Balancing Programme Webinar

27 March 2024

ESO

Welcome & Agenda

#BPMarchWebinar2024

Time	Title	Details
14:00 – 14:10	Welcome & Setting the Scene	
14:10 – 14:35	OBP Progress Update & Future View	• Progress update and OBP utilisation stats • Upcoming releases and impacts
14:35 – 15:00	Current Systems Progress Update & Future View	• Progress update on BM & ASDP releases • Upcoming BM & ASDP releases and impacts • ASDP MW Dispatch Service
15:00 – 15:05	Future Engagement Opportunities	• Future engagement opportunities • Teams polls
15:05 – 15:25	Q&A	• Slido
15:25 – 15:30	Next Steps	
15:30	Close	

Please note: This webinar, including the Q&A, will be recorded and published on the ESO website

Q&A Session via Slido

Please post any questions you have for our speakers on Slido - #BPMarchWebinar2024 - ensuring to list both your full name and organisation; this will enable us to follow up with you after the event.

All questions posted in Slido will be published online with answers after the event; this will include any questions we are unable to answer in the session due to time constraints or the need for further information.

Out of scope questions will be forwarded on to the appropriate ESO team or expert for a direct response. We may ask you to contact us by email to ensure we have the correct contact details for the response.

Slido will close at the end of the webinar; if you have any further questions, please do not hesitate to get in contact with us at **box.balancingprogramme@nationalgrideso.com**

Balancing Programme: Setting the Scene

Brendan Lyons, Head of Balancing Programme

Programme Vision

1. Manage increased **number of market participants**

2. Quickly **adapt** to new requirements, innovation and services

3. Enable **level playing field** for new flexibility services

4. Optimise **balancing cost**

Some key areas of current focus for the Balancing Programme

We will deliver a **2nd Data Centre providing enhanced resilience** to the Open Balancing Platform (OBP)

Build out **cross programme integration** – e.g., Integrated Energy Management System, Single Markets Platform and Data & Analytics Platform

Capability to send **all Balancing Mechanism (BM) instructions from OBP**

Transition of **Electronic Data Transfer /Electronic Dispatch Logging** to the OBP Strategic platform

Fast Dispatch & new **BM Quick Reserve service** will be implemented in OBP

Enablers to support **Non-BM in the Open Balancing Platform (OBP)** enabling Ancillary Services Dispatch Platform (ASDP) Decommission in 2025

New **Platform for Energy Forecasting (PEF)** enable ESO to update forecasting models with ever evolving energy landscape and data

Roadmap for BP3 - 2025 and beyond elaborated, underpinned and interlocked with other programmes

Stakeholder Feedback – “You said, we did”

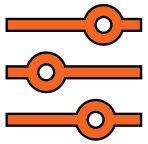
You would like to see improved accessibility & advance notice of Balancing Programme events	We will now alternate between online webinars (recorded) & in-person events – schedule for the year has been shared via our newsletter
You want to better understand the impact of the changes we are making to Control Room Systems and processes on Market Participants	Release details presented today will highlight changes to systems and processes including where they impact on Market Participants
You asked for more detail on OBP development as the programme progresses	Greater detail will be provided today on the OBP Spring 2024 release, including opportunities for engagement & feedback
You would like to see more coverage on the future plans for MW dispatch	Today’s webinar will provide more details of the MW dispatch Regional Development Programme inc. progress to date & how to get involved
You told us the 15-minute rule hindered battery dispatch and utilisation	We have transitioned to the 30-minute rule to give the control room the ability to issue longer instructions to batteries

OBP Progress Update & Future View

Bernie Dolan, Principal Product Manager

OBP Release Philosophy

Until existing systems are fully decommissioned we have two types of release

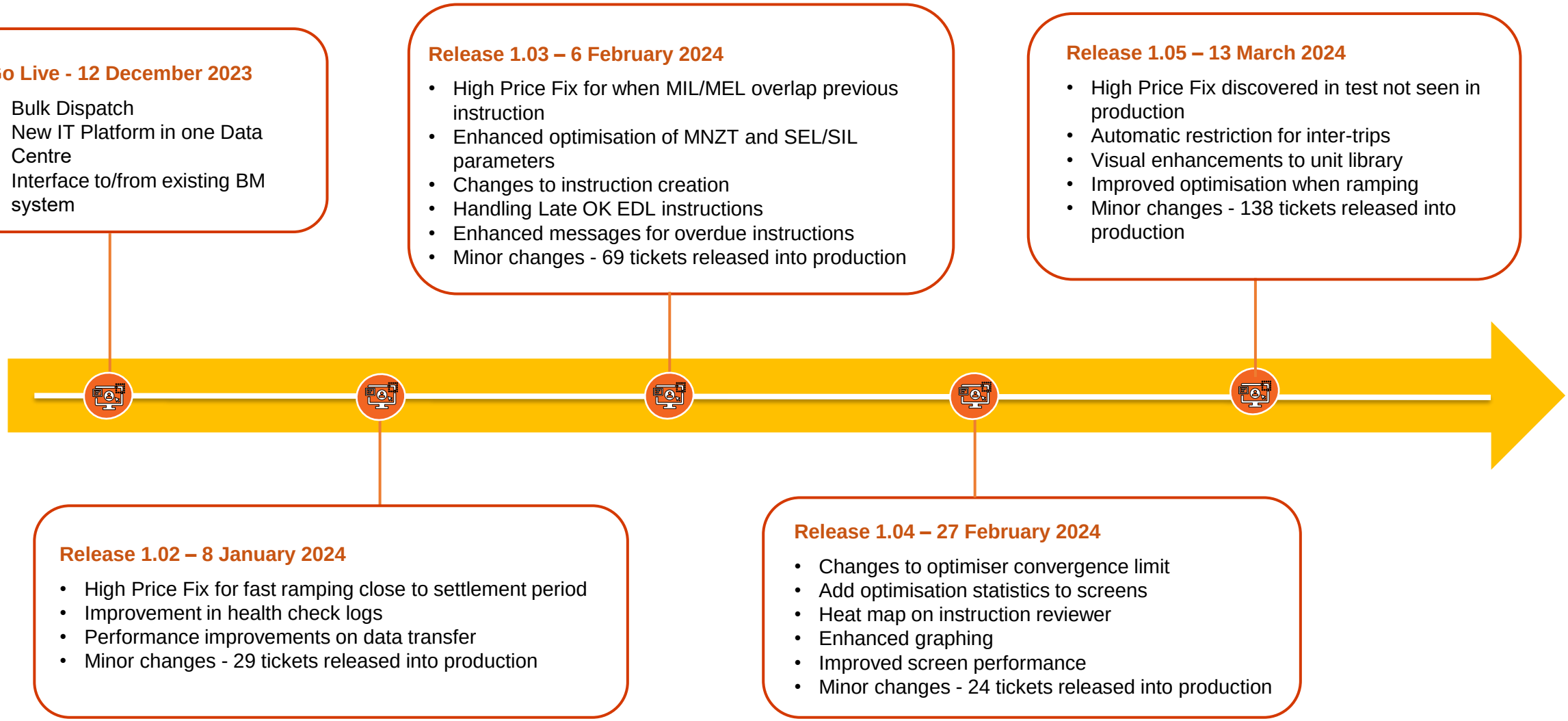


- If an OBP release has a dependency on an existing systems then OBP must align with the other system's release schedule
- If the release is fully managed within OBP we adopt the philosophy of "release on demand"
- OBP will adopt continuous delivery (aiming for every two weeks) – use feature "toggles" to promote regular deployment and "release on demand"

When evaluating what to implement and when, we must take into account the level of resilience the services requires

- Initially we go live with "OBP Lite" – this provides a resilient platform support within one Data Centre
- Later we implement "OBP Strategic" – automatic resilience across two geographically separate Data Centres
- While in OBP Lite the fail over if we lose an OBP Data Centre is to revert to existing systems and so some new services may be lost

OBP Delivery to Date



Go Live - 12 December 2023

- Bulk Dispatch
- New IT Platform in one Data Centre
- Interface to/from existing BM system

Release 1.02 – 8 January 2024

- High Price Fix for fast ramping close to settlement period
- Improvement in health check logs
- Performance improvements on data transfer
- Minor changes - 29 tickets released into production

Release 1.03 – 6 February 2024

- High Price Fix for when MIL/MEL overlap previous instruction
- Enhanced optimisation of MNZT and SEL/SIL parameters
- Changes to instruction creation
- Handling Late OK EDL instructions
- Enhanced messages for overdue instructions
- Minor changes - 69 tickets released into production

Release 1.04 – 27 February 2024

- Changes to optimiser convergence limit
- Add optimisation statistics to screens
- Heat map on instruction reviewer
- Enhanced graphing
- Improved screen performance
- Minor changes - 24 tickets released into production

Release 1.05 – 13 March 2024

- High Price Fix discovered in test not seen in production
- Automatic restriction for inter-trips
- Visual enhancements to unit library
- Improved optimisation when ramping
- Minor changes - 138 tickets released into production

Abbreviations

EDL: Electronic Dispatch and Logging **MIL:** Maximum Import Limit **MEL:** Maximum Export Limit **MNZT:** Minimum Non-Zero Time **SEL:** Stable Export Limit **SIL:** Stable Import Limit

Batteries – Absolute Volume and Instruction Count

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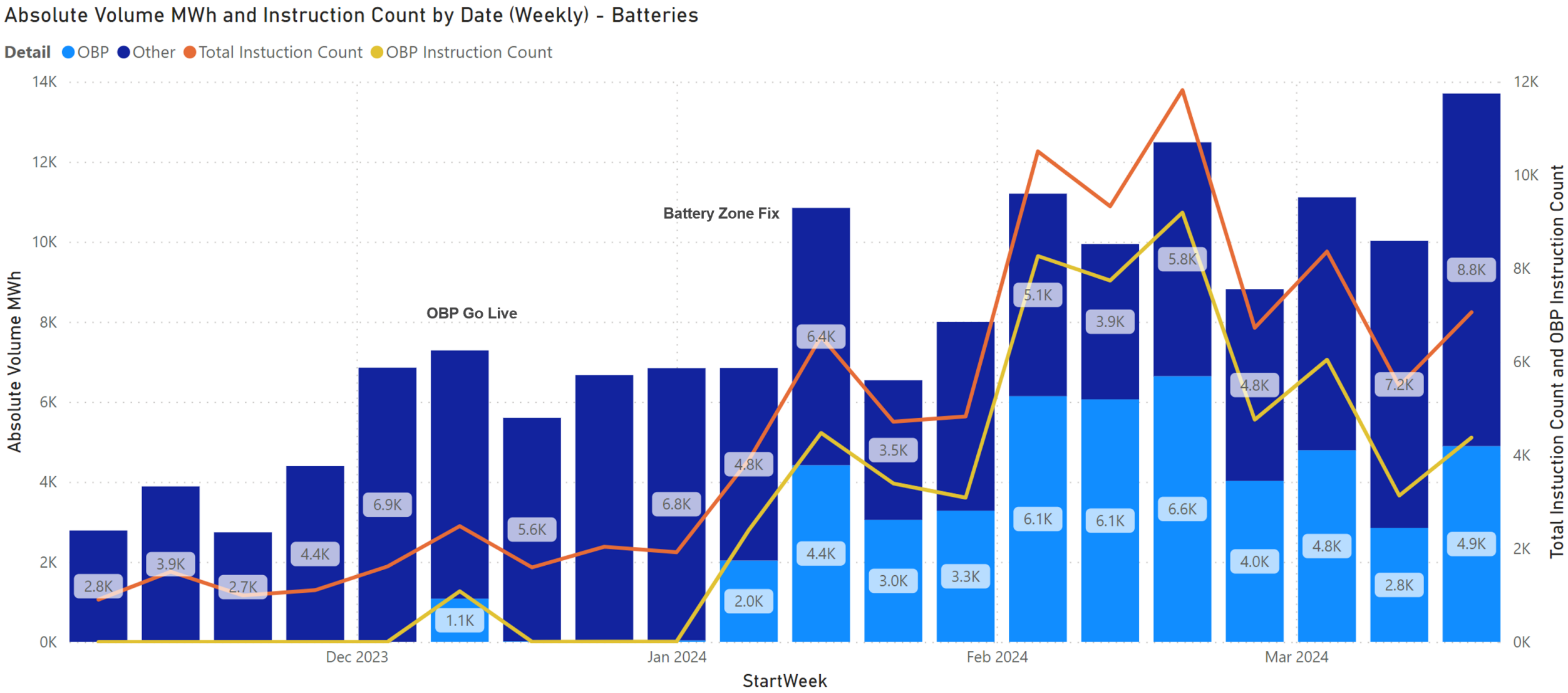

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Small BMUs – Absolute Volume and Instruction Count

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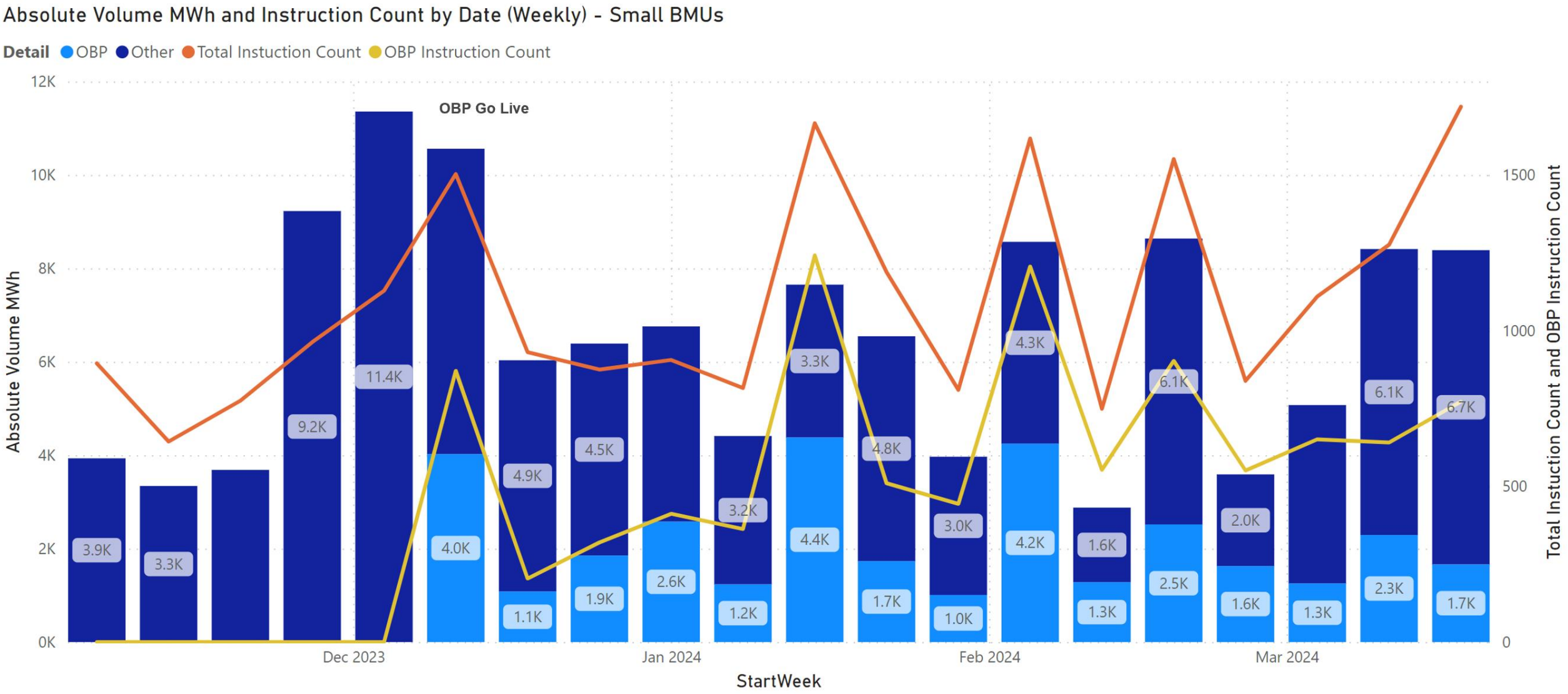

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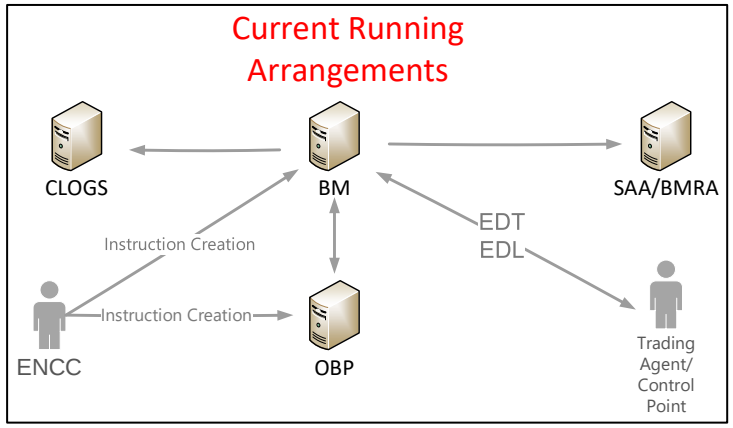
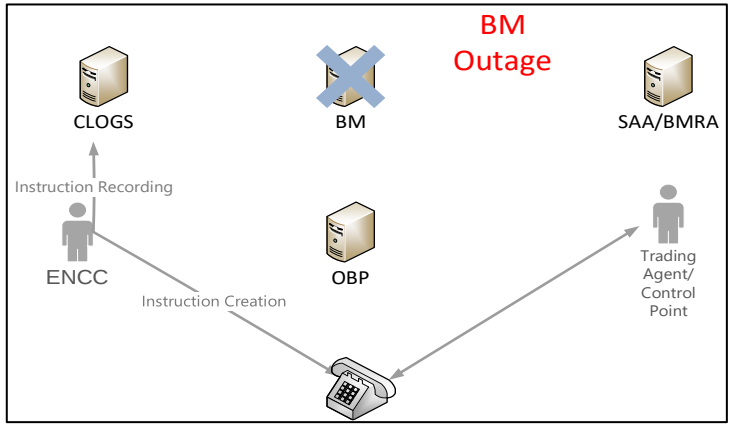
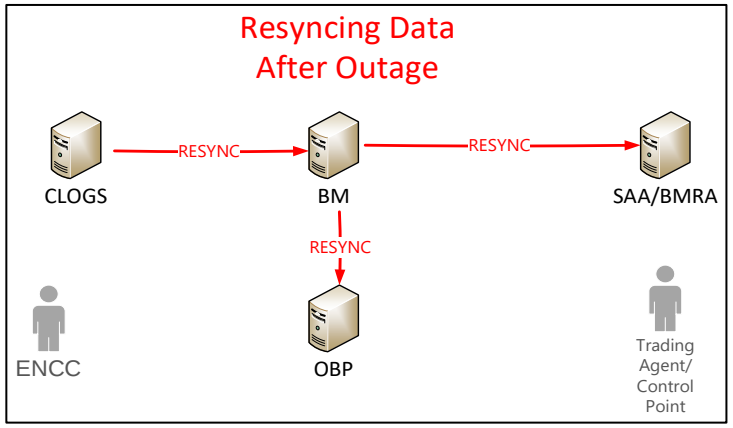
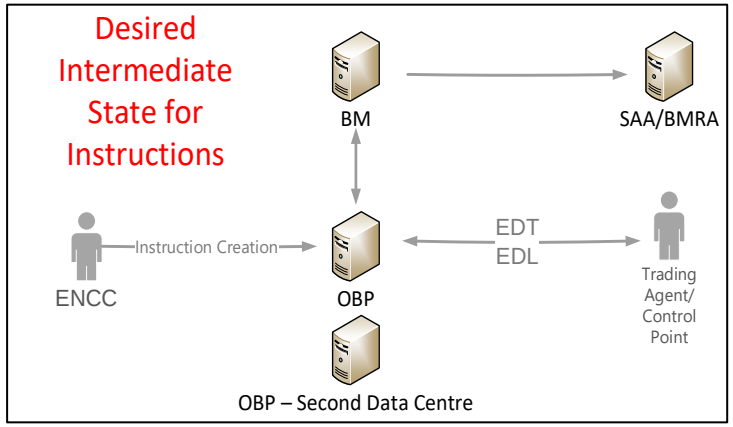
Reason for Roadmap Changes









- After further development of our architecture roadmap we have identified that having instructions created in both BM and OBP makes failure scenarios more complicated
- Hence, we decided to move all instruction creation functionality into OBP earlier in the roadmap
- To do this some items in the roadmap must move later
- However, we also realise we have commitments for new services and so these must be prioritised
- For these reasons we have adjusted the delivery of the roadmap with these constraints in mind

Abbreviations

CLOGS: Contingency Logging System **SAA:** Settlement Administration Agent **BMRA:** Balancing Mechanism Reporting Agent

Open Balancing Platform Release Plan Timeline

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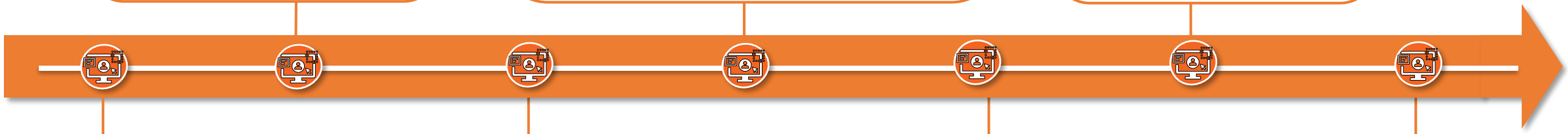
Legend

- Moved to an earlier date (no. of seasons moved)
- Moved to a later date (no. of seasons moved)



Spring 2024

Capabilities:
1. Fast Dispatch
2. Balancing Reserve

Enablers
1. Support for Clock Change
2. Interface from SCADA for metering

Summer 2024

Capabilities:
1. BM Quick Reserve

Enablers
1. Interface from Single Market Platform

Autumn 2024

Capabilities:
1. Manual instructions [-4]

Enablers
1. Interface to Data Analytics Platform

Winter 2024

Capabilities:
1. New storage parameters
2. Bulk Dispatch Wind BMUs (rule based) [+2]
3. Constraint Management [+1]
4. Pumped Storage BOAs [-2]

Enablers
1. OBP Strategic – second Data Centre
2. Interface to Ancillary Settlement for NBM

Spring 2025

Capabilities:
1. NBM Instruction Types

Enablers
1. NBM APIs
2. EDT/EDL mastered from OBP [+1]

Summer 2025

Capabilities:
1. NBM Quick Reserve
2. BM Slow Reserve
3. NBM Slow Reserve

Autumn 2025

Capabilities:
1. Move MW Dispatch
2. Move Response (DC/DM/DR)

Enablers
1. Ready to decommission ASDP

Abbreviations

EDT: Electronic Data Transfer **DC:** Dynamic Containment **DM:** Dynamic Moderation **DR:** Dynamic Regulation **ASDP:** Ancillary Services Dispatch Platform **BOA:** Bid Offer Acceptance

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About Fast Dispatch

Key function:

- Provide capability to the control room to dispatch fast
- To be used in cases where immediate corrections to frequency are required

Compared to BDO:

- BDO is designed to produce a solution within about 60sec
- FD is expected to produce a solution in <10sec
- FD runs close to real-time as possible
- FD currently ramps units within a minute
- FD requirement duration is limited to <10min

Spring 2024

Capabilities:

1. **Fast Dispatch**
2. Balancing Reserve

Enablers

1. Support for Clock Change
2. Interface from SCADA for metering

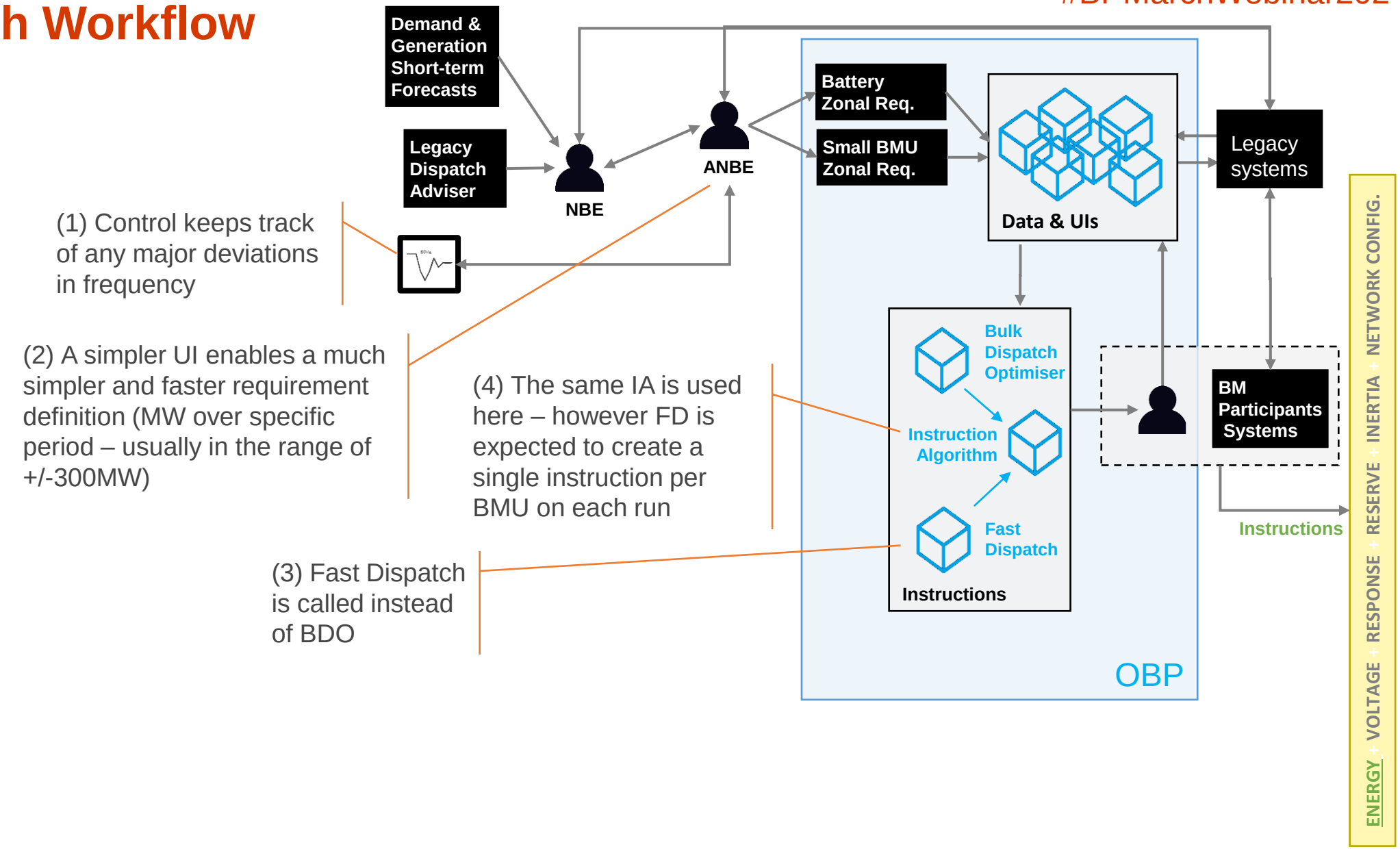
Points of interest

- Long NTO/Bs may not be dispatched at all (NTO/NTB > 1 minute)
- Units may be dispatched to their ramp-rate rather than their full capacity.
- Long MZT/MNZTs might not be dispatched unless units already on, or their sync/desync can be delayed or be brought forward.

Abbreviations

BDO: Bulk dispatch Optimiser **MZT:** Minimum Zero Time **FD:** Fast Dispatch **NTO:** Notice to Offer **NTB:** Notice to Bid

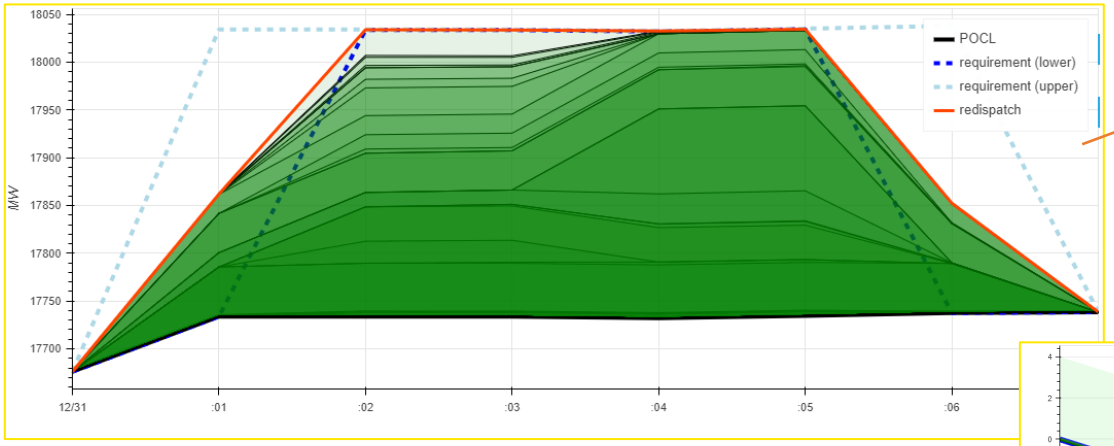
Fast Dispatch Workflow



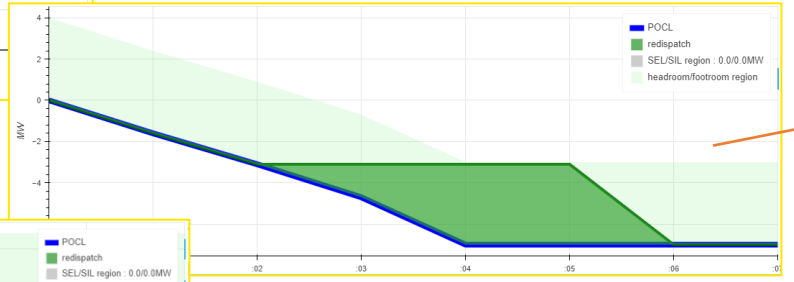
Abbreviations

NBE: National Balancing Engineer **ANBE:** Assistant National Balancing Engineer **IA:** Instruction Algorithm **BMU:** Balancing Mechanism Unit **UI:** User Interface

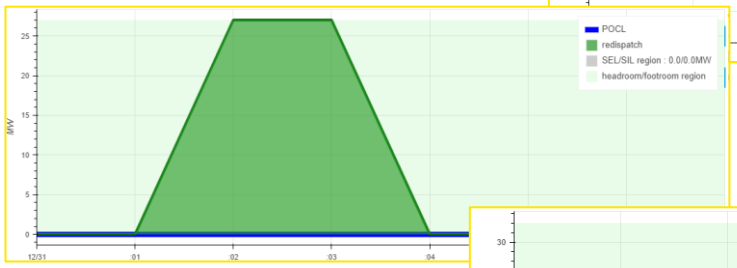
An Indicative Example

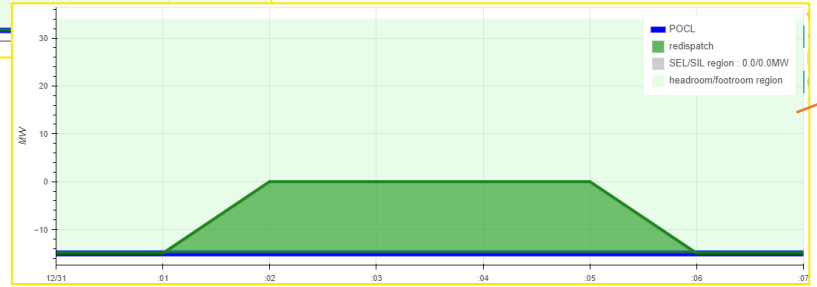


(1) Requirement duration and ramp-time is quite restricted, as close to real-time as possible.



(2) Units may not be dispatched to their full capacity – we are looking for simple (one-off) instructions.





(3) Units would be restricted by their ramp-rates

Abbreviations:
POCL: Pre-Optimisation Committed Level

Current Systems Progress Update & Future View

Neil Morgans, Principal Product Manager
David Bunney, Product Owner - Regional Development Programme

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Current Systems – Balancing Mechanism Delivery Nov – March 2024

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	DETAILS OF CAPABILITY	IMPACT	BENEFIT TO MARKET & WIDER
Balancing Reserve: Single Dispatch Improvements	Improved navigation, filtering and sorting to reduce time to dispatch and extend BOAs.	Time taken for single dispatch instructions reduced from ~45 seconds to <10 seconds	More time for dispatch decisions. Balancing Reserve benefits £25m a month.
Commercial Inter-trip Enhancements	New price functionality and process improvements	Enables monthly revision of pricing for Inter-trip units. Reduces manual workload.	Further time saving for the control room and improving the inter-trip service.
EBS Decommissioning	BM changes to enable EBS decommissioning	Removes reliance on EBS	Enabling retirement in 2024
OBP Integration	Interfaces delivered to enable OBP to bulk dispatch small BMUs & batteries	Enabled bulk dispatch for the Small BMU and Battery Zones	Interfaces to enable OBP to bulk dispatch - estimated £11m savings
Scheduling Improvements	Improvements to SPICE scheduling logic	Enables scheduling of battery units and improved scheduling of CFD Wind units	Supports increased dispatch efficiency and reductions in balancing costs
Interconnector Functionality	Changes to enable Greenlink commissioning		Energy security, improved access to zero carbon energy, potential to reduce balancing costs

Systems: **SORT** – System Operation in Real Time, **SPICE** – Scheduling Platform in a Controlled Environment, **VERGIL** – Versatile Graphical Instruction Logger,

EBS - Energy Balancing System

Balancing Mechanism Performance Improvements

Context:

- At the end of last year, the control room experienced several instances of performance degradation to the BM systems, making the systems difficult to use as a result of periods of high CPU utilisation.

Actions taken:

- Adding additional memory and CPU resources
- Code improvements to how data is ingested, stored and validated
- Features to reduce CPU loads of processes – e.g. Bulk MVAR dispatch reducing further ~8% CPU utilisation
- Creation of guidance and engagement with Market Providers to reduce EDL and EDT submissions

Results:

- >40% reduction in EDT and EDL records submitted
- Significant reduction in CPU utilisation and EDL/EDT processing times
- Improved user experience, capacity for additional load and reducing burden on downstream systems

Next Steps:

- Additional software optimisations are in progress to mitigate against the risk of future performance degradations ahead of the transition to OBP
- We need your continued support to reduce unnecessary EDL and EDT submissions.

Current Systems – Balancing Mechanism Summer 2024 Release

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	DETAILS OF CAPABILITY	IMPACT	BENEFIT TO MARKET & WIDER
OBP Integration	Additional feeds to OBP: Including National Demand, Constraint Data, Response Status	Supports additional zones and improved constrained dispatch in OBP	Improved constraint management and enabling OBP to dispatch all zones
Stability and Voltage Pathfinder and Inter-trip enhancements	New Reason Codes & Improved Price Visibility	Enables instruction of SCL and inertia independently & static or dynamic voltage independently	Allows control room to optimise services used
Control Room & Performance Improvements	Improvements to Control Room dispatch tool (SORT)	Improve performance & situational awareness	System resilience and dispatch efficiency
Dynamic Response Enhancements	Arming and disarming improvements for dynamic response services.	By GSP Group, Constraint and individual BMU.	Improved flexibility and visibility for arming & disarming, supports system security

Systems: **SORT** – System Operation in Real Time, **SPICE** – Scheduling Platform in a Controlled Environment, **VERGIL** – Versatile Graphical Instruction Logger,

EBS - Energy Balancing System

Abbreviations: **SCL** – Short Circuit Level, **GSP -** Grid Supply Point

Current Systems – Ancillary Services Dispatch Platform (ASDP)

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	DETAILS OF CAPABILITY	IMPACT	BENEFIT TO MARKET & WIDER
Delivery Nov – March 2024			
Technical Go-Live of UKPN MW Dispatch	**Delivery of constraint turn-down service functionality.**	**Allows the control room to turn down generation in the UKPN area**	**Reduced constraint costs & earlier connection for distributed assets**
Control Room Improvements	**STOR and Fast Reserve service improvements**	**Improvement to situational alerts, log screen retention and auto cease functionality**	**Risk reduction and efficiencies**
Dynamic Response Enhancements	**Arming and disarming improvements for dynamic response services.**	**Instruct at a unit, service or GSP level. Improved visibility of contracted units.**	**Supports system security and enables more efficient use of functionality**
Summer 2024 Release			
Dynamic Response Enhancements	**Arming and disarming improvements for dynamic response services.**	**Instructing and filtering by constraints, improved filters for navigation.**	**Supports system security and enables more efficient use of functionality.**
MW Dispatch Service Enhancements	**Improvements to MW Dispatch Functionality**	**Dynamic constraint assignment, improved situational awareness and automated interfaces.**	**Reduced constraint costs & earlier connection for distributed assets**

Abbreviations: STOR - Short Term Operating Reserve

Regional Development Programme (RDP): MW Dispatch

Why do we need it?

There has been rapid expansion of energy resources connecting to local distribution networks. We have been working with Distribution Network Operators (DNOs) through RDPs to get their customers connected more quickly and at lower cost to the consumer through innovative non-build solutions.

Where does it exist?

Currently, MW Dispatch applies to Distributed Energy Resources (DER) connecting at 13 Grid Supply Points with National Grid Electricity Distribution (NGED) in the South-West and UK Power Networks on the South-East Coast.

What is MW Dispatch?

MW Dispatch is a whole system approach to managing transmission network thermal constraints between ESO and each partner DNO. NGED live in 2023 / UK Power Networks (UKPN) live in March 2024.

MW Dispatch utilises specific conditions for 'visibility and commercial control' in customer connection agreements, enabled through existing DER Management System/Active Network Management. DER availability assumed unless DNO makes unavailable (from 3 Week Ahead to 1 Day Ahead)

The service then requires a basic real power 'turn to zero' response from DER following instruction from ESO, taking into account any potential provider 'conflicts'.

Service providers will be paid for the volume of energy they have curtailed.
The current minimum unit size is **1 MW**.

Potential Future MW Dispatch Enhancements

The initial MW Dispatch RDP delivery was for a Minimum Viable Product (MVP) for NGED and UKPN and we are looking to enhance the service moving forwards – scoping is underway with anticipated delivery in late 2024 / early 2025 in line with our committed Ofgem Business Plan

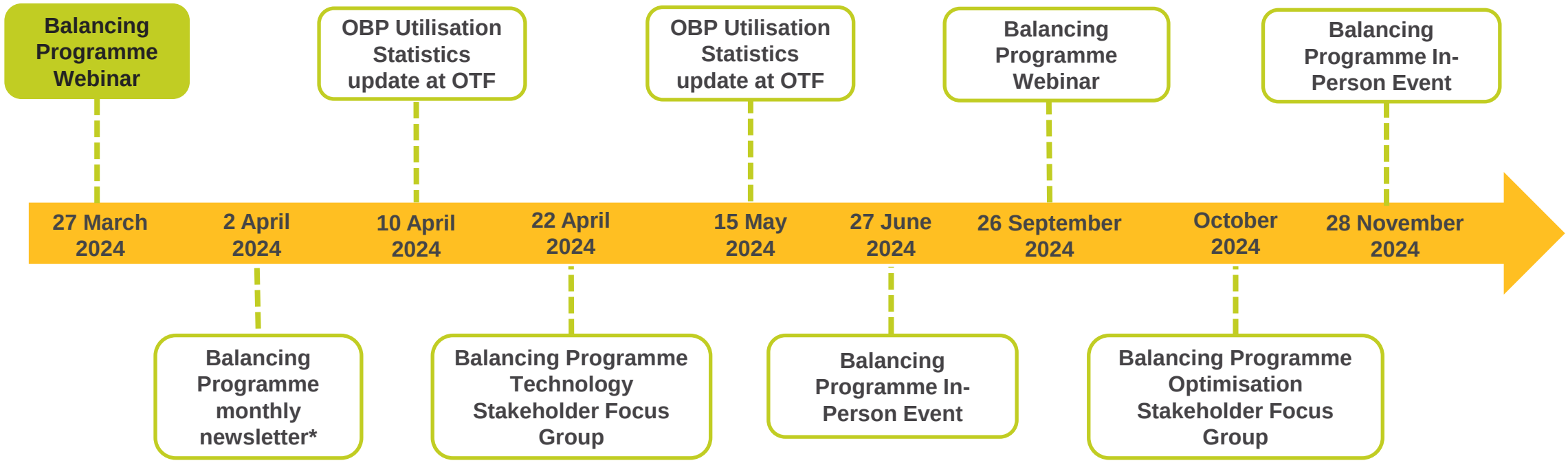
Current view of potential enhancements could include (subject to internal and external stakeholder agreement):

- Automation of manual MVP processes
- Alignment of solution across NGED and UKPN to provide a blueprint for wider consistent rollout
- Inclusion of 0.5 - 1MW DER Units
- Configurable Baselining Methodology
- More frequent and granular data exchange between ESO and DNOs facilitating more informed decision making
- DNO access to the service for distribution needs
- Stacking of Services
- Automation of manual ESO Connection validation, Network Access Planning (NAP) tool and Settlements process

Opportunities for Industry Collaboration & Input

Kashia Cullen-Anderson, Strategy and Engagement Manager

Future Engagement Opportunities . . .



Balancing Programme newsletters issued regularly, providing updates between online & in-person events


Q&A
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Next Steps . . .

We welcome your feedback – please get in touch via the email address below

Slides from today's session will be published on our website, along with the webinar recording

You can reach out to the Balancing Programme team via email – **box.balancingprogramme@nationalgrideso.com**

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Balancing Programme Engagement Webinar

27 March 2024

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