Public

Balancing Programme Webinar

March 2025 #BPMarwebinar25

NESO
National Energy System Operator

Agenda

Time	Agenda Item	NESO Presenters	Details
14:00 – 14:05	Welcome & Setting the Scene	**Brendan Lyons,** Balancing Programme Director	• Balancing Transformation overview
14:05 – 14:45	Balancing Systems Update	**Bernie Dolan**, Principal Product Manager **Alex Carter**, Operational Manager **Nisha Bhamidimarri**, Senior Delivery Manager	• Delivery progress since November 2024 • Utilisation statistics – small BMUs & batteries • Roadmap update • Deep dive: Bulk Dispatch of Wind (Rule Based) • Digital enabler update: EDL/EDT transition plan & Non-BM API
14:45 – 15:00	Forecasting Systems Update	**Richard Sykes**, Product Manager	• Delivery progress since November 2024 • Solar BMU MVP model findings • Enhanced National Demand model
15:00 – 15:05	Beyond 2025	**Neil Morgans**, Principal Product Manager	• Update on progress to shape our balancing & forecasting capabilities beyond 2025
15:05 – 15:25	Q&A	**Beth Wilks**, Strategy & Engagement Manager	• Hosted via Slido
15:25 – 15:30	Next Steps	**Brendan Lyons**	• Dates for your diary & keeping in contact
15:30	Close		

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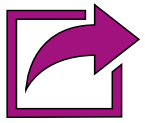
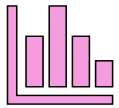
Q&A via Slido

Please post any questions you have for our speakers on Slido - **#BPMarwebinar25** - ensuring to list both your **full name and organisation**; this will enable us to follow up with you after the webinar where necessary.

All questions posted in Slido will be published online with answers after the webinar; 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 NESO 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.



Using Slido, you can also suggest topics for future Balancing Programme engagement events & webinars.

Slido will close at the end of the webinar; if you have any further questions, please get in contact with us at **box.balancingprogramme@nationalenergyso.com.**

Balancing Programme: Setting the scene

Brendan Lyons, Balancing Programme Director

NESO
National Energy System Operator

System Transformation – Where are we?

Previous landscape

System

Energy Forecasting System (EFS)

Electricity Balancing System (EBS)

Balancing Mechanism (BM)

- SPICE (scheduling)
- SORT (dispatch)
- Vergil (dispatch)
- Demand Predictor
- Clogs (back-up system)

Ancillary Services Dispatch Platform (ASDP)

- Non-BM Response & Reserve services
- MW dispatch

Current – March 2025

System

EFS

Platform for Energy Forecasting (PEF)

BM

- Scheduling
- Constraint management
- National Optimisation
- Electronic Dispatch & Logging (EDL) / Electronic Data Transfer (EDT)
- Manual instructions

Open Balancing Platform (OBP Lite)

- Bulk dispatch / Fast Dispatch
- Interface to Single Markets Platform, Integrated Energy Management System, & Data Analytics Platform (DAP)
- Balancing Reserve
- BM Quick Reserve

ASDP – Non-BM Response & Reserve services / MW dispatch

December 2025

System

EFS

PEF

BM

15% of SORT functionality
60% of SPICE functionality

Fully Resilient OBP

85% of SORT functionality
40% of SPICE functionality

Including:

- Constraints
- National Optimisation
- Manual instructions
- EDL/EDT Mastering
- BM & Non-BM response & reserve services
- PEF integration
- New storage parameters

March 2027

System

PEF

Fully Resilient OBP

- Modern, resilient, adaptable and scalable system fit for the future
- No differentiation between BM and non-BM units
- Improved situational awareness
- More economic dispatch
- Lower consumer costs
- Reduced CO2 emissions
- No IT system or market downtime

Learn more about where we are in our balancing & forecasting transformation journey in this **recording**.

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Balancing Systems Update

Bernie Dolan, Principal Product Manager

Alex Carter, Operational Manager

Nisha Bhamidimarri, Senior Delivery Manager

NESO
National Energy System Operator

Progress Since November 2024

New IT system:

- **Dispatch Efficiency Monitor**

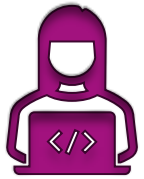
Deliverable: Ability to monitor dispatch efficiency in near real-time

Benefit: Real time data on instructed dispatch visible to the control room desks

What does this mean for you? Improvements in economic dispatch; this new monitor has enabled the reporting of skip rate data on the NESO website, using the published LCP methodology – you can access the skip rate data here.

Current Systems:

- **VERsatile Graphical Instruction Logger (VERGIL)**



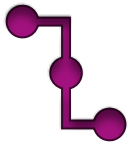
Deliverable: Features to enhance visibility and navigation for managing constraints and improve the automatic extension of manually created BOAs.

Benefit: Ease of use coupled with better situational awareness for control room engineers

What does this mean for you? Supports improved economic dispatch

Open Balancing Platform:

- **Data Analytics Platform (DAP)**



Deliverable: Interface created between DAP and OBP; DAP is a new platform providing NESO with advanced analytic tools to monitor actions taken in the control room.

Benefit: The connection of OBP data into DAP provides a long-term solution to store and make available key data related to unit selection to ensure compliance with external audit requirements and dispatch transparency

What does this mean for you?: Enables future developments to support faster response times to questions and queries, and greater transparency via the data portal.

Open Balancing Platform:

- **Phase 1 of the new Quick Reserve (QR) service (Business Go Live)**

Deliverable: This new service is part of the suite of services being introduced by NESO to improve our existing response services – QR is responsible for reacting to pre-fault disturbances. Delivery of the full service (Phase 2) will take place in Summer 2025.

Benefit: Potential to deliver consumer savings in the region of £29-£32 million each year.

What does this mean for you?: Further commercial opportunities for assets with the correct parameters.

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Battery Utilisation Statistics

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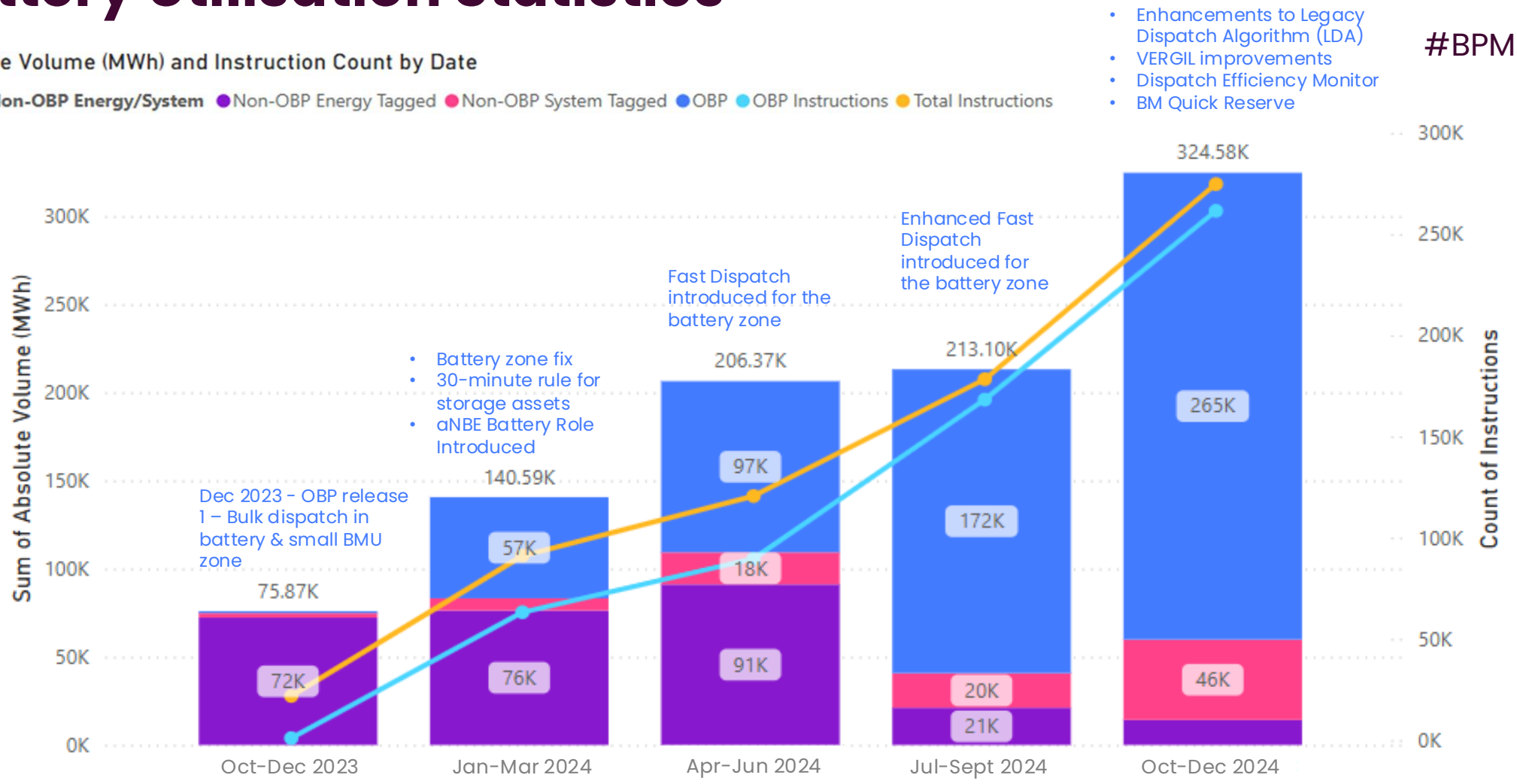

Comparing 3 months before OBP went live to the latest period - 01 October to 31 December 2024, we observe the absolute volume per quarter (MWh) of Batteries in the BM has increased from 75.87K to 324.58K (328% increase). The total number of quarterly instructions has increased from 21.88K to 274.72K (1,156% increase).

Small BMU Utilisation Statistics

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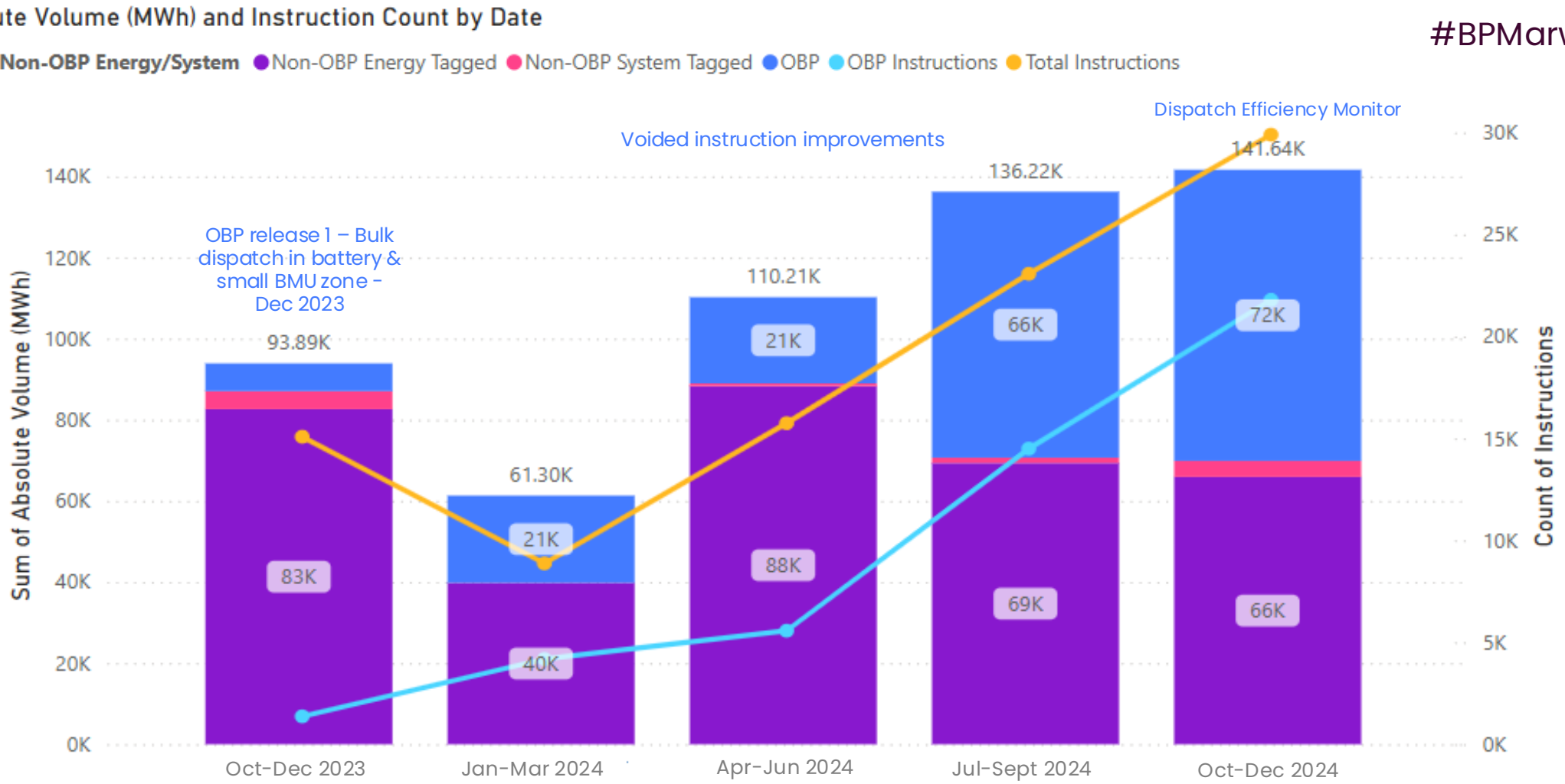

Comparing 3 months before OBP went live to the latest period - 01 October to 31 December 2024, we observe the absolute volume per quarter (MWh) of Small BMUs in the BM has increased from 93.89K to 141.64K (51% increase). The total number of quarterly instructions has increased from 15.08K to 29.90K (98% increase).

Balancing Systems Release Plan

Key:
- Complete
- Moved to a later date (no. of quarters moved)
- Moved to an earlier date (no. of quarters moved) OR New
- No change
- **PI:** Programme Increment

PI 14 (Oct 24 - Jan 25)

OBP Capabilities & Enablers:
1. Interface to **Data Analytics Platform** (DAP)
2. **BM Quick Reserve** Business Go-Live

Non-OBP Capabilities:
1. **ASDP System** – Final release
2. **BM System** – LDA updates (NEW)
3. **VERGIL** – addition to improve economic dispatch (NEW)
4. **Dispatch Efficiency Monitor** – real-time monitor (NEW)

****Please note** – GC0166 implementation date is dependent on the outcome of the Grid Code Modification process****

PI 16 (Apr 25 - Jul 25)

OBP Capabilities:
1. Non-BM Instruction Types
2. Non-BM Quick Reserve
3. National Optimiser
4. Pumped Storage BOAs (+1)
5. Bulk Dispatch Wind BMUs (rule based) (+1)

PI 18 (Oct 25 - Jan26)

OBP Capabilities:
1. Constraints Pathfinder
2. Stability Pathfinder
3. Manage Sync/De-sync

OBP Enablers:
1. Ready to decommission ASDP
2. EDT/EDL mastered from OBP (+1)
3. PEF Integration (+2)

Retire ASDP, VERGIL & CLOGS

PI 15 (Jan 25 - Apr 25)

OBP Capabilities:
1. Constraint Management
2. Manual instructions (+1)

OBP Enablers:
1. Interface to Ancillary Settlement for NBM
2. Non-BM APIs (-1)

PI 17 (Jul 25 - Oct 25)

OBP Capabilities:
1. BM & Non-BM Slow Reserve
2. Move MW Dispatch
3. Move Response (DC/DM/DR)
4. Optimisation within a Constraint (+1)

OBP Enablers:
1. Ready to decommission ASDP
2. OBP becomes Operationally Critical (+1)

PI1 9 (Jan 26 - Apr 26)

Capabilities:
1. Interface to NCMS for constraints
2. Response and Inertia

Abbreviations: **DC:** Dynamic Containment **DM:** Dynamic Moderation **DR:** Dynamic Regulation **BOA:** Bid Offer Acceptance **DX**: Dynamic Response **VERGIL:** Versatile Graphical Instruction Logger **NCMS:** Network Control Management System **EDL:** Electronic Dispatch & Logging **EDT:** Electronic Data Transfer **ASDP:** Ancillary Services Dispatch Platform **CLOGS:** Contingency Logging System

Changes to the Balancing Systems Release Plan

Non-BM APIs: Brought forward from our original date in June to allow for external testing in April 2025.

PEF integration: To avoid extra work for network configuration, and to save costs, we will delay connecting OBP to PEF until PEF has moved from National Grid azure tenancy to NESO azure tenancy. This does not affect the business case because wind forecasts are still available on the existing system and can be transferred from there.

OBP becomes operationally critical: Moving from National Grid to NESO networks involves extra work. We have re-baselined our plans to allow for extra testing.

EDT/EDL mastered from OBP: Development work on the new versions of EDT and EDL is almost complete but mastering from OBP depends on OBP becoming operationally critical. This work cannot complete until OBP moves to a fully resilient solution and only after a period of stability where we can complete testing different hardware configurations. By following this path, we minimise disruption to external parties.

Manual Instructions: Work to improve economic dispatch and enable Quick Reserve has been prioritised delaying the go-live for this capability. We are training control room users now and expect go-live to be in March 2025.

Pumped Storage BOAs/Bulk Dispatch of Wind (Rule Based): Pumped Storage BOAs and Bulk Dispatch Wind (Rule Based) depends on Manual Instructions and so these capabilities been delayed until this is complete.

Optimisation within a Constraint: Optimisation within a constraint is dependent on developing rules for Pumped Storage and Wind units and so is delayed until dispatch of these unit types has been migrated to OBP.

Bulk Dispatch of Wind (Rule Based)

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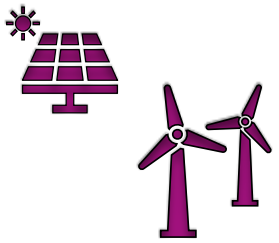
Bulk Dispatch of Wind (Rule Based)



Key function:

- Ability to instruct large volumes of units (e.g., wind & solar) relying on intermittent energy sources, for energy and constraint management. In the interim we will be using a rules-based approach, rather than optimisation, until we have determined how to model a BMU not following its PN within our optimisers.
- The rules will be based around the current manual dispatch methodology.
- Logic for wind is likely to be applicable for all units.

What's different compared to current management using BM systems?

Similar capabilities to existing BM systems but with greater integration into the OBP Energy and Constraint journeys.

What benefits will Market Participants see?

Additional functionality will be delivered to the control room supporting economic dispatch.

Will Market Participants see any technical / operational differences?

May see a difference in the grouping of instructions and different instruction durations.

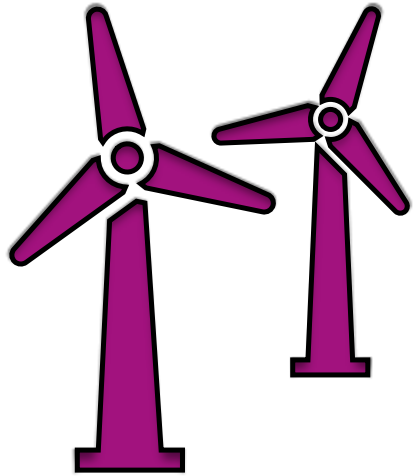
Dispatch for BMUs not following PNs

BMUs not following Physical Notifications

- Although we usually refer to Wind BMUs we have the same issue for any BMU not following its “market position”. That is, any BMU not following its Physical Notification (PN).
- Wind BMUs find themselves in this position due to the variability of the wind.
- This led to Grid Code change GC0063: Power Available – you can read more here.

Wind BMUs are normally dispatched for the following purposes:

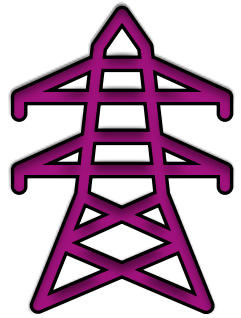
- Constraint Management (90%)
- Energy Balancing/Economic Dispatch (infrequent)
- Emergency Instructions (very rare)
- Frequency Response (infrequent)



Wind Dispatch Characteristics

Large Volume of Instructions

Multiple GW of pullback for constraints for multiple hours



PN v Metered output differences

Wind output can vary significantly away from their PN due to weather variations, but BOAs are costed from PN resulting in:

- Costing issues when issuing instructions
- Uncertainty of return MW, particularly if unit has been instructed down for many hours (Power Available)

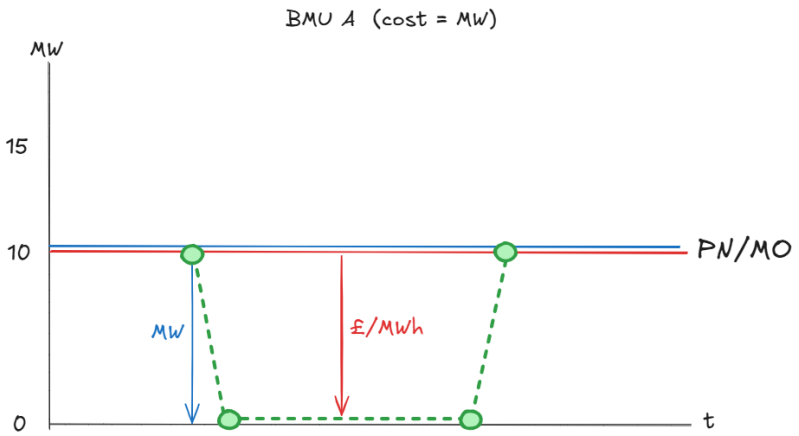
Real Time Situational Awareness:

For the Control Room it is important to understand:

- What can be instructed to meet requirements (constraint, energy, etc)
- What is instructed
- What instructions are coming to an end

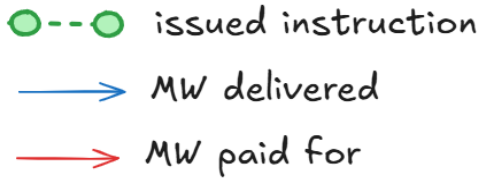
PN vs Metered Output (MO) Differences

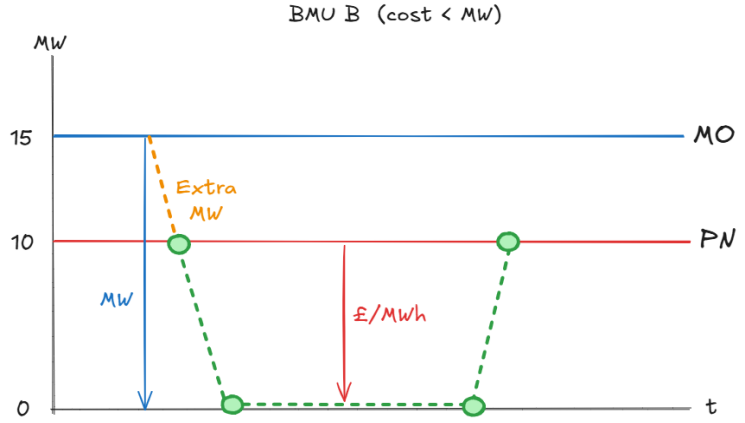
Wind BMUs declare their PN based on the forecasted wind, however in real-time their MO may be different if the actual wind doesn't match the forecast. This results in discrepancy between the MO and PN and as such impacts the cost of wind pullback actions in the following way:



PN reflects wind

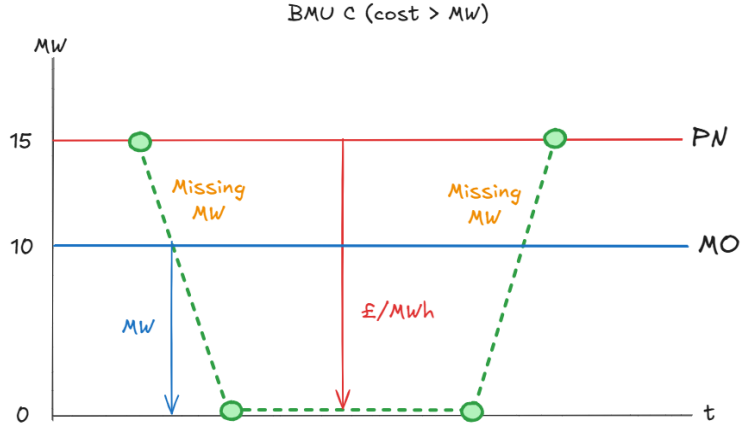
The amount of MW obtained as a result of this action (10MW) is equal to the amount paid for (10MW). This is the most straight forward outcome.





Wind stronger than submitted PN

Since the price is calculated from PN, the MW between MO and PN will be zero cost (5MW). The price will only be applied to the MW from PN to zero (10MW).



Wind lighter than submitted PN

Since the MO is lower than PN, it means that the maximum amount NESO can obtain as a result of this action is MO to zero (10MW). However, the cost of the instruction will start at PN and NESO will pay for 15MW.

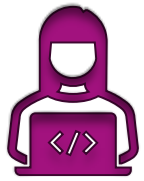
BOA Extend - Solution Options

Instruction Repeat

- Repeats the target MW level and the duration of the original BOA.

Requirement Repeat

- Re-runs the MW duration and requirement.



Target Level Extender

- Keeps the output level of the initial instruction but allows the user to change the duration of BOA extensions.

Instruction Volume Risk Management

- Need to ensure we spread the end times of large volumes of instructions.
- May need to spread the start time (e.g., total, by provider).
- Identify when BOAs are ending.

Digital Enabler Update

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Update: Non-BM Integration Update

Non-BM Quick Reserve and Slow Reserve are progressing in OBP – Quick Reserve (June 2025), Slow Reserve (Sep 2025)

- **Quick Reserve** - Article 18 Consultation commenced in February 2025; further information available **here.**
- **Slow Reserve** – NESO webinar led by Markets Team held 11 February 2025 – slides and recording available **here.**
- **Dynamic Response** – NBM API v4 updated for NESO branding, connected to new NESO data centre.

Balancing Programme Technology Focus Group - 18 March 2025 - A more detailed session on non-BM integration requirements with OBP , covering the new internet gateway, NBM API integration, service crossover, instruction & profile logic and market participant testing timeline and process – sign-up to join the Focus Group **here** or scan the QR code.

Quick Reserve Integration Drop-ins – 20 March 2025 - A series of drop-in sessions where NESO IT teams will run through and demonstrate the key requirements for integrating with NESO systems such as OBP, Settlement and Operational Metering for Phase 2 Quick Reserve prior to go live; details on how to sign-up are available **here**.

Non-BM Integration Testing - NESO are seeking interested providers to assist our system implementation teams ahead of the Quick Reserve Phase 2 go-live. We would like to hear from providers interested in supporting testing - sign-up to support testing **here** or scan the QR code; you can also contact your account manager.

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Update: EDT/EDL Mastering on OBP

EDT/EDL transition from BM to OBP is currently planned for a 6-week period between October '25 and December '25.

- The transition has been carefully planned to avoid a big bang cut-over; it will happen in tranches during a transition window
- Every party must transition to OBP within a 6-week window. We cannot allow new participants to connect to the BM systems during this period
- A more specific window will be confirmed once we have finished our testing with Market Participants

Two sets of transition:

2

- **Transition from BM to OBP** – This is application transformation and will include branding transition from National Grid to NESO (URL, new authentication, Network changes)
- **Network Transformation** – Transformation to a different network provider and exiting Optel/ISDN

Balancing Programme Technology Focus Group - 18 March 2025: A more detailed description of transition and changes expected from Trading Agents (TA) and Control Points (CP). Sign-up to join the Focus Group **here** or scan the QR code.

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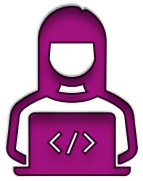
EDL/EDT Mastering on OBP Update

What support do we need from Software Providers & Market Participants?

- **Provide information about your team and software**
  - We will be emailing all TAs & CPs a survey requesting contact details for business and IT technical areas which interact with the submission/receipt of EDL/EDT data – completion of this Survey is essential to ensure we have accurate information about your software, and contact details so that we can plan and co-ordinate testing and cutover with your teams.



- **Participate in testing - it will happen in two phases:**
  - With **software providers** to assure that our system honours the existing interface and works end to end; we have contacted all EDL/EDT Vendors and will be testing with them in due course
  - With **individual market participants** to assure that their systems can directly connect to our new system

- **Make changes to your systems:**
  - Branding change from National Grid to NESO including URLs
  - Readiness to move to Secure File Transfer Protocol (SFTP) from File Transfer Protocol (FTP)

- **Plan for changes to your network**
  - Firewall changes
  - Network route changes

Forecasting Systems Update

Richard Sykes, PEF Product Manager

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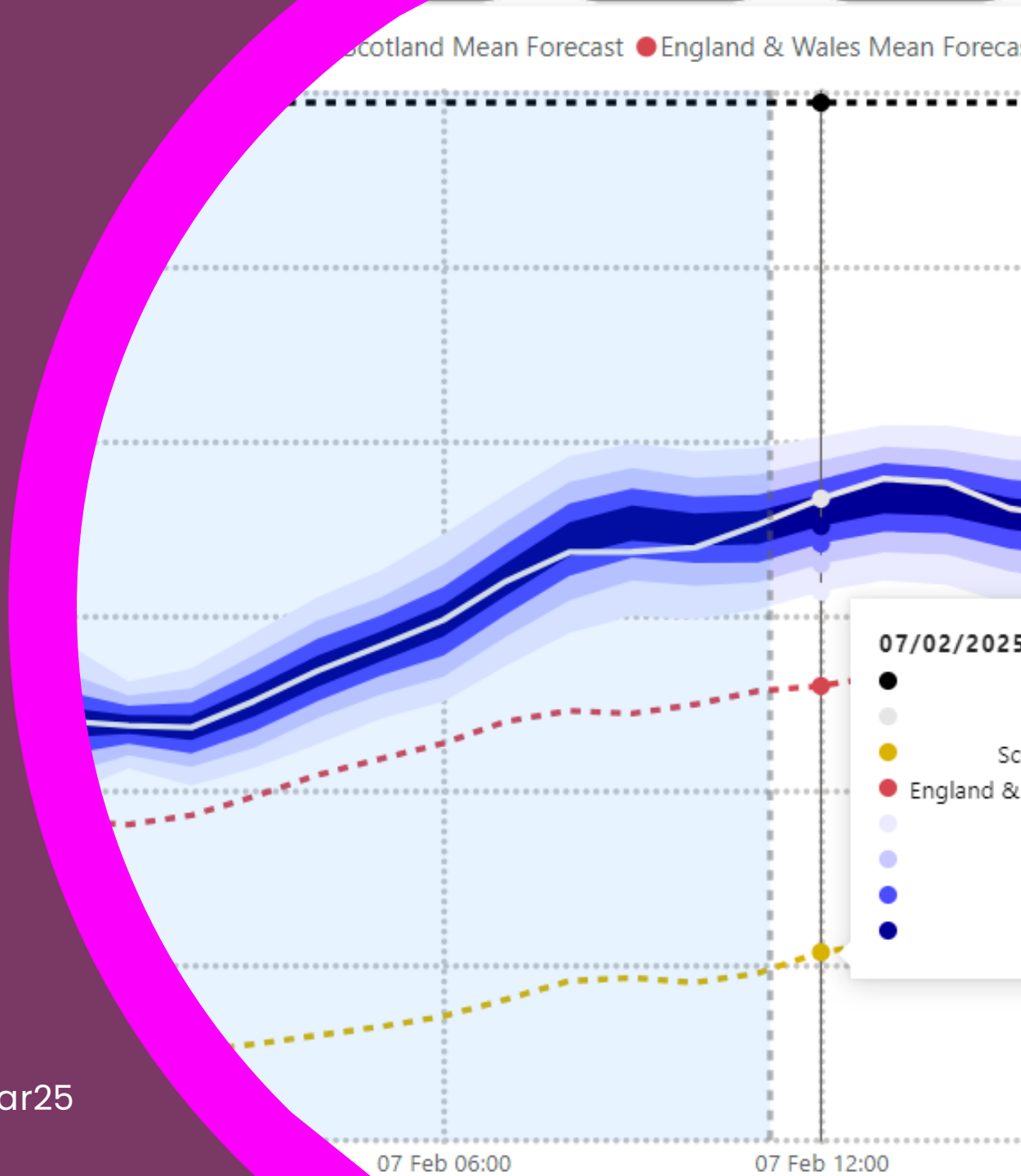
Progress Since Nov 24

- One forecasting platform
- Incremental platform improvements
- New Visualisations and tools fed from the new platform



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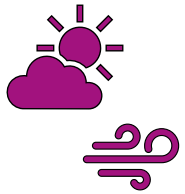
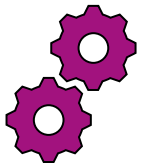
System Migration and Platform Stability



Deliverable:

- All short-term forecasting models (Wind, Solar, GSP and National Demand) will reside in Azure
- Platform resilience for the migrated functionality and integration enhancements for downstream consumers

What's different compared to using the current Energy Forecasting System(EFS):



- More frequent forecasting model training to support improved accuracy
- Streamlined model development opportunities, ability to improve and retrain models more frequently
- Models has access to richer Numerical Weather Prediction (NWP) weather data to support improved accuracy
- Enhanced real-time monitoring of data ingestions to proactively identify issues and improve performance
- Improved platform stability & reduced maintenance effort

What benefits will consumers see?

- Reduction in balancing costs due to more accurate forecasting

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New Visualisation and Tools

Key function:

- A suite of visualisation tools for the control room
- New tools for analysis and reporting for the forecasting team

What's different compared to using the current Electronic Forecasting System(EFS):

- Removing reliance on legacy platforms for renewable generation related internal reporting
- Better situational awareness for the control room due to more frequent and redeveloped visualisations

What benefits will consumers see?

- Reduction in balancing costs due to more accurate forecasts being visualised and validated

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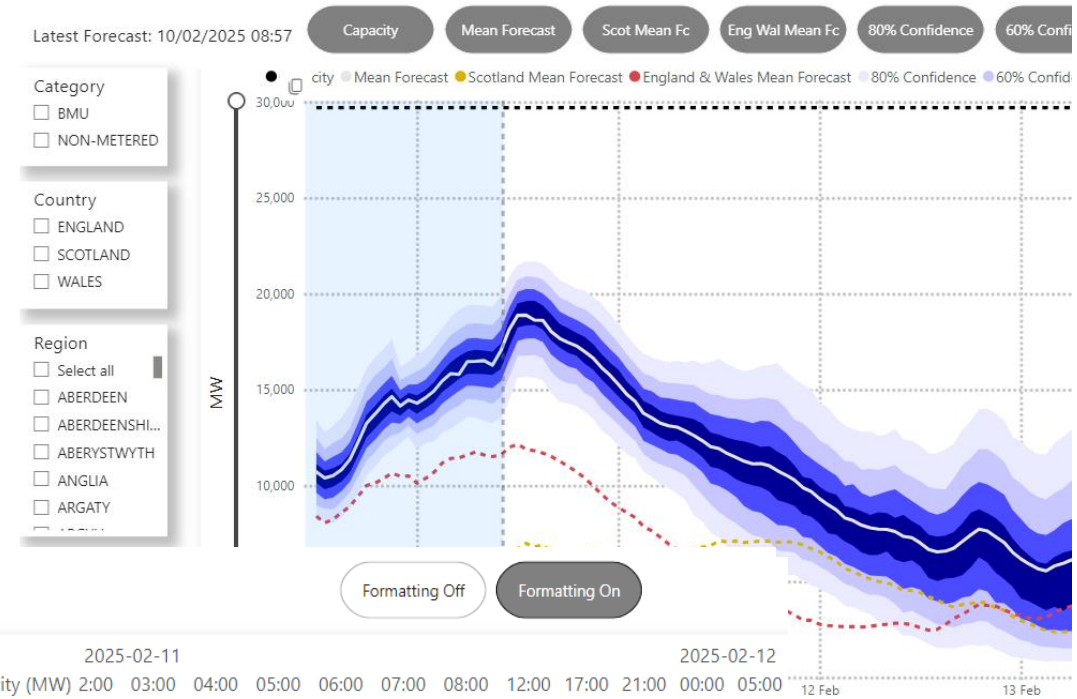
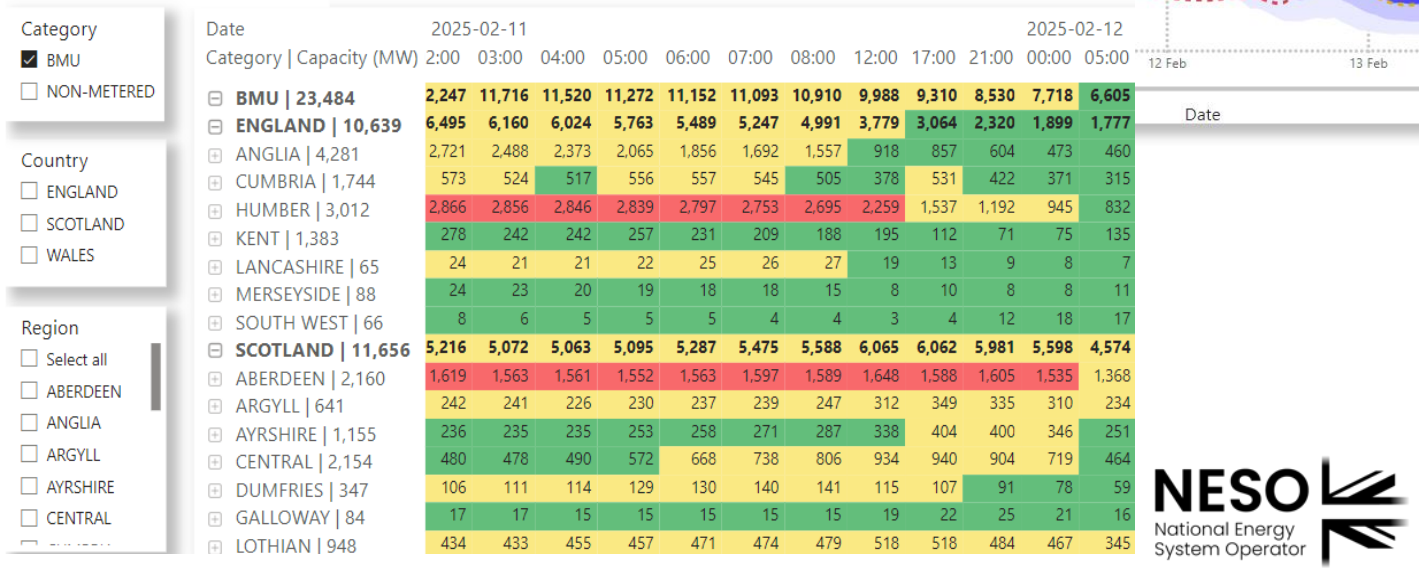
Wind Power Forecast graph



Region summary



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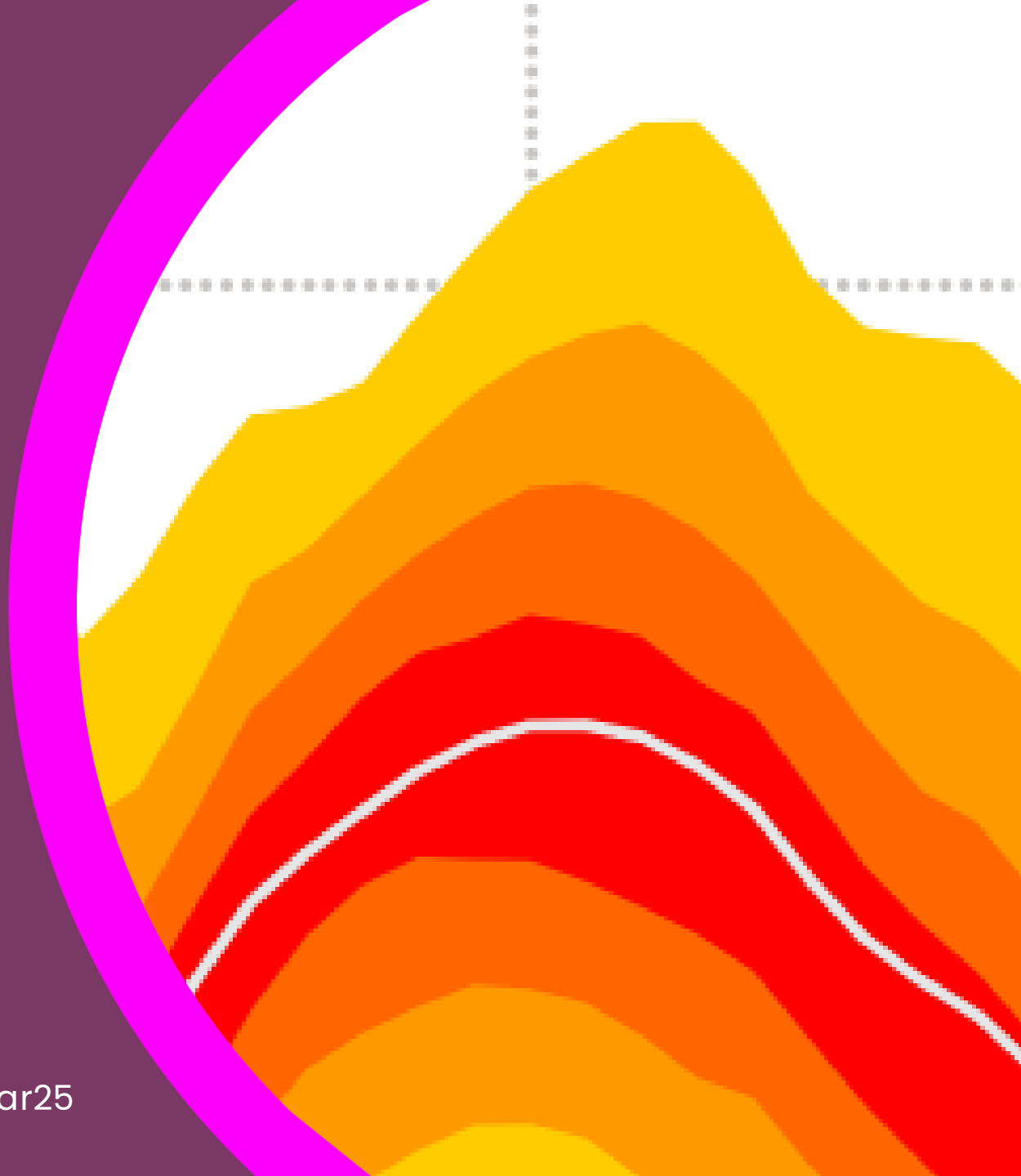
Solar BMU MVP Model Findings

- Minimal viable product (MVP) approach
- Utilising current data and Wind approach
- Better visibility of the growing volume (~2GW) of Solar BMUs ahead of summer



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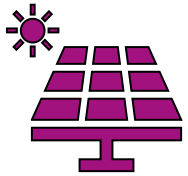
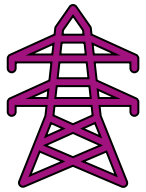
MVP Solar BMU Forecasts



Key function:

- Matured agile approach for model development with learnings from our Wind model developments



What's different compared to using the current Energy Forecasting System (EFS):

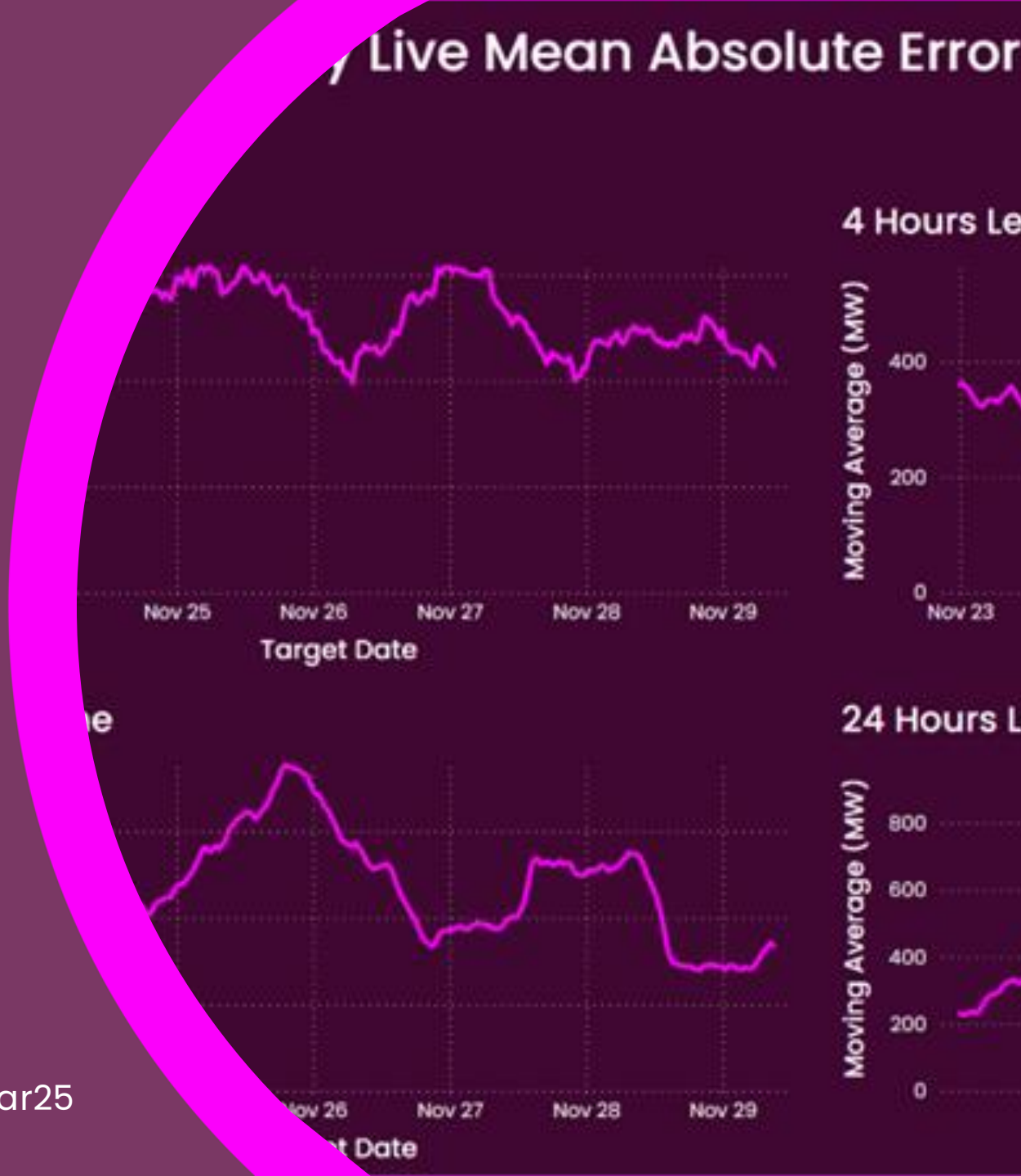
- Forecast visibility for the control room of Solar BMU
- Utilising richer Numerical Weather Prediction (NWP) data to support improved accuracy

What benefits will consumers see?

- Reduction in balancing costs due to more accurate forecasting

Prototype National Demand model deployed

- Collaboration with NESO AI Centre of Excellence team
- New AI approach with a deep learning model
- Incorporated into the new Azure Platform



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Improved National Demand Forecasts

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Key function:

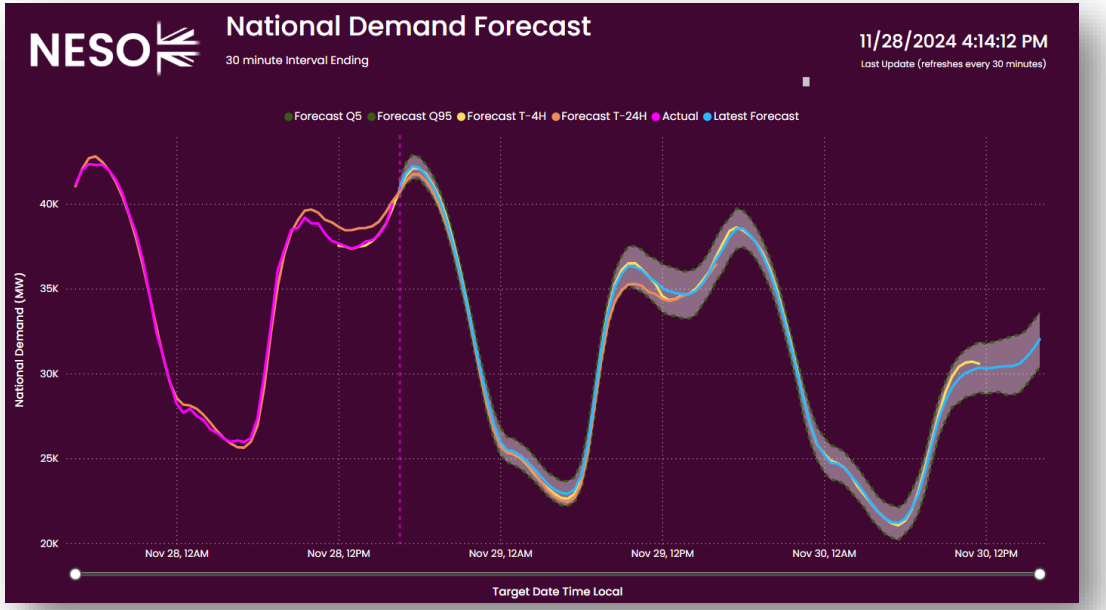
- Improved Machine Learning Model providing more accurate National Demand forecasts and visualisations
- Trained on 3-6 years of historical data (variable dependant)
- Incorporates weather, solar and national demand data

What's different compared to using the current National Demand Forecasts:

- Improved performance for overnight time periods (midnight to early hours) which have been historically challenging to forecast accurately
- Parallel run during January and February 2025 has demonstrated superior performance

What benefits will consumers see?

- Reduction in balancing costs due to more accurate forecasting



Future iterations:

- Utilise richer NWP weather data
- Expanding variables and applying learnings

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Platform for Energy Forecasting Roadmap – Looking Forward into BP3

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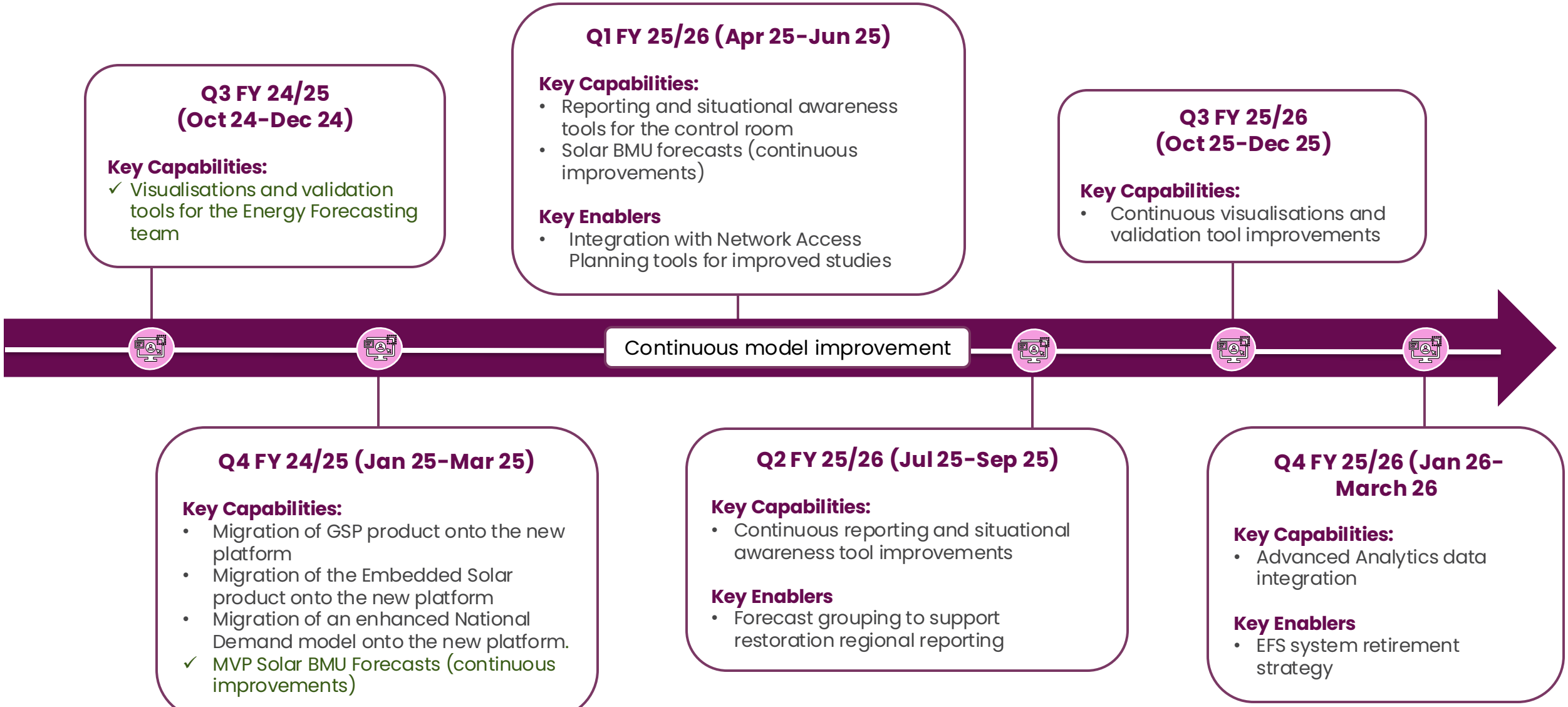
Platform for Energy Forecasting (PEF) Release Plan

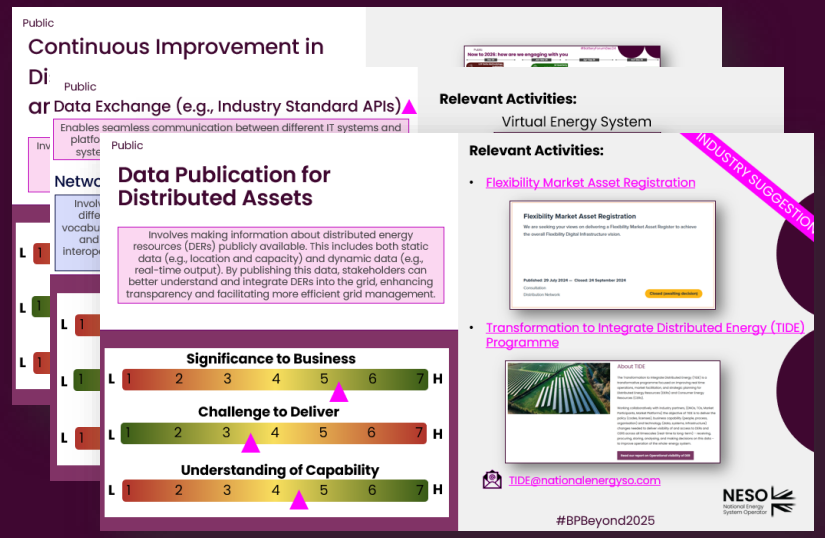


Beyond 2025

Neil Morgans, Principal Product Manager

NESO
National Energy System Operator

January 2025 Webinar - Recap



Future Discussions: Highest Ranked Areas

Area	Avg Score
Co-optimization (Energy, System, and Ancillary Services)	4.30
Decentralised Dispatch	3.97
AI-Based Decision Support Tools	3.94
Zonal and Local Demand Optimisation	3.88
Constraint Forecasting	3.88

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Links to Materials

- Watch Webinar
- Pre-Read
- Slide Pack

Requests for Input

Co-optimization (Energy, System, and Ancillary Services) - You've asked for more information on this capability - what information would you like?

Transparency of Non-Balancing Mechanism (Non-BM) Data: Which parameters that are not currently published would be most valuable and why?

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Continued Industry Engagement

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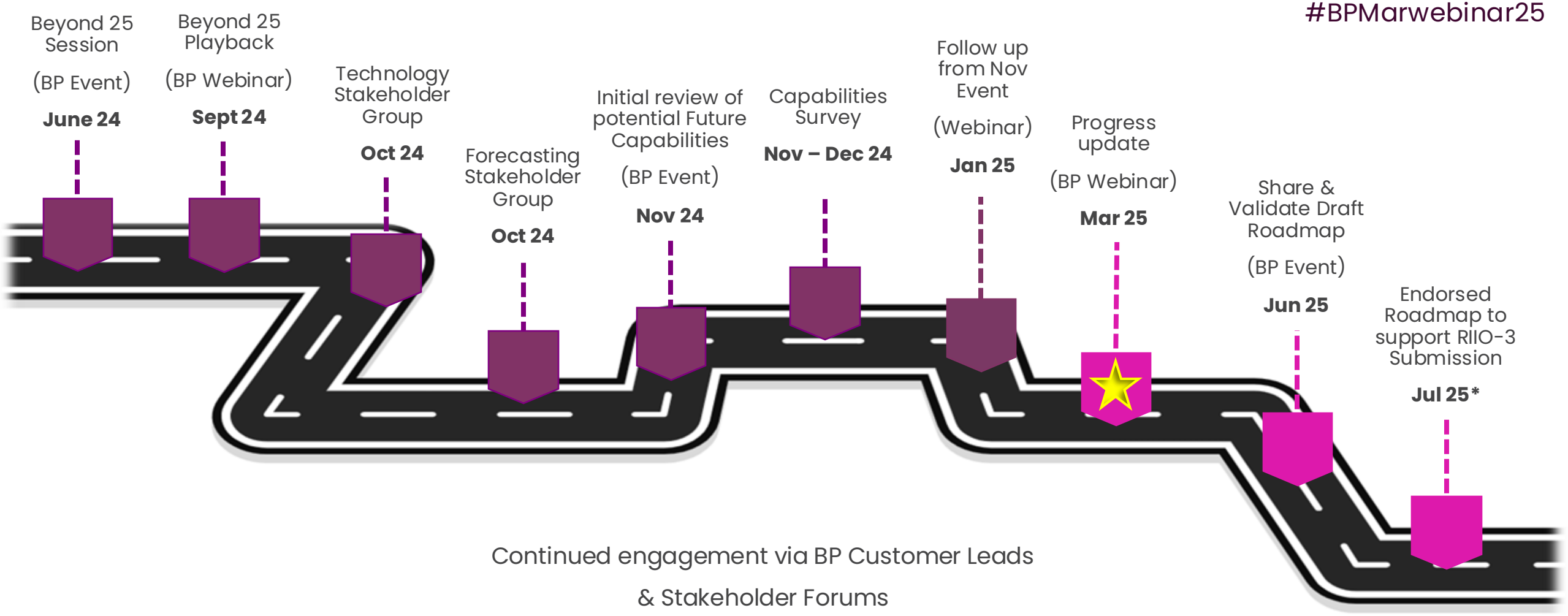

*Timelines for the RIIO-3 Price Control Submission are yet to be confirmed

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Q&A

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2025 External Engagement Timeline

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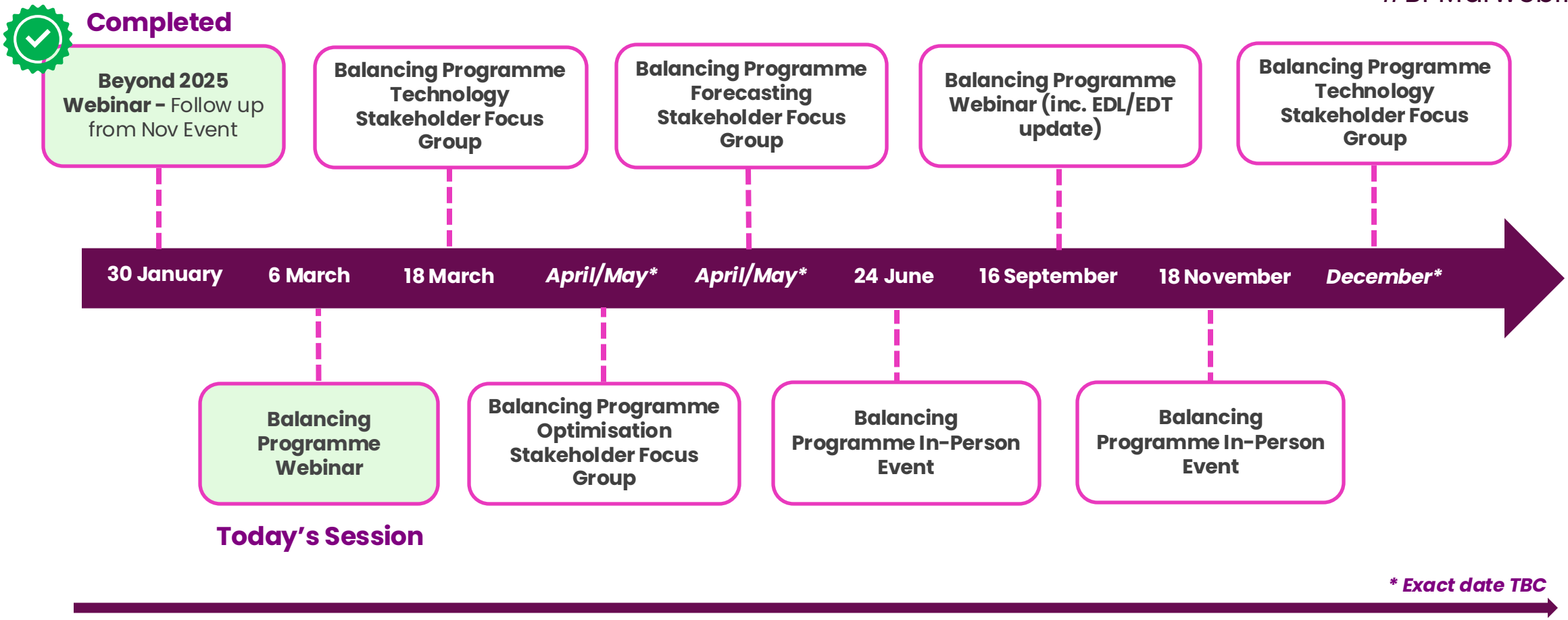

Balancing Programme **relationship management meetings** throughout 2025 & **external NESO newsletters 'Energising Progress'** with Balancing Programme content issued regularly, providing updates between online & in-person events.

Further Stakeholder Focus Group dates to be added throughout 2025.

Next Steps

We welcome your feedback & questions – please get in contact with us at **box.balancingprogramme@nationalenergyso.com.**

Slides from today's session will be published on our website.

Subscribe to our new NESO newsletter **here - please select Future of Balancing Services inc. Balancing Programme** to keep up to date.

Sign-up to our Stakeholder Focus Groups for Optimisation, Technology, & Forecasting - **Balancing Programme Stakeholder Focus Groups.**

If you are interested in a regular meeting with a representative from the Programme and would like more information, please get in contact using the email address above.

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Public

Balancing Programme Webinar

March 2025 **#BPMarwebinar25**

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