ESO

Enhancing Energy Storage in the Balancing Mechanism

Answers to your questions

Introduction

This document holds all the questions we have received during our recent event ‘Enhancing Energy Storage in the Balancing Mechanism.

Contents

We have grouped the questions into themes to make it easier to view our responses. We will update this document regularly with responses to all the new questions we receive from stakeholders.

Question themes:

- Dispatch Transparency
- Systems
- Markets
- Other

Dispatch Transparency

Question	Answer
Should an external organisation verify the changes once they have been implemented to come back to the market with evidence and then identifying further issues	The outcomes from the LCP analysis will provide us with KPI’s we can use to monitor and assess the impact/benefits delivered by the changes implemented as per our roadmap. Our Balancing Mechanism and BPS audits also give additional assurance around the effectiveness of our operations, in line with license obligations and security of supply
Will unexplained skips be categorised into groups by technologies or by the size of the assets, or both? How granular will the ‘deep dives’ be	Yes, they will be categorised by technology and size. For the deep dives we will take a sample of days that will be identified from our overall skip rate analysis. For each of those days, we will be going period-by-period to drill into individual accepted actions and trying to identify why those actions were taken, by observing system conditions using all non-BM market data available to us. Based on this, we will be able to identify whether actions were validly taken out of price merit or not.

Question	Answer
If Batteries are with the NBE desk: Can ESO commit to dispatching in merit for "slow" imbalance correction and constraint management? Thanks.	Yes, the NBE will be able to use Batteries for slow reserve, constraint management and frequency control. With Bulk dispatch this should be possible similar to how the pumped storage zone is managed. All assets are optimised at a national level as one zone every 5 minutes. Zonal management are purely for re-optimisation between the 5-minute intervals when we might need fast ramping units. So slow imbalance correction will be optimal as it will be optimised as one national zone which includes batteries
Why not instruct earlier and therefore "reserve" battery capacity? Instruct before GC or use a TERRE like product (which is already developed)	We don't have the necessary storage data parameters to make this scheduling decision at present. Balancing Reserve will be implemented in Spring 2024 and will provide this service.
What is the expected improvement in skip rate once OBP+BDO goes live? It looks like Jean's reasons 1 and 3 are not well solved by the launch in December?	With the delivery of Bulk Dispatch, we have calculated that the dispatch capability will be increased by 550% as long as there is a requirement to dispatch. In addition, with the control room process review and training we expect a material impact on skip rates
Will part of the LCP analysis be to consider changing manual dispatch skips into 'avoidable' skips? Wouldn't this help measure success of Bulk Dispatch?	As discussed in the presentation and at the breakout session – terminology is really important, hence the need for collaboration with industry during this analysis and agreement on what terminology is used for an understood explanation. The LCP analysis will provide us with KPIs to help monitor, track and assess the improvements we will be delivering
Does the auto instruction repeater improve skip rates or make them worse? Repeating a unit might not be as efficient as moving to a different one.	The automatic repeater instruction is mainly used for managing the system during times of high wind and constraints. Wind is bid off in cost order with prices monitored by the Zonal Balancing Engineers. These actions will be marked as system
Will the LCP Delta report be made publicly available once complete	Yes – unless commercially confidential. We have committed to sharing the analysis, proposed methodology and a plan going forward based on the outcomes.

Question	Answer
What is ESO's own estimate for BESS and wider zero-carbon flex skip rates? If LCP's work highlights the need to change the transparency data, will that happen?	We do not currently calculate "skip rates". We publish the dispatch transparency dataset to provide insight into our dispatch decision making. Our Balancing Mechanism and BPS audits also give additional assurance around the effectiveness of our operations, in line with licence obligations and security of supply. The outcomes from the LCP analysis will provide us with an independent view of the way we categorise decisions and suggestions for KPI's we can use to monitor and assess the impact/benefits delivered by the changes implemented as per our roadmap.
Where is the publicly available data showing that, for instance, a BMU has been dispatched to be positioned for Freq Response?	This information is not published on a per BMU basis, only overall response volumes are shared in our monthly incentive and MBSS reporting. However, for dispatch transparency we do show where frequency response was the reason for a unit being taken. The Response category in the All-BOA dataset is defined in the methodology document as: "Action where the BMU is providing or being positioned to provide response in the Settlement Period or across settlement periods if positioning/returns abridge the adjacent settlement period. "
We've been told 'do phone ENCC if you are skipped', and 'don't phone ENCC if you are skipped'. Which is it, and can we have consistent treatment for all please?	If you are concerned that a unit has been skipped, please provide the details to box.NC.Customer@nationalgrideso.com. The Operational Insight team will be able to provide an explanation for the dispatch decisions made, seeking advice from the control room engineers as necessary. This will reduce the risk of distracting control room engineers while they are actually dispatching units and ensure your query is logged.
The skip dataset, and specific incident analyses of it, have improved our own operations. Thank you for putting this into the public domain and supporting it.	Thank you!

Question	Answer
Thank you for informative presentations. Are there opportunities to publish decisions e.g. 'skip' reasons in real-time.	Not at this point in time, however future iterations in dispatch tools may enable a control engineer to assign a reason to a decision in which case this potentially could be included in the publication of BOA details.

Systems/Operational

Question	Answer
Regarding the issue with bulk dispatch in the BM, it was previously mentioned that NG were working towards a multi dispatch tool. Was this implemented	OBP is on track to deliver Bulk Dispatch in December.
We don't talk about policies, just system changes. How can we be confident the CRAIG documents demonstrate the correct behaviour for storage if now shown?	In addition to system changes we are reviewing our process and new procedures for OBP Go Live. CRAIG is used as a short-term operational advice until procedures are updated.
How far into the future would you want to ideally be able to calculate storage capability?	As per our existing process, 32 hours ahead at the day-ahead stage will enable us to feed battery capacity into our overall margin and transmission analysis processes
Why don't you use Max deliver volume and maximum delivery time?	These parameters, which already exist, are unidirectional. For storage assets we need to take into account their bidirectionality which is why we need an Export and Import version of these.
Why use state of charge? There are many variables that affect what the MW/MWh will be from the SoC. NG are not best placed to do this. Use Max delivery volume.	Options on the best dynamic parameters to use were presented at the event and will continue as part of our plan to enhance the use of storage assets. These will be taken in consideration and finalised as part of the required grid code change.
Can you reassure us the battery zone won't become a sidewater and limit the ability of BESS to compete against fossil fuel and larger generators	Yes, the NBE will be able to use Batteries for slow reserve, constraint management and frequency control. With Bulk dispatch this should be possible similar to how the pumped storage zone is managed. All assets are optimised at a national level as one zone every 5 minutes. Zonal management are purely for re-optimisation between the 5-minute intervals when we might need fast ramping units. So slow imbalance correction will be optimal as it will be optimised as one national zone which includes batteries.
How are the parameters MDV and MDP currently used in the control room? How should storage set these values given their flexibility	Unfortunately, MDV and MDP are unidirectional whereas storage assets need an export and import parameter
To be clear are you asking battery optimisers to reduce the amount of MEL/MIL re-declarations? If so by how much and to what limits?	We are asking people to submit changes to MEL/MIL and not just re-submit all information. We will be providing guidance on this shortly
Can the system function without traditional inertia from CCGTs?	That depends on whether the 140GVAs can be met with alternative inertia – hence the pathfinder stability projects and other areas

Question	Answer
When will the ESO systems be able to handle decimal places? (I.e. more granular than 1MW	OBP does handle decimal places and as part of its proof of concept we constructed a “Service X” which included <1MW units. However, until 2027, OBP will interface with our legacy systems which still have integer limitations so as an end-to-end solution we would need to cater for this.
What is exactly the 15-minute rule for Dispatch and how would the SoC signal via SCADA remove it?	In the absence of parameters which explicitly tell the ESO how much capacity a storage asset has left we use the parameters MIL and MEL and the fact that we will issue 15-minute instructions to deduce the capacity. This means the ESO is limited to instructions of a certain length. SoC would tell us explicitly how much capacity is left and allow the ESO to vary our instruction length
The problem with using state-of-charge is not that it's a single value. It's that you need to know several other parameters (capacity, efficiency, min/max SOC)	Agree. The ESO will shortly send out worked examples of our scheduling need with the data we think we need. Industry can then reply with improvements to our proposal, and we aim to implement the best option.
How will all the advances to BM work with the Elexon systems that are still managing all the payments relating to the BM?	All of our Balancing Mechanism (BM) systems, existing and in development, have to meet the requirements of the Grid Code and the Balancing and Settlements Code (BSC). The BSC in particular governs the way in which data is managed and shared with Elexon to inform the Settlements process. The BM systems and data is audited each year by external providers to ensure the ESO systems continue to meet these requirements.
Will NGESO enable the optimization of storage assets providing frequency services alongside BM activations?	Over time we are developing new optimisers (with universities such as Strathclyde, Imperial and Oxford) to co-optimise many different services
We quickly need an agreed process to get to a decision on storage parameters. What do ESO propose.	We are looking at progressing this via Grid Code changes
What is the minimum BOA duration that NG would instruct to a storage asset?	One minute.

Markets

Question	Answer
How concerned are you by the large number of storage units that are heading down the non-BMU route and NIV chasing? There could soon be ~1GW in this class.	Market participants will obviously make their own decisions. We're trying to make our markets accessible for all parties and our preference is for transparency and controllability for our control room. We would hope that the progress we are making will allow parties to operate with confidence in all our markets.
How will you prevent market manipulation with the new parameters given that they can be changed post gate? Clear guidelines and monitoring will be required.	This will be a consideration of the design and code change process. Parties have general obligations with respect to market manipulation. Any suspicions of manipulation should be reported to MarketReporting@nationalgrideso.com
Will there ever be a consideration to pay Batteries a fee to guarantee availability in the BM (equivalent to paying to warm a gas station to use in the future)?	Yes, this is an area we're actively looking into through a project looking at what market design is needed to drive more effective scheduling. We first need to understand to what extent the new day-ahead Balancing Reserve market would address the current distortion of unit start-up costs being included in real-time BOA prices. Our projects on this topic are in the early stages but we will be reaching out to engage in Nov/Dec.
How will increases in Dynamic service caps address skips for assets other than batteries, given the current tech profile of those services?	Dynamic Response (DM/DR/DC) volume increase does not directly impact Skip Rates in terms of BOAs being in Merit or not. It is another market for assets to sell capability by participating in auctions. For more information see: New Dynamic Services (DC/DM/DR) | ESO (nationalgrideso.com)
What is the most suited market or service for battery technology that can fully charge and discharge very quickly in 90 seconds approximately?	We don't comment/advise on most suited markets – this is down to individual providers business plans.
Any word on when slow reserve will be launched? **Did I miss something from this timeline presentation or has Slow Reserve disappeared for the foreseeable future?**	Slow Reserve has been removed from the roadmap as plans for delivery of the new Slow Reserve service are still being considered. Quick Reserve and Balancing reserve have been prioritised

Question	Answer
Will some of the operational problems of ESO IT and manual work practices be used as excuses to deny BESS access to Slow and Quick Reserve launches in 2024?	We have said that we will deliver quick reserve for BM units in OBP next year and in non-BM units once ASDP is migrated to OBP in 2025. Our processes, procedures and training are being updated for OBP Go Live and will be reviewed as we make incremental releases throughout 2024
We were told you'd set expectations for the scale of impact from each improvement. I don't feel we have clarity on the impact of changes, when will we?	You've heard today about the market and tools that we are planning to adapt/amend. With LCP we will be working to establish how to demonstrate the impact of these changes – as new KPIs provided to us to start measuring/tracking/monitoring the benefits and how these are being realised. Committing in December for analysis to share with yourselves, and a proposed methodology and a plan of action for how we think we can implement those metrics and KPIs.
Does NGESO ever compare its own markets with European ones such as FCR and aFRR, which are much simpler for batteries to participate in + for TSOs to operate?	We do consider what other TSOs have in terms of either system or market operation.
Will OBP ensure that batteries don't need to be considered their own Zone, and enable their use by the Zonal Balancing Engineers?	As per the Dispatch in Practice presentation, OBP will still manage assets in zones. The first two zones in December are Batteries and Small-BMUs. Batteries in their own zone so that we can use for fast frequency connection – when used for slow closure within BM gate it is easy for NBE to do this. With or without OBP – dispatch advice is per zone. No concept that there's a negative aspect to batteries being in their own zone. All assets are optimised every 5 mins as one national zone. The sub zones are only used when we need to optimise between the 5 min optimiser runs. Normally the requirement is then also for fast moving assets like hydro and Batteries. Hence these two zones can be directly instructed by the NBE who controls the Frequency.

Question	Answer
What technical parameters are needed to qualify as a 'fast asset' e.g. Ramp rate, delivery duration, time to response etc?	It depends on the requirement on the system at the time. We rank the options the ESO have in terms of time taken from sending instruction to delivery. So NTO/NTB of zero mins. NDZ of 0mins. Ramp Rate of 999MW/Min is the fastest assets we have.
Self-dispatch / NIV chasing - how do you know the volumes are small? Have you looked at the 'hot' periods when the signals for self-dispatch are strong?	ESO are not in a position to know the value of any NIV chasing which occurs, as we are only able to see the differences between what units indicate they will do in their physical data submissions and their actual metered volumes at BMU level. There are potentially a number of reasons these differences occur, and this is not the same as the true NIV level.

Other

Question	Answer
Have LCP engaged with DSR providers? Over-focus on batteries/storage risks exclusion when DSR has also flagged these issues for a number of years.	Yes, DSR providers have been engaged in the stakeholder engagement and their views will be reflected in the report.
What are the timeframes for implementation for the new grid code change to include new dynamic parameters? (Presented to grid code forum on 2 August)	We hope to have our software changes complete by Dec 24 – in parallel we will progress Grid Code changes. Hopefully, with Industry support we would complete in 3 to 4 months with then time for Ofgem's decision.
The outputs of the LCP analysis should then include setting incentive targets for the ESO incentive scheme that Ofgem should monitor as the ESO regulator	Thanks for the suggestion – we will be sharing all these questions and suggestions with Ofgem. We currently report the dispatch transparency dataset on a monthly basis with our incentive metrics and would anticipate that if another metric is developed, we could include this in our reporting.
How does one match BSAD actions from DETSYSPRICES & PHYBMDATA (old Elexon BMRS API end points) to the BMUs being dispatched for these actions?	Although the ESO provides data to Elexon which they publish through BMRS we are not familiar with the contents of the API they provide, or how you may choose to match, compare or combine the API outputs with other datasets from the ESO, Elexon or other sources. Elexon publish their own BMRS API and Data Push Guide - Elexon Digital BSC. You may find this document useful as it gives details of the data fields provided in each dataset including which fields contain the BMU identities.
Has ESO engaged with EDL/EDT software providers to make sure that they have enough information to deliver EDL changes in time for go live?	For our December release there are no functional changes to EDL/EDT. At our face-to-face industry events we have presented volume increases. We also made a presentation to the Grid Code Development Forum on this issue and encouraged Market Participants to contact their software houses. In addition, we have directly contacted several software suppliers directly. We are also setting up an IT Forum to discuss future changes that will involve functional changes
Will part of the LCP analysis be to consider changing manual dispatch skips into 'avoidable' skips? Wouldn't this help measure success of Bulk Dispatch?	We won't automatically put all manual skips into avoidable skips – however, all kinds of skips will be included in the data being assessed and won't be overlooked

Question	Answer
Ref LCP comments. Why exclude batteries from 3h+ events? Battery MW can be de-rated to run for >3h and is attractive to BESS operators. Let's be inclusive?	The methodology excludes >90mins. In the BM we can't access those assets – therefore greater lead time is excluded. LCP are looking at last 12months for their analysis, so they see it as more economic or cost effective not to part load for a long period of time – but to max output for a period of time.
My conclusion of the day is that the launch of OBP/BDO in December and then fast dispatch will have the greatest impact on BESS dispatch – is this correct?	We do expect to see a significant increase in BESS Dispatch with the introduction of these new functionalities. However, this is still caveated by system conditions at any given time to what the best solution may be.
Can you set out the expected impact on each roadmap deliverable on BOA call off for BESS assets in terms of both number of instructions and duration	It's not currently part of our plan to do but it may be something we consider in the future.