Public

Answers to your questions

Balancing Programme Events 2023 & 2024

Introduction

This document holds all the questions we have received during our Balancing Programme events. You can find out more about our events and what was covered in the Balancing Programme area on the NESO website – Click here.

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 our customers.

Dispatch Transparency

Received	Question	Answer
26 Sept	**Do any of the algorithms optimise an instruction across multiple zones, or do they all optimise within a particular zone?**	Currently, BM's Legacy Dispatch Algorithm (LDA) optimises across multiple zones and provides a cost-optimal power and response loading of each Balancing Mechanism Unit (BMU) to balance generation and demand whilst satisfying constraints and response. This advice is then aggregated to a zonal target in the BM which is also transferred to OBP. OBP provides capability to run an optimisation to meet the zonal target,

		bulk instructions are created and sent automatically to the selected units. In 2025 a new National Optimiser will be built in OBP which will replace and improve the LDA functionality.
26 Sept	**Is the merit order used for constraint management purely based on pricing? Are there any other factors considered or co-optimised (BMU technical characteristics)**	The effectiveness of a BMU on the constraint has to be considered. For instance, if one BMU is twice as effective on the constraint compared to another one but isn't twice as expensive then it could be taken ahead of the unit which appears lower on the price stack.
26 Sept	**What impact do you expect the changes to LDA for the battery zone will have on dispatch rates for battery in the BM?** **What net impact should changes to LDA for the battery zone have on dispatch rates for batteries in BM? (expect some situations a manual calc is feasible, some not).**	Previously the control room have been manually estimating zonal targets for the battery zone as advice has not been available, which can be challenging. The LDA changes we are implementing in October will provide the control room with a cost optimal solution to follow. Given the output of the advice currently is manually adjusted, it is difficult to accurately forecast the impact on dispatch rates of the improved advice, but as this change will reduce manual calculations and support improved advice across all zones, it will contribute to improvements in overall dispatch efficiency.
26 Sept	**Encouraging to see the reduction in the number of voided instructions. Is compliance with the ramp rates the main reason for these voided instructions?**	In part – there are multiple reasons for this, but fundamentally, the need to start and stop on an integer MW or minute drives this. It could be the declared ramp rates that we would need to honour, but also that a unit may be already ramping with a completely different rate. An example could be a unit may have a profile where its PN is slowly changing 20MW over 7 minutes. There is no point

		where the unit is at an integer MW during those 7 minutes. By shifting the start/end point to fit, it may mean that there would be a breach of Minimum (Non) Zero Time which would lead to voiding. The instruction remediation work has removed much of these issues to the extent that we have <0.1% void volume.
26 Sept	**What improvements are taking place alongside the systems change to report the costs by constraint boundary as the Monthly Balancing Services Summary (MBSS) is too high level.**	There are other publications of our cost data and breakdowns of costs. A more detailed breakdown of constraint costs based on significant boundaries can be found by clicking here. We are always wanting to improve our accessibility to data and visualisations. We will provide updates to these datasets when possible.
26 Sept	**There doesn't appear to be any updates in the presentation pack on the LCP report reasons for delay and updated timeline.** **When will the LCP analysis on skip rates be published and will the data be refreshed to be up to date?** **I believe ESO is seeking to get a better views of skips in real time themselves (rather than ex post assessment) in the control room, any progress on this**	In July, we announced a delay to the publication of the independent report on skip rates, due to the knock-on impacts of complications with data processing by our third-party provider. Since then we have continued to work closely with LCP Delta to ensure that an updated report and suite of findings can be presented to the industry as soon as feasible. Additional data validation and report assurance activities continue to take place. We understand the level of interest in the report and apologise for the inconvenience caused by this delay. The methodology is due to be demonstrated to industry during the week commencing 04/11. The actual date and time will be advertised at the OTF on 23/10. This initial session will be to explain the

		methodology employed by LCP to determine skip rates. It will be an MS Teams event, and the expectation is that it will be 45 minutes. An expressions of interest will also be circulated at OTF on 23/10 giving 2 weeks to register. Queries can be sent to .box.battery-storage-strategy@nationalgrideso.com and Box.Battery-Storage-Strategy@uk.nationalenergyso.com. We will be publishing the full report in November following the webinar. We are continuing with all other initiatives to drive down and understand root causes of skips. This includes improvements to dispatch algorithms, delivery of live dispatch efficiency tools and bolstering the headcount within the shift Energy teams in our control room.
26 Sept	**Is there an update on the resourcing in the control room (extra people) that are supporting the control room on the skip rate issue?**	We have undertaken a recruitment campaign recently, and new full time-time engineers have accepted roles within the control room. In addition, we have agreed internal secondment opportunities to the control room, Individual start dates are a bit flexible and are tailored to training and business release dates.
27 June	**With respect to constraint management - if an asset is in a constrained zone and marked as 'in constraint' what does that mean? e.g., would you take bids but not offers?**	It means that if it is an export constraint we won't move the unit up, and if the opposite, we won't move the unit down. We take into account the direction of the constraint. The demand pattern may mean the constraint is temporary - it is determined in SORT.

27 June	**Please can you talk through the changes that have increased the volume and number of system-flagged actions being delivered by batteries and how this might change in the future.**	Thank you for your question – we are currently looking into this and will provide a response shortly.
27 Mar	**For the planned Non-BM dispatch functionality, how will real-time dispatch transparency be shared?**	We are working on the "Discovery" stage of non-BM onboarding roadmap, in line with the rest of the OBP Roadmap. Further details will be shared once the functionality and integration are finalised. For current system dispatch, ASDP instructions are published on the Data Portal within 1 minute. We expect to publish similarly when issuing instructions using OBP, but subject to Discovery. We also have our Operational Transparency Forum which can be used to answer questions on dispatch of non-BM assets.
27 Mar	**When will arming instructions be published from a transparency perspective?**	We have started to publish inter-trip arming data on the portal since 2 weeks ago. The data is located here https://www.nationalgrideso.com/data-portal/constraint-management-intertrip-service-information-cmis The files are updated monthly.
27 Mar	**Wasn't the LCP analysis due in December 2023? Please can you explain what has delayed this so much?**	LCP analysis phase 1 was due to complete in December and has been completed. We are continuing to work with LCP Delta on a second phase of the analysis to ensure the methodology is consistent, its more granular, and includes essential operational data. The methodology has been going through an iterative validation process with our data scientists and Control Room teams over the last couple of months and will be published in May based on a revised plan of delivery with LCP Delta. In

		addition, key resources within the ESO have been focusing on other industry priorities including GC0166 and the change of the 15-minute rule to 30 minutes which have impacted this delivery.
11 Dec	**Will small BMUs be scheduled for, e.g., the evening peak, then dispatched using bulk dispatch.**	If small BMUs are in merit then they will be scheduled and then dispatched using OBP. The Control room have all had training and have been asked to use OBP as their first dispatch tool for both the Small BMU and Battery zones.
11 Dec	**What is the timescale for implementing any changes following the Dec 15th MEL/MIL guidance?**	We aim to publish this guidance on the w/c 19th December. This is slightly later than originally planned as we had to include EDT guidance too, following feedback from stakeholders.
11 Dec	**What testing has been done to ensure that the BMRS and other transparency platforms can handle the ~100x increase in BOA data, given they're already struggling with MELS?**	Testing was undertaken with multiple software providers of the EDT/EDL, market participants, and also with Elexon.
11 Dec	**How many ZBEs are there now and what zones/geography does each look after?**	There are two Zonal Balancing Engineers (assistant National Balancing Engineers) and one National Balancing Engineer. The Zonal Balancing Engineer south dispatches the South Conventional Zone, South Wind Zone and the small BMU zone. The Zonal Balancing Engineer North dispatches the North Conventional zone and North Wind zone. The National Balancing Engineer dispatches the pumped storage zone and the Battery zone (both these zones are national).
11 Dec	**With so many BOAs published, will the Operational Transparency Dataset still be kept up to date with Alternative BMU actions?**	Yes, we don't anticipate any changes to the existing transparency dataset due to OBP go-live.

28 Nov	**From Summer 24 will all wind BMU be instructed to follow PN when necessary, or just those in a particular zone / region?**	We don't intend to change the way we manage wind BMUs from an external standpoint. Our release in 2024 is designed to alleviate workload in the control room by automating the actions they take now.
28 Nov	**How will the Fast Dispatch functionality (expected Spring 2024) impact on battery dispatch?**	Fast dispatch provides an enhanced optimisation algorithm targeting the flexibility of fast acting units. This will enable the National Balancing Engineer to manage frequency control using OBP in the first instance and will replace functionality currently provided by Vergil.
28 Nov	**Can batteries and small BMUs in new zones be filtered by location to manage constraints from 12 December?**	All units within a constraint boundary can be identified by a price stack within the current BM systems. If units are tagged as system within a constraint OBP will be made aware of these and will not dispatch those units.
28 Nov	**More detail on the scheduling of storage would be helpful**	We currently do not have visibility of battery reserve and do not have bulk dispatch capability. We are delivering bulk dispatch and in parallel are undertaking some quantitative analysis to enable the ESO to schedule reserve on batteries based on historic performance. This policy change will go-live once approved and close to the time of OBP Bulk Dispatch going live. A system change has been implemented in the BM to enable scheduling of some storage.
28 Nov	**Can batteries be used for constraints management by August 2024?**	Yes, they can be. If units are behind constraints, they can be tagged as system and excluded from optimisation. However, there is the opportunity to issue manual instructions.
28 Nov	**Can control room still dispatch batteries that are in OBP zones manually?**	Yes, they can. All assets can still be dispatched via SORT.

28 Nov	**It is a fact that energy data transparency leads to more efficient system & lower costs to consumers…what is ESO doing now to release OBP data real time?**	All instructions sent from OBP to BM and on to market participants are published on the BMRS system. The programme continues to be as transparent as possible publishing information on our website and via these engagement events. If there are more specific requirements, please provide your feedback and we will consider this. We will consult internally around future data transparency plans, e.g., for NBM data.
28 Nov	**Will you publish which BOAs were submitted by BDO vs manually?**	The systems involved do hold confidential data and are part of Critical National Infrastructure. We will consult internally around future data transparency plans including this request. Thanks for the feedback.
28 Nov	**Demystifying dispatch: could you publish "requirements" as generated by LDA and as fed into BDO? Real-time ideally, ex-post would also be valuable.**	The systems involved do hold confidential data and are part of Critical National Infrastructure. We will consult internally around future data transparency plans including this request. Thanks for the feedback.
15 June	**Great stats on increase in battery dispatch. Is it possible for future updates to include comparison with other technologies (e.g. CCGTs) and perhaps MWh/MW?**	Very good suggestion, looking at what can share and overlay. And sharing in other forums. Anymore suggestions let us know.
15 June	**How does the NBE construct programmes for tech grouped zones (Small BMU/BESS) when either zone could flex more or less? Isn't that is what the BDO is designed for?**	The current Balancing Mechanism (BM) System has a despatch algorithm which calculates the programmes for each individual zone. The despatch algorithm runs every 5 minutes. The National Balancing Engineer (NBE) checks the programmes and then issues them to the Zonal Balancing engineers. Once the programmes are accepted by the Zonal Balancing Engineers, they will they then transfer automatically to OBP. The Bulk

		Despatch Optimiser will sit in OBP and will develop an optimised set of BOAs which are automatically sent back to the BM systems. They are then issued to the BMUs via EDL.
15 June	**How do you consider long actions such as warming thermal plant with respect to skip rates? Pre-procuring headroom means flex doesn't even get chance to be skipped.**	We are very careful with our decisions to either warm or stand down coal units. Prior to warming coal units, the availability of flexible units is considered in the System Operating Plan and can be used to reduce reserve requirements in scheduling timescales. Warming coal may take place up to and beyond 12 hours ahead of real-time and invariably there are occasions where changes can occur via forecasts, redeclarations of BMUs or on the hourly intraday gates which influence decisions closer to real-time. There have been occasions where coal has been stood down and subsequently flexible units have also redeclared their availability down prior to the peak. This is a risk which needs managing and can result in running higher cost units in contingency or Short-Term Operating Reserve to maintain margins.
15 June	**NBE has more advanced tools for dispatching – can you elaborate** **Expectation of industry that batteries are going to be dispatched more efficiently. Worried that batteries will be ignored if not in Small BMU Zone** **Follow up question – hopefully better with multi dispatch** **Want to see a more efficient utilisation of storage**	A decision was taken earlier this year to move the batteries into a separate zone on the NBE desk, with the intention of improving the despatch of the batteries. The NBE uses an additional tool Vergil which has also been developed this year to enable more efficient despatch of batteries. This despatch performance of batteries has improved with these changes. Following feedback at out latest Industry event we have agreed to prioritise inclusion of the battery zone in the OBP December release, however this is a stretch target for the team and we will confirm in the months ahead.

		Based on our experience from previous deliveries and in-line with our agile methodologies, our aim is to deliver value early and incrementally, in order to prove that our solutions meet required outcomes in the most efficient and cost-effective way.
15 June	**The skip rate figure considers limitations in tools available to the Control Room like valid reasons (not a skip). This definition completely misses the point.**	We do recognise this feedback and the limitations both in the systems and in how this is reported. We are talking around the 10% of actions where the dispatch transparency dataset has a code allocated or not.
	We understand human errors happen but care about improvements to ensure dispatching is in merit order. Can skips be redefined to reflect the reality? The quoted 0.4% is not what is going on.	We will be engaging further on how we explain our actions and any updates to the dispatch transparency dataset and reason codes to be more transparent in this space.
9 Feb	**Do you have any stats on how effective the recent changes made have been on reducing skips rates - especially for batteries!**	We do not currently have stats on this. Our dispatch transparency dataset tracks the number of unallocated skips – from October we've seen between 0.4 and 0.3% of actions which are unallocated reason codes. We do not break this down by technology type. To be clear, we are seeking to reduce unallocated skips, there will likely always be occasions when we will need to take actions out of merit depending on the operational situation.
9 Feb	**Can we change the definition of a skip to cover reasons under Frequency - time to make decision, complexity of decisions and efficiency of dispatch process?**	Thanks for the feedback, we will this away and will try to make the terms we use for the classifications more specific and try to explain logic behind skips in more detail.
9 Feb	**There is a miss match between**	We will continue to publish reason

	industry's definition of a skip vs ESO's definition of a skip. Can we provide additional narrative?	codes for action out of merit order – our regularly reported evidence 2E in our monthly report has between 0.3-0.4% of actions taken out of merit which do not have a reason code assigned. Over the next financial year, we will work to provide additional information and clarification on our despatch decisions and resulting actions. In the September example, 3 of around 2700 total actions did not have a reason code assigned. Providing specific additional narrative against this small number of actions is resource intensive and outweighs the benefit we believe would be achieved.
9 Feb	**Skip rate explanations are qualitative. Tesla would like more objective, measurable metrics around skips. They believe that 70% of actions outside of merit order are marginal and could be interpreted as skips.**	We'd welcome additional ideas for metrics that would be of use to the industry so please do engage and give us your ideas. We'd like to understand what additional transparency you'd like to see and the benefit behind this for the industry. Our new platform will give us auditable reasons for some of the actions taken (documented, logic based bulk dispatch decisions). Moving towards this means the reasons are captured at the time of the decision, providing greater insight into dispatch decisions.

Systems

Received	Question	Answer
26 Sept	**The OBP will bring together BM and Non-BM activities into one system, does that mean that all instructions will look the**	Within OBP, whilst there is an architectural principle known as "Harmonisation" to allow OBP to treat units equally such as within optimisation or price stacks, OBP will

	same?	honour the instruction types for NBM and BM. For example, NBM receive open instructions, and are Service based, and BM have closed BOA. OBP will "de-harmonise" before sending instructions to units in the manner that are expected.
26 Sept	**Are there future plans to upgrade/replace EDL/EDT?**	Our current focus is to transition EDL/EDT across to OBP as is, honouring the existing interfaces. Beyond BP3 we will begin looking at how we might improve the interfaces. Changes to the interfaces at this stage could cause delays to Market Services introduction of new services and increase cost for providers in the near term.
26 Sept	**Can we expect any changes to the SORT upload for new BMUs in the future? Will new BMUs need to follow the SORT upload dates or can we expect them to become more frequent as the changes are implemented.**	Whilst OBP and BM are operating in parallel, the SORT update timelines will need to continue to be followed. In the future, the registration and prequalification processes will transition to the new platforms including Single Markets Platform (SMP) and would be integrated directly with OBP. This will allow for a more flexible and frequent onboarding process. The architecture to support this is within 2025 timeframe, however, changes to the registration process will be part of wider NESO and industry work.
26 Sept	**As far as I know, there is only one uploaded video of the 'real' OBP in action. It was very helpful to see how the platform is used to generate instructions to the different zones. Are there any plans to upload other videos to display**	We're very glad you find the demo videos useful! OBP demo (working) videos are premiered in the Balancing Programme in-person events and are shared afterwards with the material.

	how the platform is used for constraints? This is very valuable and appreciated, and makes it very tangible!	The most recent instance was in the June event where Fast Dispatch was demonstrated, comparing with the Target Optimisation model delivered on the first release in December 2023. Prior, we had shared how the R1.0 OBP operates, and during our run up to R1.0, we shared our path to first release. We will have another OBP demo video for the next Balancing Programme in person event in November 2024. You can access previous videos from event content here.
26 Sept	**Where is the link to the system constraints video?**	You can access the video by clicking here.
26 Sept	**Re optimisation - will OBP optimise individual problems (e.g., constraints) or will it provide an optimised solution for all problems faced at a point in time?**	Thank you for your question – we will provide a response shortly.
26 Sept	**Excellent run-through from Bernie of how Control Room plans / manages constraints and how this dovetails with BDO was very good. Please could we see a more detailed run through at the next in-person event?**	Thank you for the feedback, we are really pleased to hear you found the Constraint Management section useful. We will look to host a further breakout session on constraint management at the November 2024 event.
26 Sept	**When do you believe the national optimiser will be able to optimise energy dispatch in a quicker time frame than the 5 minutes?**	Thank you for your question – we will provide a response shortly.

26 Sept	**Re: Wind forecasting improvements, you mentioned improving the quality of outage data. Can you say more? Can this be published live so that everyone benefits?**	The new platform is better integrated with our own and external system. The outage data we use is mainly provided by the industry to us. Outage data comes in many forms with different types of outages, and it is not necessarily owned by the NESO, some of this is already published and therefore available. Some data can be related to system security which we have access to but would not be able to share.
26 Sept	**Will there be an option in OBP for the Control Room operator to automatically extend the instructions, similar as possible for wind behind constraints?**	Yes – within OBP's backlog is the ability to manage requirements in a more automatic manner. This may be extension of individual or sets of instructions, or automatic extension of requirements which would lead to optimisation and extension of instructions, or reduction/increase of instructions. This aspect has previously been shared in Balancing Programme Industry Quarterly engagement events and external groups such as the Wind Advisory Group and Technical Advisory Council.
26 Sept	**Do improvements across forecasting, scheduling and optimisation systems enable improved calculation of Loss of Load Probability (LOLP)?**	The loss of Load Probability (LOLP) calculation is a dynamic calculation which reflects the uncertainty of demand and generation/energy resources. More accurate demand forecasts and generator availability submissions would both improve the accuracy of the derated margin and LOLP forecasts because they would effectively tighten the probability distributions used in the calculations and so reduce the error or variance in the distributions and hence in the calculation results. There is unlikely to be any impact

		of improved scheduling and optimisation as these are about meeting the requirements not defining it.
27 June	**Do ESO have detailed worked examples of how a day / part of a day is managed from Day-ahead through to delivery, including different stages of the legacy systems / process through to OBP BDO / FD timescales. If not, how best can we learn about this / who best at ESO to contact about this?** **I'm making an observation about the terminology you used - is there any documentation about how you actually manage the system? Where the legacy systems start and end and where OBP comes in with actual examples. That would help us at these sessions to be up to speed more quickly.**	We have provided previous webinars regarding our control centre scheduling and dispatch processes, and these are recorded. Here is a link - Dispatch Transparency Event 23.06.02 – we will consider internally how we might do another learning session in the future. Thank you for the feedback.
27 June	**Will OBP drive to lower balancing cost?**	Over time OBP is designed to reduce balancing costs by providing Control Room engineers with improved decision support tools and better visualisation across BMUs and non-BMUS and multiple services for energy, response and reserve.
27 June	**Is there anything that providers have to change on their systems ahead of the EDL/EDT transition?**	For both EDT and EDL the interface protocols will remain the largely the same. Each participant will be required to prove their ability to connect to the new OBP system prior to cut-over. There will be a

		series of opportunities before go-live for this test to be performed. Ahead of the Market Participant tests we will be working with all EDT/EDL software suppliers to prove their software against the new system. We will be making contact will all participants to establish the correct points of contact and will then update on our plans as the dates become available.
27 June	**Could you please give more details on planned developments for constraints management? Is it going to be a separate zone with batteries for each zone or any other solution?**	We have split developments in constraint management into two stages. Currently we use a "node and line" model for constraints. In the first stage we are looking at ways to improve this so that bulk dispatch can take into account the time varying nature of constraints. In the second stage we are working with colleagues from another programme to use a new "look ahead" capability to predict future constraints using a full network model
27 June	**With the OBP changes mentioned in the Current System presentation, will the change actually deliver instructions across all assets / zones or is this a change that will happen subsequently? It was slightly unclear on the slide. Is this expected to increase in merit dispatch?**	OBP will be receiving more data from our current systems so that OBP has more visibility across all zones. This is required for constraint monitoring across the national network. This also builds our capability so that in the future OBP will be able to send manual instructions in other zones.

27 June	**Why do you need to maintain the concept of separate zones? Surely the optimisation, and best / most economic outcome, will be achieved by having all units together? The distinction feels arbitrary and limiting so any extra context if there is any would be helpful.** **Is there a future scenario where Battery and OBP zone could be combined to one OBP Zone? If not is this an OBP shortfall or a market/logistical requirement?**	The configuration of zones in the Balancing Mechanism is historic and not all zones are locational. The small BMU zone, Battery Zone, Interconnector Zone and STOR zones are all national, Wind is split into two zones North and South and we have conventional generation which is split into North and South. There is a national dispatch algorithm which sits above these zones which sets the target for each zone. Instructions are issued per zone to manage workload. There is a future capability which will bring assets within a single group for National Optimisation at the instruction stage but this is later in the roadmap. We need to move functionality across in pieces and have prioritised the Battery and small BMU zones which are the only zones to currently have a bulk dispatch optimisation. We also need to bring non-BM services into OBP to have all assets within OBP before considering National Optimisation for instructions. Any changes to market design could also impact the roadmap and the design of future zone management.
27 June	**For wind BMU's, you talk about using rules / heuristics. Are you considering alternative ways to manage them better, for example using more real time data and parameters, similar to limited duration assets?**	We are currently looking into improving both the forecasting capabilities for wind, and the process of dispatching based on underlying uncertainty.
27 Mar	**A mapping of the new and old platforms would be useful**	We have given some high-level views in previous engagements (see December 2023, slide 10). I'm sure you will appreciate we do not give too much detail as these systems are part of Critical National Infrastructure.

27 Mar	**Can I please clarify when Dynamic Services for Non-Balancing Mechanism Participants will transition to OBP? It was mentioned in the OTF last week that it might happen this year but my understanding from today is that it will happen in Autumn 2025?**	We did look at the possibility of moving response earlier but we realised we could not make the necessary architectural changes to support this and so after evaluation we reverted to our original plan.
27 Mar	**RDP Can the DSO handle the situation where an ESO trip instruction affects distribution security? Do we need advanced control at DSO level with the interface to the ESO. Important as more DER connected and covering OBP DER instruction**	Under MWD the ESO doesn't trip the DER but they are reduced in output to zero using the DNO DERMS / ANM. Both partner DNOs involved in MWD so far have built in safeguards at their end to ensure that a MWD instruction will not impact distribution security. The DNO also has an option to make an asset unavailable to the ESO for MWD instruction ahead of time, or in real time, which gives the DNO the ultimate control over the use of an asset in MWD. The RDP, N-3 Operational Tripping Scheme (OTS) has been carefully considered from its inception. The use of N-3 to secure the network is evaluated and coordinated in operational planning timescales between the ESO and DSOs and in operational timescales the ESO contacts the potentially impacted DNO/DSO to get approval to arm the N-3 intertrip on embedded generators. It is the DNO/DSO who confirm that their network is secure and that their operations will not be adversely impacted by the potential triggering of the intertrip. RDPs are being considered and slowly migrated as appropriate into the OBP space. Please refer to the regularly updated roadmap for details.

27 Mar	**Can you please explain in a little more detail what 'Bulk MVAR dispatch' involved and how the performance savings were achieved?**	Previously Control engineers needed to issue individual instructions to generators to either import or export MVARs. This was done practically by issuing manual instructions from different screens within the BM and due to the time it takes to navigate between the screens they operated with a large volume of screens open. The improved functionality reduces the number of screens and key stroke actions required by control room engineers to dispatch MVARs to generators.
27 Mar	**Not a question but just a comment that slide 13 (the OBP release plan timeline showing changes compared to last time in green/red) is really helpful, thank you!**	Thank you!
27 Mar	**Please can you explain what activities are included in the 'Constraint Management' programme? (as the timeline shows this +1 delay on the timeline). Thank you**	Firstly, we are moving across constraint management for the majority of BMUs and this work is currently in progress. The next phase looks at Wind and requires forecasting capability. So, although we have delayed constraint management by one season, we will get early value but the full benefit is not expected for another season.
27 Mar	**Regarding the movement of constraint management by 1 season - what would the impact be on constraint management costs given that this has been quite a concern?**	This constraint management piece of work essentially moves across our current constraint management processes from the BM to the Open Balancing Platform. Prior to this delivery the Vergil Dispatch tool for Wind will remain available to the control room to help minimise constraint costs until Bulk Dispatch capability of wind is built in OBP. We have taken a decision to bring forward the capability of issuing all instructions in OBP to de-risk failure modes when OBP Strategic goes live. Having all

		instructions available from one place also improves the control room transition allowing better situational awareness and positive benefits. We are evaluating the balance in these two cases.
27 Mar	**What does 'Automatic restrictions to inter-trips' stand for?**	This is a control mechanism whilst OBP is co-running with other systems to ensure that OBP does not include a unit that is subject to an inter-trip contract within a separate instruction.
27 Mar	**When exactly will ADSP retire, is there a firm date yet?**	We are currently expecting to retire ASDP by the end of 2025 after the slow and quick reserve services are live, and the MW dispatch and dynamic response have migrated to OBP which is due to be delivered in the Autumn of 2025.
27 Mar	**Is the EAC the same as the OBP?**	No. The Enduring Auction Capability (EAC) is an auction system to deliver co-optimised procurement for our day-ahead Frequency Response and Reserve products. The results of EAC (such as awarded contracts) are integrated with our systems including, but not limited to OBP, BM and Settlement systems.
27 Mar	**What Integration Patterns will be available for Integrating with OBP services?**	To minimise impact on industry participants, OBP will support the existing BM and NBM integration patterns – EDL/EDT and Wider Access API for BM, and NBM/ASDP Web Service integration for non-BM. In the future, we will be discussing options to implement new integration patterns. The Technology Stakeholder Focus Group will be the forum where future integration patterns can be discussed – it has its next meeting on the 22 April 2024. You can sign up to this forum via the following link:

		Balancing Programme Stakeholder Focus Groups.
27 Mar	**Will OBP hosted on the public Cloud? if yes, then which cloud platform is selected?**	No. OBP is hosted on a dedicated platform within multiple data centres to meet Critical National Infrastructure requirements.
11 Dec	**With the planned speed at which multiple changes are planned, what contingencies are there if any developments are delayed? Also, a request to please provide industry with as much technical specification as soon as possible in advance, as there will likely be considerable work also for providers in order to interact with the new systems.**	The BM systems will continue to be maintained and remain the master system for despatch. This will remain the case throughout 2024. If there are delays with OBP developments, then the BM system can still be used. The Balancing Programme has an ambitious plan to replace functionality in the BM and is currently running on track. We will engage as early as we can regarding technical specifications and any changes that impact customers. We run a technology forum and commit to discuss technology changes within this forum as well as through our wider industry engagement. Please contact the .box.balancingprogramme@nationalgrideso.com for further information.
28 Nov	**Are there plans to change GC and technical systems to allow decimal BM dispatch?**	Not currently, this is a big change which would impact both BM and settlement systems. It needs to be discussed more widely to understand the benefits and when it may be appropriate to do that. OBP has been designed to be able to provide sub-MW optimisation and is future proofed if that change was implemented.
28 Nov	**We all hope for 12/12 date…however, IF operationally not possible, please advise 6/12 OTF on new date…in new year**	We can confirm OBP went live on the 12/12/23.

	please (9/1?) so we have support ourselves(!)	
28 Nov	**Great to see UAT is going well. Why 25 to 50 instructions per run? Is this what the system needs or driven by the limits of the OBP lite, or something else?**	This is driven by the typical requirement a Balancing Engineer would dispatch to rather than a limitation of OBP lite. The optimiser and instruction algorithm could create more instructions but a larger requirement may adversely affect frequency if dispatched in that way.
28 Nov	**Are there plans to revise EDL and provided clients to be more resilient to the increased number of BOAs and MELs/MILs?**	Not part of our current roadmap, we have said we will honour existing interfaces and will continue to work on that basis, unless something changes. The Technology stakeholder group will be the right place for these conversations in the future, as it will require an industry-wide change.
28 Nov	**No functional change for EDT? What about new API to interface to OBP?**	There are no changes to EDL/EDT in OBP R1.0. OBP will be taking over EDL/EDT for resiliency in 2025. In the future, we are looking at potential changes to the integration subject to industry consultation, but our initial position is to honour the interfaces as they are now.
28 Nov	**Will File Transfer Protocol (FTP) be removed (and when) as underlying technology for EDT message processing? Asking because of issues with EDT not being acknowledged in time.**	Not included in our roadmap at present, but we should include in the Technology stakeholder group conversations.
28 Nov	**Will you consult on design of new APIs replacing ASDP before they reach testing stage? We would like to avoid some problems in the design of the existing APIs.**	We will welcome feedback on what those issues are, and we should discuss this within our technology stakeholder forum to understand any issues with current designs. Our approach is to honour existing interfaces.

28 Nov	**What is the best way for participants to engage with the ESO on the 'axe the fax' work? Is there a focus group which covers this?**	Technology Forum – Fax replacement was discussed at the first meeting. You can find the details on our website.
28 Nov	**When will the revised MIL/MEL guidance for batteries participating in BM be published, and where?**	We aim to publish this guidance on the w/c 19th December. This is slightly later than originally planned as we had to include EDT guidance too, following feedback from stakeholders. The guidance will be published on our website, an email with the link to it will be sent out to our Balancing Programme distribution list.
15 June	**What is your plan for achieving BM/non-BM combined dispatch? I.e. is there a roadmap for integrating OBP with ASDP?**	We are currently undertaking discovery and analysis to inform the decommissioning plan and migrations to OBP, we don't have a confirmed timeline yet, current projections are to initiate transition in late 2024 and complete by the end of 2025, but we will provide more details at our next quarterly event.
15 June	**When will BM and NBM STOR migrate onto OBP?** **Will the OBP use the same API as ASDP?**	See above for timelines of migrations to OBP. In terms of ASDP Web services, ESO is committed to continue to support the existing interfaces, however, are mindful that there are discussions/requests to change to newer integration protocols (moving away from SOAP etc.). We plan to set up an IT stakeholder Forum to consider this as part of their remit.
15 June	**How will OBP interact with NGESO planning horizons?**	The introduction of OBP will any not change any current processes in regard to our planning horizons.
15 June	**Do you have any information around the depreciation and replacement of PAS?**	We are currently undertaking discovery and analysis to inform the decommissioning plan and migrations to OBP, we don't have a confirmed timeline yet, current projections are to initiate transition in late 2024 and complete by the

		end of 2025, but we will provide more details at our next quarterly event.
15 June	**Are you trying to reduce the cost and power demand of your data processing costs, or is this currently being seen as negligible cost?**	Data processing costs are not negligible for the solutions we are looking to deliver. Cost reduction is not a main driver in our plans, however, we work on the principle of delivering solutions that meet our requirements and that are cost effective and deliver value for money, e.g. moving PEF to our strategic Cloud solution.
15 June	**Can the ESO provide a timeline of OBP releases and what the expected impact/improvement is for providers at each release?**	The roadmap provides a timeline of the new capabilities being delivered by the programme. For more description on each release please see the commentary in this report download (nationalgrideso.com). Please note the roadmap will be revised following feedback from this industry event.
15 June	**How will OBP handle instructing from a negative baseline to a positive power? An instruction of this type requires 6 points (points at 0MW) but EDL only has 5?**	OBP will create instructions that conform to BOA structure. Where a unit is at a negative Physical Notification (PN) and were to be instructed to a positive MW (for a period), and return back to a negative PN, it can be formed using 4 Instruction Points (IPs). There is no need to have an instruction point at 0MW. It should be noted that if an IP is required at 0MW, then we would send an IP for 0MW. If it is simply "passing through" 0MW, then no IP would be sent. Internally, we do generate a zero point for Settlement purposes (even for "passing through"), but it is not required to be sent as part of the BOA. Note, if the optimised profile for a unit (from the Optimiser) is complex (i.e. requires more than 5 points), then more than 1 instruction would be created.

15 June	**Does OBP allow BM instructions above the maximum pricing band volume (MWs) as the current system does?**	In our first release, OBP will not utilise MWs above the price band. More specifically, where MWs do not have prices associated, OBP will not utilise those MWs. This is to ensure that Deemed Price/MWs are not utilised automatically without Control Room users being aware. Control Room still have access to MWs without specific prices in BM. Functionality to handle deemed price/MWs will be included in future OBP releases
15 June	**Does OBP have a defined threshold value for pricing out above which an asset would never be instructed?**	Not in Release 1.0. Control Room will be able to see the prices/cost of proposed instructions as part of the process, and if appropriate remove instructions/units from the instructions to be sent.
15 June	**Which dynamic parameters will the OBP optimiser use in it's algorithm? Can you provide a guidance document on how each of these parameters is considered?**	The following are dynamic parameters that the OBP Optimiser considers: Stable export limit: SEL Stable import limit: SIL Maximum export limit: MEL Maximum import limit: MIL Physical notification: PN Run up rate: RURE (Export) & RURI (Import) Run down rate: RDRE (Export) & RDRI (Import) Minimum flat top time: MFTT (Minimum total length of instructions for a given unit before a change of direction (Export/Import) can be applied) Minimum zero time: MZT Minimum non-zero time: MNZT

		Maximum delivery volume offer: derived from MEL (implementing the current agreed model for batteries) Maximum delivery volume bid: derived from MIL (implementing the current agreed model for batteries) More detail will be given in the Optimisation Stakeholder Group
9 Feb	**Are there plans to replace ASDP in the near future? Our experience is that it seems to suffer from outages quite often**	Yes, our plan is to eventually migrate all services managed through ASDP over to OBP. We are currently in the early stages of planning this transition, what, how, when, so that we have a clear path to deliver this transition, involving system, process and people changes required. At present, we estimate development of ASDP functionality in OBP will commence around Winter 2024 and may take around a year to complete. We will work on the principle of seamless change to market participants, however, as these plans are firmed up, we will share them with industry for feedback and buy in. On the feedback about often outages, I would be keen to understand this in more detail, so that we can improve the service provided. We have made improvements to the way we perform routine maintenance changes, reducing the timing, frequency, and length for those.
9 Feb	**Are you keeping EDT/EDL on the participant side long term? If so, how are you avoiding design limitations like only supporting integers.**	For the immediate term we envisage EDL/EDT being retained to provide the functionality needed by ESO and the market. Longer term, our platforms will be reviewed and revised in line with the market needs and technological developments.
9 Feb	**The OBP appears to introduce a new set of rules. Where is it**	If changes to the Grid Code etc are required, we will initiate these in good time.

	planned to codify these?	Where code changes are not required, we will publish examples of how we have implemented the codes.
9 Feb	**Is there a plan to make the OBP logic auditable? OBP will evolve, industry participants need a way to stay informed about the current logic and proposed changes.**	We intend to have interactives days where participants can observe test cases and submit their own. In addition, we will publish details of the implemented logic on our external website.

Markets

Received	Question	Answer
26 Sept	**Thank you for showing the Release Plan. On BM Quick Reserve, the plan shows December 2024 go live, but previously the ESO said November - is a delay expected?**	Quick reserve phase 1 is expected to get an OFGEM decision at the end of October. In terms of capability, the auction platform will go live in mid-November (opening 14 days ahead of first the auction). The first auction (co-optimised with Response) service is expected to take place in early December 2024 OBP is technically ready for the product.
27 June	**How many MWs expected to be procured of quick reserve from day one, and what's the long-term procurement objective for the service?**	Although not firm we expect that the requirements will be ~500MW positive and ~300MW negative. We will update the market through our usual Market Information Reports (MIR).
27 June	**Are ESO concerned with about the potential loss of flexibility if energy suppliers agree long term contracts with large volume of batteries for balancing their own supply/demand?**	The ESO is the residual balancer where the market is resolving the majority of issues before the ESO needs to be involved. If the ESO is receiving a more balanced market as a result, then this potentially reduces the amount of residual balancing. We do value having

		flexibility to control assets in the BM. In terms of energy margins and according to the Winter Outlook report the margins for this winter are sufficient.
27 June	**Once OBP replaces SORT, will there be a more efficient, regular onboarding process to register new BMUs into ESOs systems?**	We recognise that BM registration is an area where we and all our stakeholders would like to see improvements. We are looking at how we take forward a piece of work in this area and we have committed resource to take this forward. Very happy to hear from you all on what good looks like in this space so please do come and have a conversation with us.
27 Mar	**Does MW dispatch not introduce another market distortion? Why not make BM and other flex markets easier to enter and more appealing rather than relying on unpaid flex (ANM) or a ringfenced market (MW dispatch)? Why is there not an equivalent option for demand turn up in these areas?**	MW Dispatch does not introduce a market distortion. It is a congestion management service, specifically targeted to allow faster connections in otherwise congested zones. As with other constraint dispatch activities, the dispatched volumes are posted to the BMRA. MW Dispatch is an important pilot providing practical design solutions to primacy and stackability, and these learning points are being utilised as part of wider ENA industry design activities and will feed into other service design considerations over time. The service itself allows for easy participation for DERs without needing the IT infrastructure required to participate in the BM and is an engine for greater integration between nascent DSO and ESO coordinated control. Whilst some ANM services imposed by DNOs or the ESO are uncosted, the nature of these services is made clear to connection applicants ahead of time and

		their existence is there to permit early connection. MW-Dispatch is geographically restricted to areas experiencing congestion but is not ring-fenced and with future work on primacy and stackability, should allow greater ability to participate in other balancing service markets in parallel in the future. The ability to include other types of DER including demand-flexibility and storage in MW-Dispatch is a strong possibility as part of future enhancements to the service. Flexibility services have been developed by the DNO and ESO, often to tackle specific issues in a given locality. Lessons may be learned locally with a specific DNO, solving urgent operational issues and providing learnings which can then be worked into broader solutions. This is the principle of RDP. Learnings about stackability and primacy taken from the development of MW-Dispatch are being considered in wider operability and market rules being developed within the ENA.
28 Nov	**On your spring 2025 slide, you mention NBM quick and slow reserve being introduced. Is this the new timeframe for implementation of these services?**	Yes, these are the dates we are working towards. We are hoping to share more details and engage further through the Reserve Reform team during December and January. Delivery of Non-BM for Quick & Slow in Summer 2025 prior to decommissioning of ASDP by the end of 2025 so that there is a transition period for the services.

28 Nov	**Why is NBM quick reserve delivered later than BM quick reserve?**	Mainly due to the need to integrate the products in our strategic systems rather than legacy systems. BM quick reserve can be supported by OBP in Summer 2024 whereas Non-BM will be supported by OBP in 2025.
15 June	**When will ESO publish more accurate forecasts of DR & DM requirements, as currently the procurement does not relate accurately to the blanket forecast numbers?**	The forecasts that we publish are the target volume that we aim to procure in these markets, this is typically (150 DRH, 180 DRL, 80 DML, 80 DMH). To support efficient auction outcomes, we allow overholding in both DR and DM which means we will procure up to 200MW for DRL/DRH and 100MW for DML/DMH.
15 June	**There was a delay recently announced to Market Wide Half Hourly metering will this have any material impact on National Grid plans in the run up to 2035?**	MWHHS is a key enabler to growing the flexibility markets across GB. Whilst the delay is disappointing, we and industry still know the direction of travel to enabling Consumer Energy Resources to participate.
15 June	**Deciding to delay products e.g. Quick/Slow Reserve to avoid implementing in both the existing system and the OBP - will that lead to any cost savings overall?**	This decision has been taken in light of the significant changes that would have been required in our existing, legacy balancing systems and processes, given the complexity of the new service designs. In the midst of a complex and rapidly evolving systems change environment, we believe it is more prudent to re-evaluate these changes to consider if implementation into our legacy systems is still appropriate, as opposed to direct implementation into our Open Balancing Platform (OBP). There are cost savings associated with not developing reserve on legacy systems that would have included some level of regret spend.

Received	Question	Answer
26 Sept	**NGESO is meant to be taking a whole system view, but it seems to have no good view of what is going on in the DNO networks. How are you going to address this?** **How does/will Balancing Programme go beyond the Transmission System to further incorporate information from the distribution system and distributed assets, improve coordination and drive whole system optimisation.**	Thank you for your question – we will provide a response shortly.
26 Sept	**How much impact on balancing costs are you expecting from these improvements in constraint management?**	Thank you for your question – we will provide a response shortly.
27 June	**For the beyond 2025 sessions will you be sharing all the feedback received and the reasons for those that make it into the roadmap?**	Thanks everyone for your engagement in the Beyond 2025 session. We will be looking at the content from today very closely and it will help us prioritise our roadmap. Depending on the content we may summarise this into themes or activities we are taking forward and those which we may not at this time, and provide feedback in our November event.
27 Mar	**Off topic. The Digital Twin Cyber Physical model (Electricity) shows the Digital Spine; Open Data at centre with Resources (Main Gens, DG, Batteries, other DER), DSO and ESO as spoke corrections. They quote ESO Control systems extensively. Any indications to extent of changes to data management?**	Thank you for your question - we have passed this on to the relevant team and will update this document with a response shortly.

27 Mar	**Will the June and November events still have a virtual attendance option to ensure they remain accessible?**	We will currently not be offering virtual attendance at our June and November events – we have found that in-person events really benefit from everyone being in the same room together. However, all slide content from these webinars & the Q&A will be shared on our website and newsletter after the event. We have also introduced 2 online webinars, which is new for us this year, to improve accessibility to content. If we believe there is further explanation required from in-person event topics we could consider sharing recorded versions of key messages post-event.
28 Nov	**Are we going to need a BSC (or subsidiary document) change to support publishing new data items associated with the grid code change on the Balancing Mechanism Reporting Service (BMRS)?**	Yes – we have contacted our ESO colleagues who interface to the Balancing and Settlement Code (BSC) process and our intention is to present to the BSC after the Grid Code modification is accepted.
15 June	**In claiming carbon reduction benefits, will ESO discriminate on non-price grounds (such as co2 intensity) when making dispatch decisions?**	We aim to dispatch in the most economic way, taking account the operational requirements on the day. At this point in time, carbon intensity does not feature in our dispatch decisions – but you can see the carbon intensity of particular days on our live dashboard.
15 June	**Does ESO have a published study on the optimum gate closure duration as the generation mix changes (weighing generation variability and system stability)?**	We are working with Department for Energy Security and Net Zero on gate closure timing as part of Review of Energy Market Arrangements. But no conclusions have yet to be reached.
15 June	**When will you increase the procurement cap for DM/DR again, and phase out FFR?**	A key milestone in frequency response reform is the phasing-out of monthly Dynamic FFR (DFFR). This will happen gradually as we develop and establish

		the new pre-fault dynamic frequency response products Dynamic Regulation (DR) and Dynamic Moderation (DM). To enable a measured transition between the legacy and new suite of response services for frequency response providers and the ESO, we intend to reduce our DFFR requirements by 50MW for each EFA block per month whilst increasing the DR requirement by 30MW. Following the change in March 2023 to procure up to 200MW of DR a series of IT changes were required to facilitate further increases to the DR requirement. There is a final IT change that raising the requirement is dependent on to ensure the visibility of non-BM units in balancing systems. This change is on track to take place in July and therefore enable the cap to be lifted from August 2023 onwards. Further information available here.
9 Feb	**Is there a timeline for the Enduring Auction Capability module?**	We are aiming to have the Enduring Auction Capability platform live later this year. • In September we will migrate Response services • In October/November the Reserve services will be live More information can be found on our website. Future of balancing services | National Grid ESO
9 Feb	**I think Rob mentioned earlier than the expected savings of this programme are expected to be ~£2.5bn - can ESO provide any additional information on these costs.**	Further information on our costs and benefits can be found in Annex 2: Cost Benefit Analysis, which was submitted alongside our RIIO-2 business plan. These are calculated using a methodology agreed with Ofgem. The link to this document is below.

		Annex 2
9 Feb	**Sorry if I've missed this but is there a set of slides available from the October event? there's a summary video which is helpful, but couldn't find the slides**	Yes, these are now published our website.
9 Feb	**Given the outcomes of the Zuhlke review, have plans changed? What's been ESO's response (beyond the response to the DDs)?**	We agree that technology and data are fundamental to our role and will have greater importance as the energy system becomes increasingly complex. Given that our technology investments play a central role in enabling substantial consumer benefits, Ofgem applied a higher level of scrutiny to this area of our plans. As set out in our Draft Determinations (DD) response we challenged some of the technology assessment conclusions. We feel that the assessment of our technology investments in some areas is subjective, incorrect, and not aligned to either energy industry best practice or how technology of this type is typically delivered. In our consultation response supporting information annex we highlighted where we feel assessment of our investments is incorrect. Since our DD response we have been working with Ofgem to understand the format and scope of technology investment assessments throughout BP2 and how the new proposed cost monitoring framework will aid understanding and discussion on our Technology investments and the key strategic questions we are taking.