THE ELECTRICITY STORAGE NETWORK

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26 July 2023

Fintan Slye
Executive Director
National Grid ESO

Re: Reforming the Balancing Mechanism and reducing costs for consumers

Dear Fintan,

I am writing on behalf of the 80 members of the Electricity Storage Network (ESN) that represent the majority of the 2.9 GW of operational grid-scale electricity storage sector in the UK. We would like to draw your attention to the urgency and vital importance of ensuring low carbon sources of flexibility such as electricity storage[1] are effectively dispatched in the Balancing Mechanism (BM).

The Electricity System Operator's (ESO) ancillary service and balancing markets are crucial to enabling the deployment of low carbon flexibility, such as electricity storage, which, in turn, are required to achieve the UK's aims of a resilient, affordable and low carbon energy system. The government has recognised the importance of these markets, setting out in its draft Strategy and Policy Statement for Energy Policy that "We expect the FSO to be looking to drive competitive, coordinated, and effective markets which are open to all flexibility technologies of all sizes."

Investment decisions on storage projects in the UK pipeline depend on efficient dispatch of electricity storage assets in the BM as a crucial segment of the revenue stack. Current dispatch issues are putting billions of pounds of investment at risk.

The ESN welcomes, as a starting point, the reform process set out in the ESO's Markets Roadmap published in March this year including the commitment to being able to operate a zero carbon electricity system for periods in GB by 2025.

However, we are concerned ESO's current approach is not delivering on its ambitions and that the legacy systems and manual processes in the control room are putting up balancing costs for consumers, as well as contributing to higher carbon emissions.

As the ESO's Markets Roadmap sets out, "The BM is currently high carbon intensity; our IT systems and control room processes present barriers to entry for emerging low carbon flexible assets". Therefore, in order to keep pace with the development of low carbon, flexible technologies, there is an urgent need to develop a digitalised solution for the BM.

Members are concerned that cheaper low carbon units are being "skipped" (i.e. not being dispatched) in the BM in price-merit order the vast majority of the time. Instead, larger, more expensive and much longer minimum runtime (often 6 hours), higher carbon assets are being preferentially dispatched first. Whilst we welcome the ESO publishing reasons for skipping of assets which are in merit via the Dispatch Transparency dataset, the causes behind the Reason Codes shared by ESO are not always clear and confirm that ultimately skips relate to manual processes, legacy systems and an uneven playing field for low carbon flexibility.

[1] Electricity storage technologies include Li-Ion batteries, pumped hydro and other options such as liquid air energy storage and iron air batteries.

The table below sets out analysis of the current state of play. This relates to the loss to the consumer from inefficient dispatching when BOAs are issued (i.e. when trades are placed by the control room), total cost impacts in practice will be higher.

Average Skip Rate *Across 10 representative batteries in GB in June 2023, the percentage of instances batteries were skipped over whilst in price merit.*	80%
Annualised Cost to the Consumer *Forecasted annual cost to the consumer of skipping batteries in the BM in 2023.*	£150m

Table 1: Data analysis provided by ESN member Arenko. Methodology summarised in Appendix 1

We, therefore, greatly welcome the work being undertaken by the ESO to improve the BM, including:

- A new battery zone in BM as of May 2023
- The development of the Open Balancing Platform through the Balancing Programme reportedly to launch in December 2023
- The Balancing Programme Storage Stakeholder Group.

However, given the urgency of the challenge, we are calling for action in three areas:

1) Greater urgency from ESO on ensuring low carbon, flexible assets are effectively dispatched in the BM including:

    a. Confirmation from ESO that the new battery zone in the BM **will** be part of Open Balancing Platform release 1 (expectation set for December), and not a "stretch" target as verbally communicated to our members.

    b. Prioritisation of the planned grid code change to improve parameters for batteries in the control room (e.g. Maximum Delivery Offer/Bid) as soon as possible. Today batteries are only visible for 15 minutes due to parameters set by the control room about 5 years ago.

    c. Use of interim measures until skip rates are able to fall to much lower levels with system improvements, to allow for the effective dispatch of batteries in the meantime – similar to what was achieved three years ago when ESO announced savings of £700,000 in less than 10 days with just 110 MW.

    d. We also urge Ofgem to make *effective* dispatch of low carbon flexible assets a key performance metric for National Grid ESO and the Future System Operator.

2) Clear and accurate published data from ESO on the dispatch of batteries versus other technologies (such as CCGTs). This should include metrics such as Accepted MWh vs Available MWh for bids and offers and % of BM dispatch volume per technology to give a better indication of how the market is functioning.

3) A meeting with ESN members and the ESO Balancing Transformation team, control room representatives and market development teams to discuss the current BM dispatch issues, dispatch transparency dataset and reason codes to lead to collaborative work on solutions.

We are keen to work constructively with all stakeholders to ensure solutions are in place as soon as practically possible. We look forward to receiving your response.

Yours sincerely,

Rachel Hayes
Director, Electricity Storage Network

CC:
Emily Bourne, Director of Energy Systems and Networks, Department for Energy Security and Net Zero
Dan Osgood, Director Energy Security, Markets and Analysis, Department for Energy Security and Net Zero
Eleanor Warburton, Energy Systems Management and Security Director, Ofgem
David Beamont, Head of ESO Regulation, Ofgem

Appendix – Analysis of battery dispatch in the Balancing Mechanism:

This analysis has been provided by ESN member company Arenko[2]. They have been dispatching batteries into the Balancing Mechanism for several years. Including a Reserve from Storage trial in 2020 with National Grid ESO[3].

Skip rate (%)
This analysis included 10 representative batteries operated by different optimisers. We excluded system tagged instructions from this analysis as well as long instructions (defined as a unit being instructed for 3 or more consecutive settlement periods).

We looked at instances where the batteries made power available to the BM and were in merit. 'In merit' means their offer price was lower than the maximum offer price instructed, or their bid price was higher than the minimum bid price accepted.

[2] https://arenko.group/
[3] https://arenko.group/national-grid-eso-announce-highly-successful-results-of-arenko-pioneered-reserve-from-storage-trial/

The number of times the batteries were skipped in those instances was then calculated.

Annual cost to the consumer (£)

Annual cost to the consumer of skipping batteries.

This analysis was undertaken on a representative UK battery that was active in the BM from November 2022 to May 2023. The cost of skipping that battery by comparing its BM price to the top of the stack, was calculated i.e., had this battery been instructed instead of the unit at the top of the stack, how much money would this have saved consumers.

This cost was then extrapolated to the full UK operational battery fleet, which is estimated to reach 4GW by the end of 2023.

We would highlight that the cost assumption above only considers the loss to the consumer from inefficient dispatching when BOAs are issued (i.e. when trades are placed by the control room). Other factors include the cost of BM Start UP paid to CCGTs, In addition, other costs include:

i) the cost of **BM Start Up** paid to CCGTs,
ii) the cost of **wind curtailment** required to bring CCGTs to their Stable Export Level and then any headroom level above this,
iii) the **carbon price-related costs** (UK and EU) of operating the CCGTs and,
iv) the cost of **over-procuring baseload capacity in the Capacity Market**.