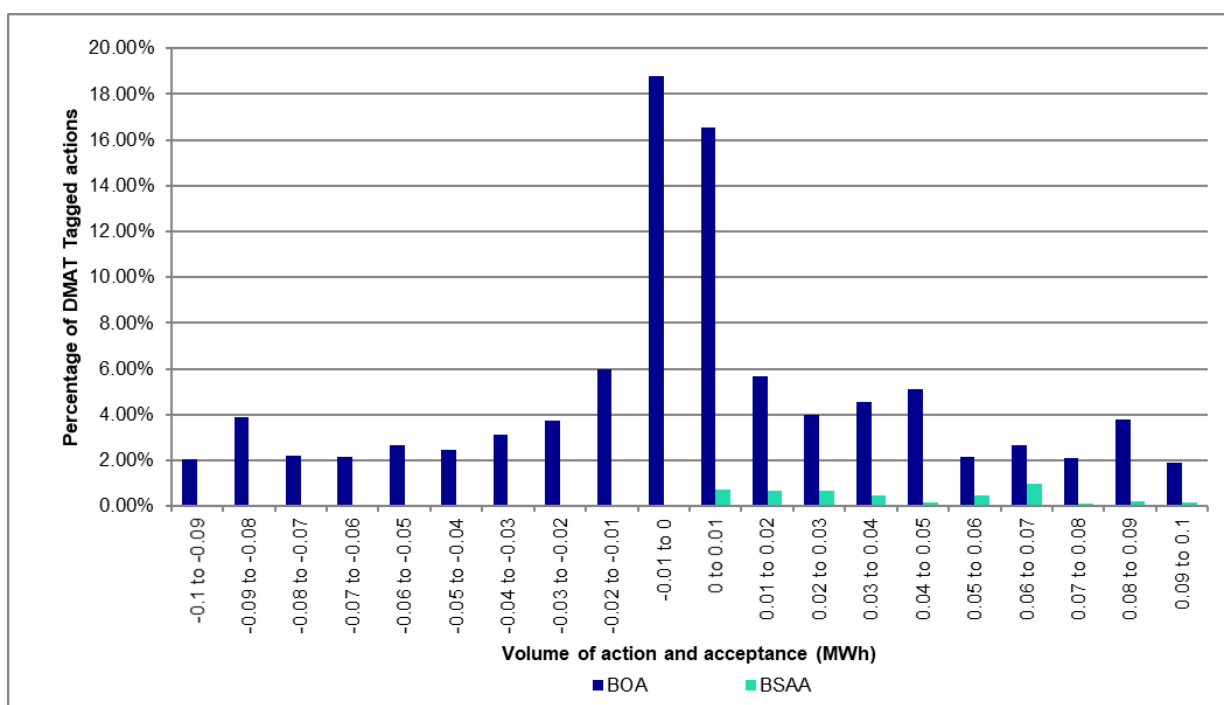

Graph 4. Percentage of DMAT Tagged actions by volume of action between April 2019 and September 2022

3.13 The graph shows that 37% of all DMAT Tagged actions had a volume between -0.01MWh and 0.01MWh.

3.14 Over the period, 95.5% of tagged actions were BOAs. The distribution of DMAT Tagged BOAs has a degree of symmetry with 49% less than zero and 51% greater than zero. In contrast 99.9% of tagged BSAA are greater than 0MWh.

3.15 **Graph 4** also shows that, on average, 0.5% of all DMAT Tagged actions are BSAAs in each category greater than 0MWh. The difference in distributions implies that the Settlement System issue that causes erroneous BOAs is different to any issue that might cause erroneous BSAA.

3.16   The analysis presented in these four graphs shows that over the period analysed, there are distinct differences in how BSAAs and BOAs have been utilised, and the volumes and number of these actions that have been DMAT tagged.

4.   Wider Access and Virtual Lead Parties

4.1   The Wider Access provisions of BSC Modification P344 'Project TERRE implementation into GB market arrangements' enabled participants to aggregate activity at several sites into one Balancing Mechanism (BM) Unit which they can use to trade in the UK balancing market. A Virtual Lead Party (VLP) can use a Secondary BM Unit to aggregate balancing actions across sites independently of the relevant Suppliers.

4.2   **Graphs 5a) and 5b)** break down the BOA volume from VLPs, from the first VLP BOA on 23 April 2020 to the end of September 2022.

4.3   7,215 Bids by VLP BM Units have been accepted in across this period, with an average volume of -6.0MWh. 29.1% of Bids by VLPs were less than 1MWh in volume and 4.3% less than 0.1MWh. **Graph 5a)** shows in pink that 4.3% of all VLP Bid Volume was removed with DMAT tagging. The percentage of actions from VLPs being removed by DMAT Tagging is four times higher than all BOAs (1.08% in 2021/22 Review Period).

4.4   In the previous parameter review, conducted in October 2020, the DMAT tagged volume from VLPs was 1% in the period 23 April 2020 to 30 September 2020.
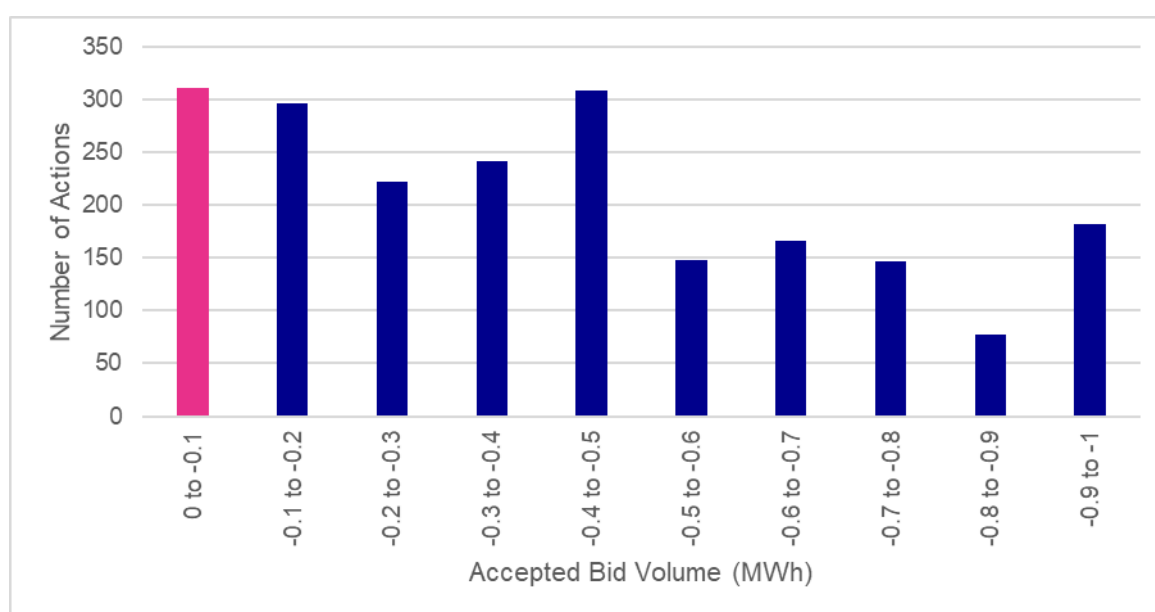
Graph 5a). Distribution of VLP Bid volumes less than 1MWh up to 30 September 2022 (DMAT removed Bids in pink).

4.5   **Graph 5b)** displays Offers by VLPs between 23 April 2020 and the end of September 2022. 9,303 VLP Offers have been accepted, with an average volume of 6.4MWh. 19.3% of accepted VLP Offers had a volume of less than 1MWh. The percentage of VLP Offer Volume removed by DMAT Tagging was 2.7%, which 2.5 times higher than the percentage of all BOAs removed in the 2021/22 Review Period (see **Graph 1**).

Graph 5b). Distribution of VLP Offer volumes less than 1MWh up to 30 September 2022 (DMAT removed Offers in pink).

4.6   In total, 560 BOAs from VLPs were DMAT Tagged during the period 23 April 2020 to 30 September 2022. This represents 0.02% of all BOAs in that period.

5.   Conclusion and next steps

5.1   Our analysis displays a clear reduction in the percentage of actions and volumes DMAT Tagged following the decrease in DMAT from 1MWh to 0.1MWh since 1 April 2019. In the latest Review Period covering a complete year (2021/22), DMAT Tagged volume is 97% less than 2018/19, consistent with 2019/20 and 2020/21 Review Periods.

5.2   The number of balancing actions from VLPs have increased since 23 April 2020, in line with the growth in the number of active VLPs. Elexon's analysis shows DMAT Tagging may impact BOAs from VLPs more than all BOAs. However, as the total number of DMAT Tagged BOAs from VLPs represents just 0.02% of BOAs, Elexon do not have sufficient evidence to reduce DMAT further.

5.3   Elexon will continue to monitor how much volume is removed by DMAT Tagging through the monthly System Price Analysis Report (SPAR).

5.4   We are therefore recommending no change at present to the current DMAT of 0.1MWh, and therefore have not published an industry consultation. We invite you to provide comments on the analysis included in this paper, and any industry changes that could impact the value of DMAT. We invite you to make a final recommendation to the BSC Panel for its November 2022 meeting.

6.   Recommendations

6.1   We invite you to:

a) **NOTE** the analysis presented in this paper, and provide comments;

b) **RECOMMEND** to the BSC Panel that no change is made to the DMAT; and

AGREE that Elexon conduct the next review in two years' time. For more information, please contact:

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