Balancing Reserve Webinar
Thursday 20th October 2022

- The webinar will start shortly
- Please make sure your microphone is muted and your camera is turned off
- We will be using Slido for questions and polls and the code is #BR1. Please add your questions into Slido

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Agenda

Topic	Presenter	Timing
Welcome and Housekeeping	Yuting Dai	11:00 – 11:05
Service Design: • Why are we doing this? • Key elements of design	Mike Coldwell Ewa Krzywkowska Eleanor Horn	11:05 – 11:50
Timeline	Yuting Dai	11:50 – 11:55
Question and Answers	Coordinated by Vicci Page	11:55 – 12.20
Next Steps and Close	Yuting Dai	12.20 – 12.30

Sli.do

We are using Sli.do to gather your feedback and run the Q&A. You'll find the code on the top right of the slides.

There will be some polls on elements of the technical and procurement design conducted through Sli.do.

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Join at slido.com
#BR1

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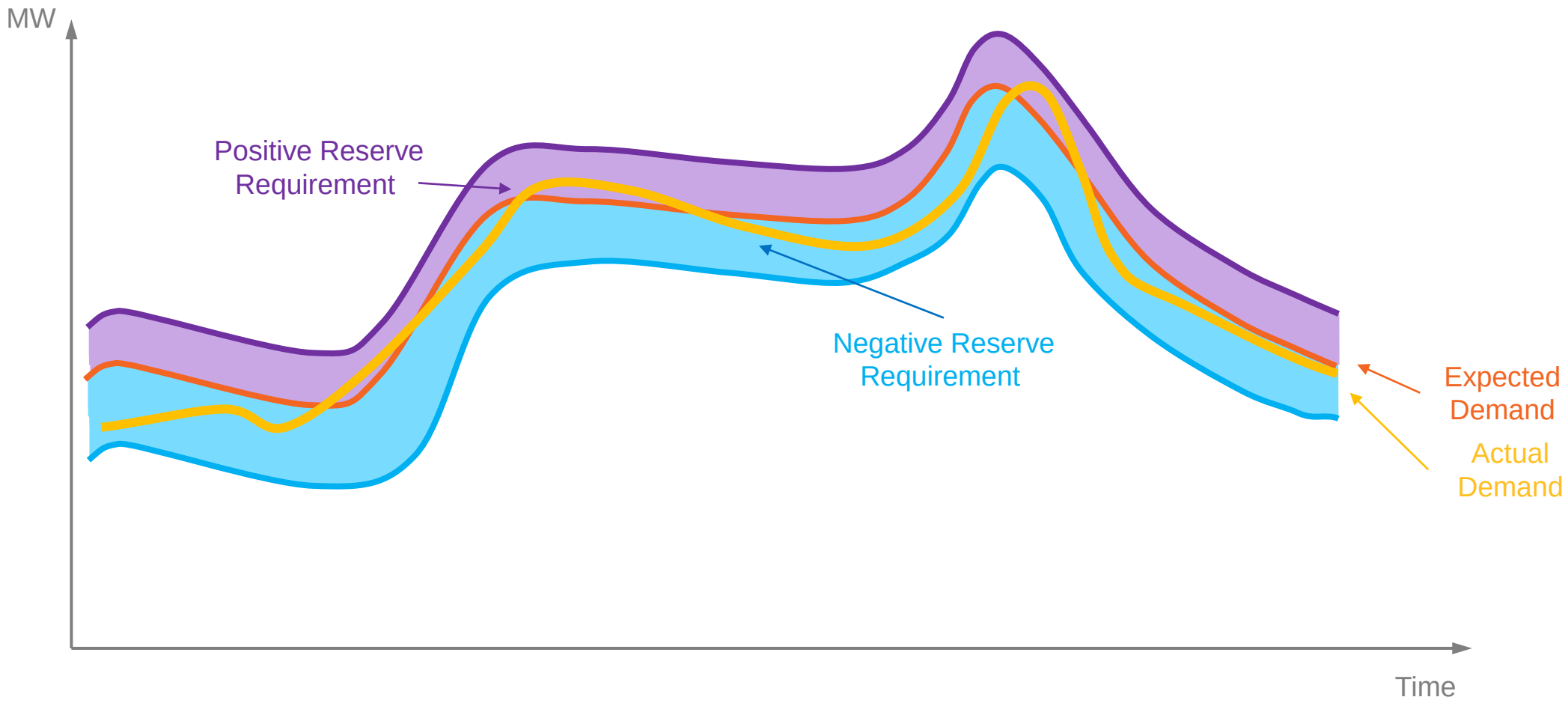
Why Are We Doing This?

Mike Coldwell

What is Reserve?

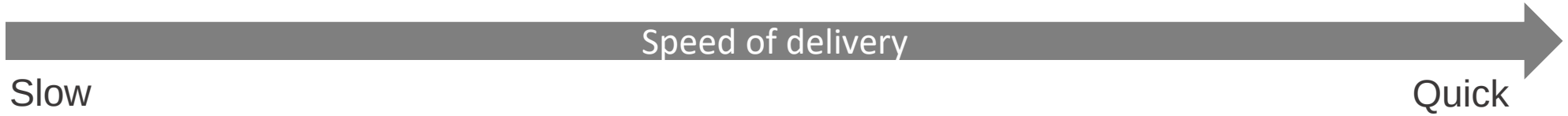
- Capacity on a unit, enabling a real-time dispatch instruction to change the power output of that unit
- Manually activated (unlike response)
- System needs drive key parameters (time to respond etc.)
- Separate services address the different system needs

What is Reserve?



Reserve Categories

	Short-Term Operating Reserve (STOR)	Regulating Reserve	Reserve for Response	Optional Fast Reserve*
Reserve System Needs	To replace generation after largest loss	Energy balancing in real time - for example demand and wind generation uncertainty	To enable access to MFR	Second-by-second balancing and frequency management
Typical Reserve Holdings	1,600-1,700MW	500-2,500MW (dependent on time of day, day type and season)	0-500MW	Optional only



*Some of our fast acting reserve needs are met by the Spin Gen service which can be manually instructed and deliver large quantities of power in short timescales.

Reserve Category	Reserve System Needs	Typical Reserve Holdings	Reserve Product & Market	Overall Reserve Costs*	Product Transition
Short-Term Operating Reserve (STOR)	To replace generation after largest loss	1,600-1,700MW	BM and non-BM Firm STOR procured on DA Market	11%	Slow Reserve
Regulating Reserve	Energy balancing in real time - for example demand and wind generation uncertainty	500-2,500MW (dependent on time of day, day type and season)	Utilised from BM or secured by Trades	10% (Trades)	Balancing Reserve
Reserve for Response	To enable access to MFR	0-500MW	Utilised as MFR provision (BMUs with MSAs^)	59% (BM)	
Optional Fast Reserve	Second-by-second balancing and frequency management	Optional only	Non-BM only	20%	Quick Reserve

* Based on the average Monthly Balancing Costs in the last 12 months, includes a mixture of utilisation and availability payments. Note that Regulating Reserve is referred to as Operating Reserve in MBSS reports.

^ MSA = Mandatory Services Agreement, a contract with the ESO which sets out how much Mandatory Frequency Response a unit can deliver at different deload levels (among other things)

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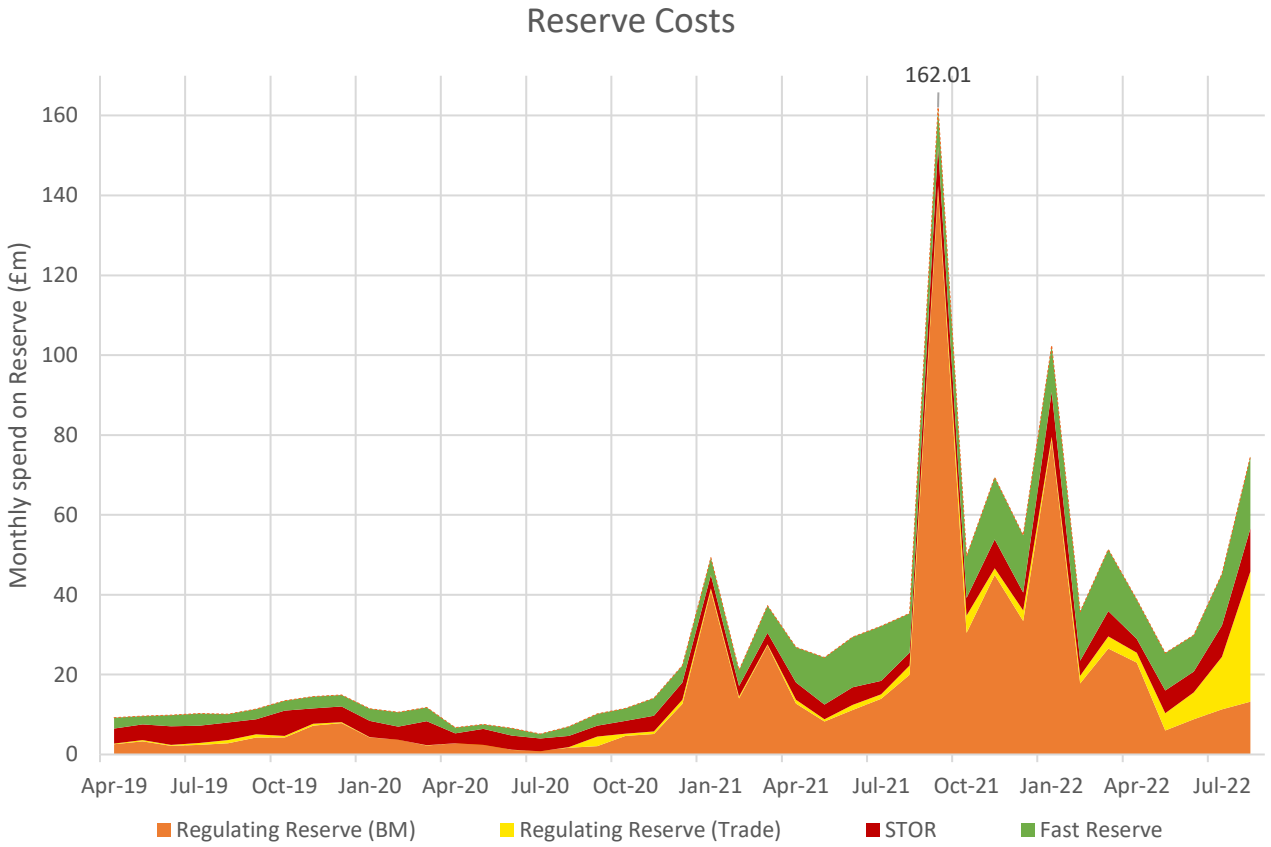
Reserve Holdings – Cost and Volume Trends

- Reserve costs* have increased over the past two years, this is particularly driven by spend on Regulating Reserve (BM and trades for reserve).
- We are not buying more volume than in previous years, the cost of buying our usual volumes has increased.
- This has been exacerbated by the Ukraine war leading to high continental prices – shown on the graph in the increasing trading cost and volume for margin.
- Securing reserve at day ahead could help to mitigate this effect by correctly reflecting available capacity in GB, leading to better balanced interconnector flows.



* Data from MBSS reports. Includes both utilisation and availability payments for STOR. Note that Regulating Reserve is referred to as Operating Reserve.

Principles Behind Our Approach

Cost Benefit Analysis suggests that introducing a Balancing Reserve market could provide the opportunity to significantly reduce balancing costs.

We are always seeking ways to minimise balancing costs and are progressing this opportunity at pace to realise potential savings for consumers as soon as possible.

To achieve this we focused on the following principles during the design and development of this service:

- **Simplicity** – To launch the service quickly we have simplified elements of the service design.
- **Compatibility with existing ESO systems** – To launch the service quickly we have designed the service to be compatible with existing BM systems.
- **Working with existing industry frameworks** – We have designed the service to make use of existing Grid Code specifications where possible to increase confidence that existing assets can provide the service and to minimise the need for pre-qualification testing.
- **Resilience –** preserving the resilience we currently have access to through the BM
- **Learning by doing** – Our Day 1 launch will help us to learn what can be improved in the future to deliver a well-functioning market for Balancing Reserve whilst also helping us to reduce balancing costs now.

Balancing Reserve Service Design

Ewa Krzywkowska
Eleanor Horn

Key Elements of Design

Technical Design proposal

- Providers eligibility
- Service utilisation and dispatch mechanism
- Ramping envelope
- Performance Monitoring
- Baselining and Energy Requirements
- Aggregation and Metering

Procurement Design proposal

- Service Windows & Linking Bids
- Auction Timing
- Settlements, Payment Mechanism & Assessment Principles
- Locationality & Service Stacking

Provider Eligibility and Direction

To participate in the Balancing Reserve market providers must be:

1. a **BM Unit** and;
2. capable of submitting **bids offering 50MW or more of reserve volume** and;
3. a **Large Power Station** as per Grid Code.

- For **Positive Balancing Reserve** service, the unit must meet the below condition:
  - (MEL – PN) ≥ contracted capacity, or
  - (SIL – PN) ≥ contracted capacity

- For **Negative Balancing Reserve** service, the unit must meet the below condition:
  - (PN – SEL) ≥ contracted capacity, or
  - (PN – MIL) ≥ contracted capacity

Service Utilisation and Dispatch Mechanism

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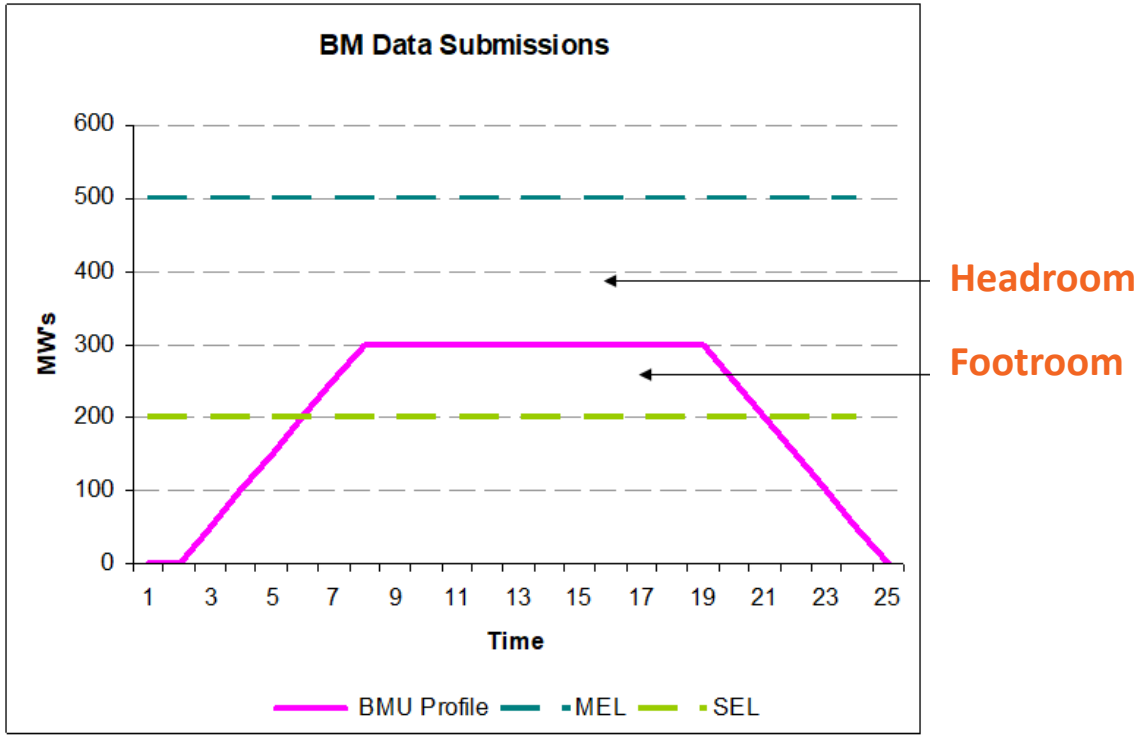
- Utilisation will be in line with normal **Balancing Mechanism** operation.
- Dispatch instructions to BM providers will be by way **of Bid-Offer Acceptances** (BOAs) via EDL/EDT.
- The unit must be capable of providing MFR when sent an arming instruction.
- Providers must be able to be dispatched in 1MW increments/decrements between their PN position and their full contracted reserve capacity.



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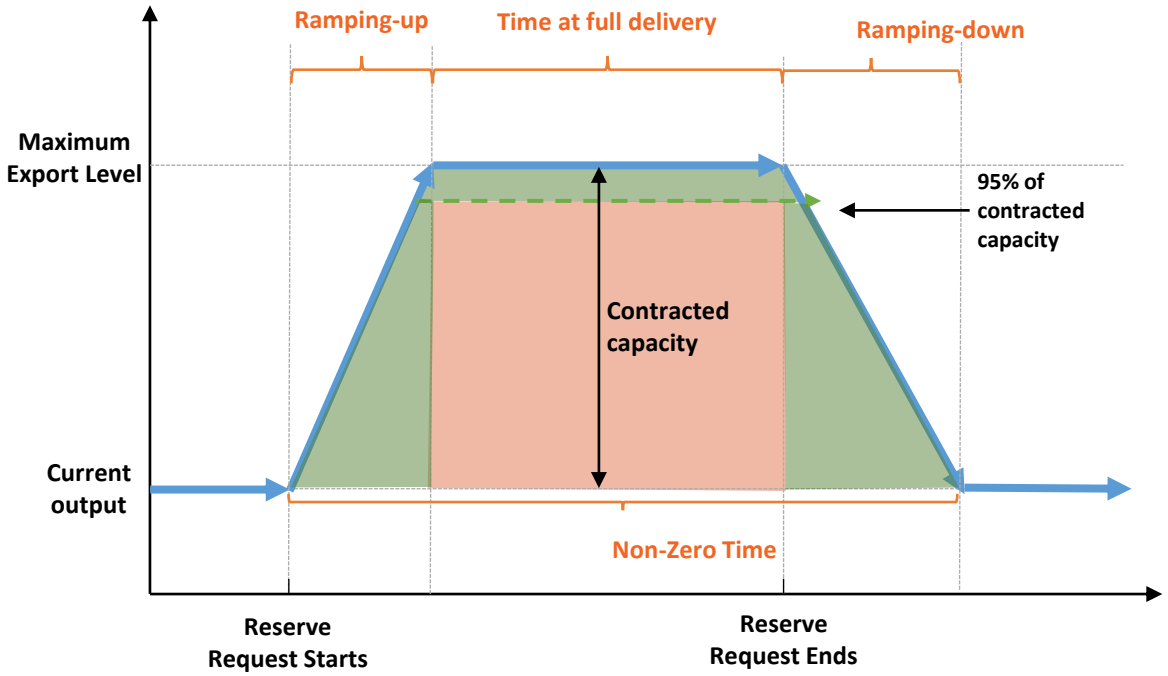
Performance Monitoring

Performance Monitoring of Availability

- Monitoring for sufficient headroom/footroom is held by units with the reserve contracts and being able to deliver the contracted MW if instructed to.
- The unit should be able to provide **at least 95%** of contracted headroom and failure to deliver at least 95% of contracted availability will trigger an **Event of Default (EOD)**. When a reserve unit triggers an EOD, it will forfeit Availability Payment for all the relevant Committed Windows.

Performance Monitoring of Utilisation

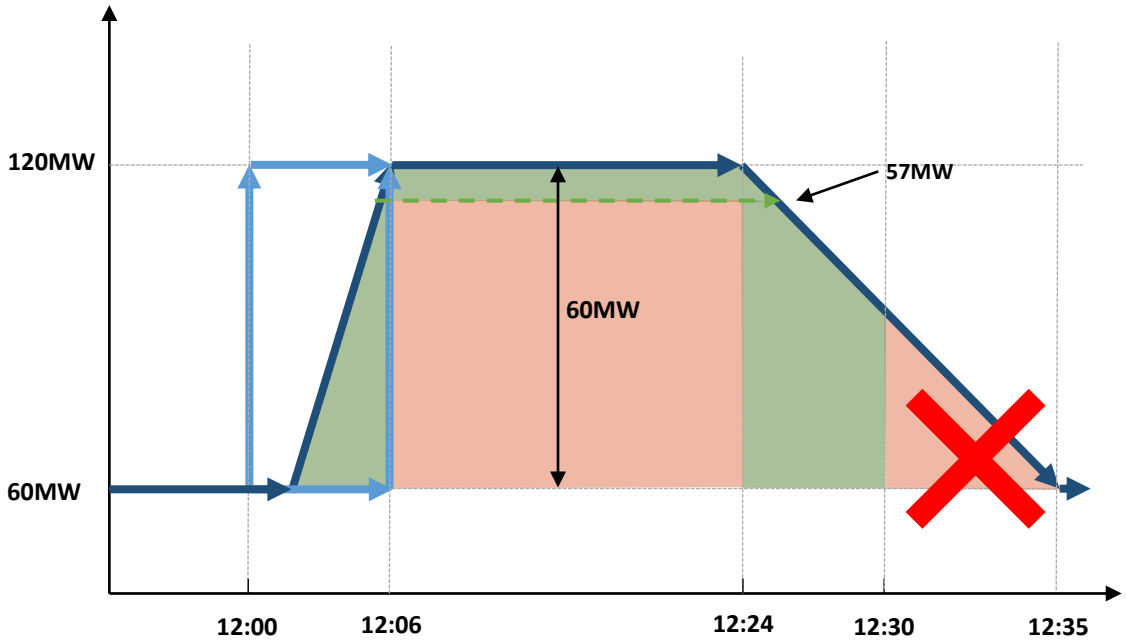
- When instructed to provide the service, **at least of 95%** of the offered MW must be delivered by the unit through the instructed period.
- Failure to deliver will trigger an **EOD** and it will forfeit Availability Payment for all the relevant Committed Windows.
- The providers will be penalised for over-delivery and under-delivery via the usual route of **imbalance charges**, so there is a natural incentive for units to follow expected delivery profiles.



Ramping Envelope

- Notice to start ramping will be **2 minutes** and will be defined by the BM parameters of either Notice to Offer (NTO) or Notice to Bid (NTB) for units with a non-zero PN.
- **No restriction on maximum ramp rates** to and from the instruction from product design. The maximum ramp rates is covered by current Grid Code.
- Minimum ramp rate limit is set as **no less than 15MW/min**.

Example of Unit	
MEL: **120MW**	Minimum ramping time: **4 mins**
SEL: **60MW**	Notice to start ramping: **2 mins**
Bid size or contracted capacity: **60MW**	Total time to full output: **6 mins**



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Do you agree with the proposal of 15MW/min minimum ramp speed?

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Free text feedback on ramping and performance monitoring

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Baselining, Energy Requirements, Aggregation and Metering

Baselining

- The providers will be expected to provide their baseline using Physical Notification in the BM, not later than 60 minutes before expected Service Windows (in line with gate closure).

Energy Requirements

- The unit must be able to deliver the full contracted capacity for the duration of the specified Service Window.

Aggregation

- The providers will not be allowed to aggregate to provide this service.

Metering

- All providers will be required to submit data to NGESO for real time monitoring of service availability and post-event performance monitoring as specified in the Grid Code.

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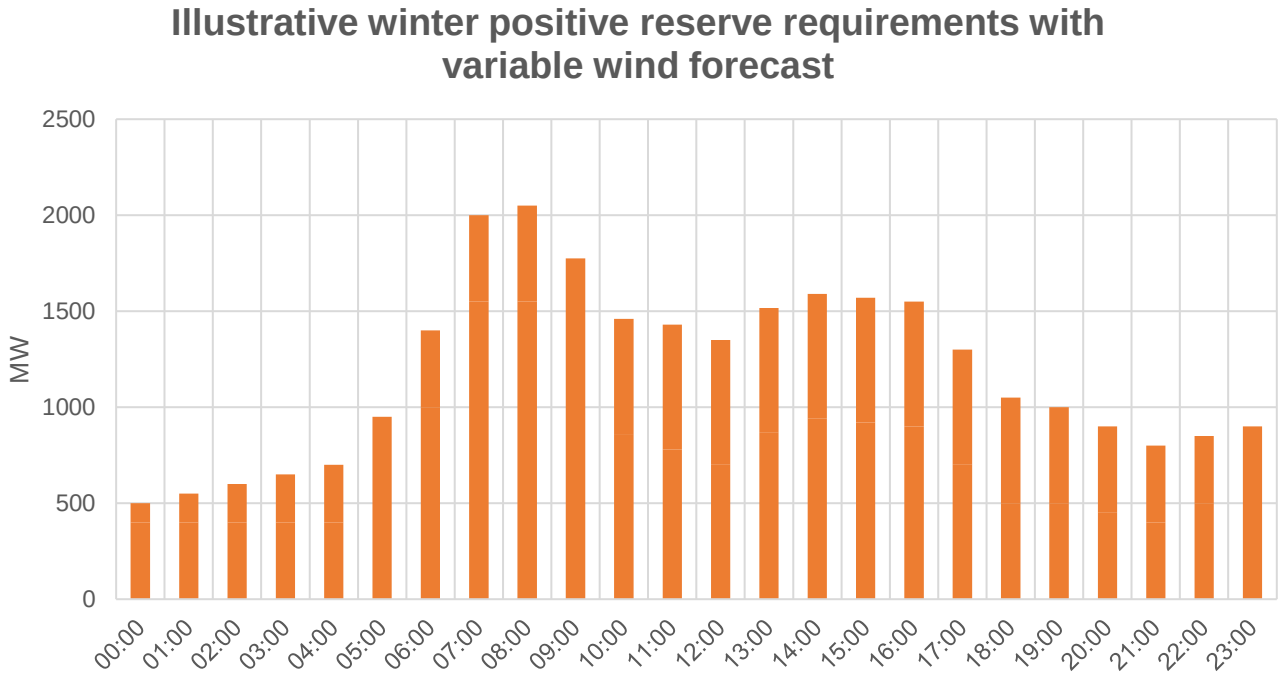
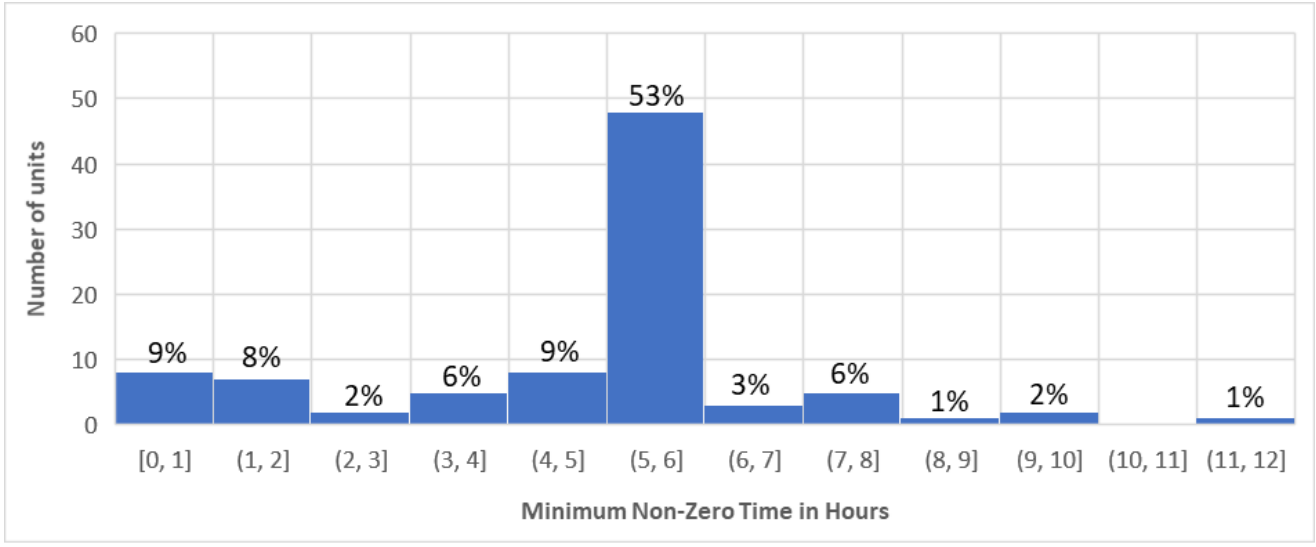
Service Windows and Linking Bids

- 1-hour Service Windows. with 24-hour coverage from 23:00 to 23:00 to align with other ESO balancing services.
- Delivery could be extended beyond the contracted windows.
- If a provider is required to deliver beyond the end of a service window, they will be paid the utilisation price submitted for the relevant window.
- No availability payments will be made outside of the availability window.
- To maximise participation in this market, **the linking of bids will be allowed** to enable providers to run for longer periods of time and guarantee availability payments in consecutive windows.





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We have proposed 1 hour service windows for the BR service, please indicate your preference for service window length.

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Free text feedback on service windows

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Proposed Auction Timing

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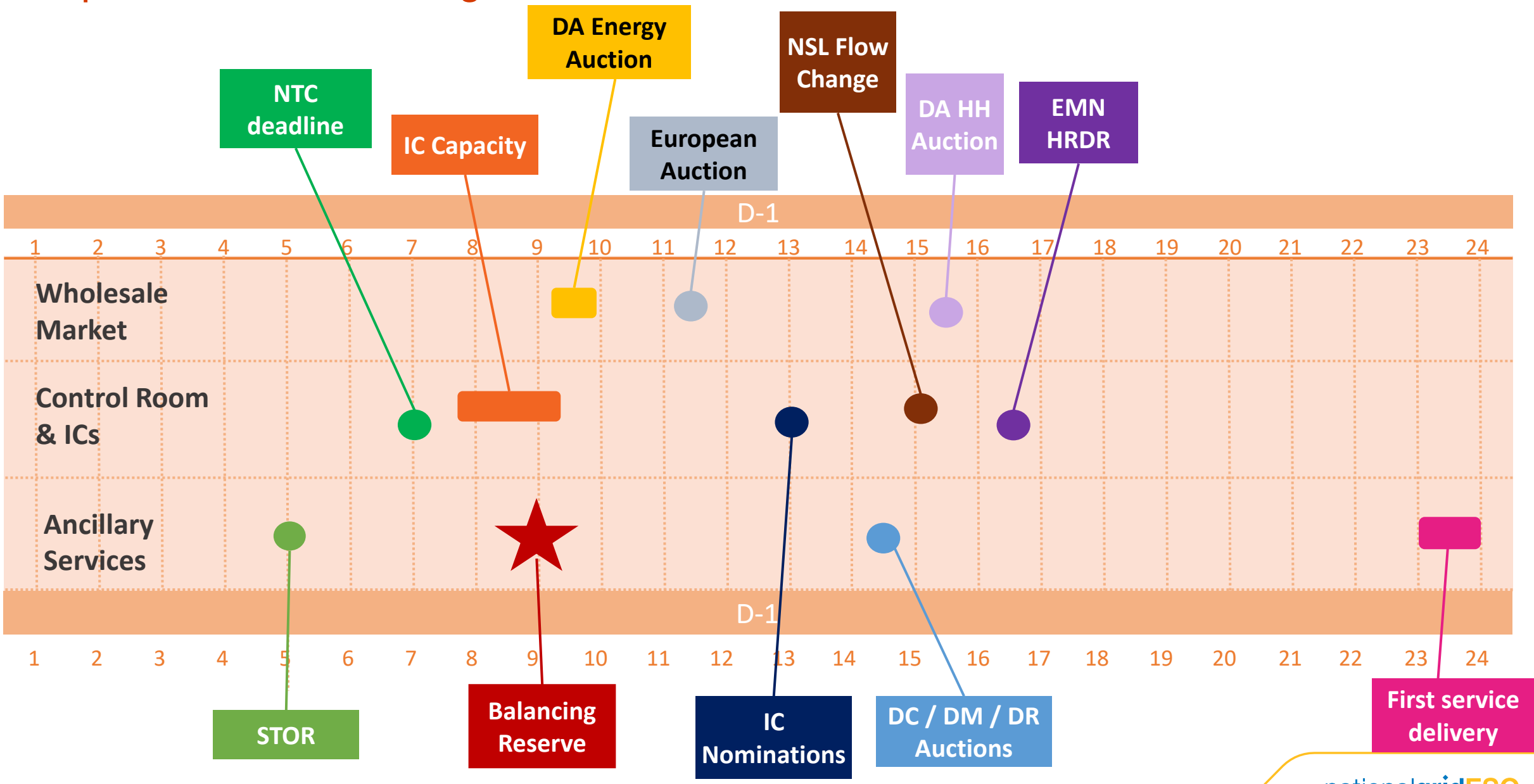

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Do you agree with our proposal to publish the results of the service by 09:00?

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Free text feedback on auction timings

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Settlements, Pricing & Assessment Principles

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Availability Payments

- Providers will be paid for their available headroom/footroom if successful in securing a contract. These payments will be made via the ESO settlements team on a monthly basis.

Mechanism: Pay-as-Clear

Bid submission

- Price (£/MW/h) and Volume (MW)
- One or more bids per each unit per Service Window with optional ability to curtail bids

Assessment Principle

The clearing algorithm will aim at minimising the overall procurement cost, which is made up of:

- the auction procurement cost; and
- the cost of securing unfilled volume in alternative markets

Utilisation Payments

- For each Balancing Reserve instruction, the providers will receive a payment for the energy delivered on a £/MWh basis if instructed to deliver.
- Energy delivered will be paid for through the Balancing Mechanism via usual BOA payment process.
- Utilisation payments will include the energy delivered in ramping towards and ramping from the instructed MW level.

Mechanism: Pay-as-Bid

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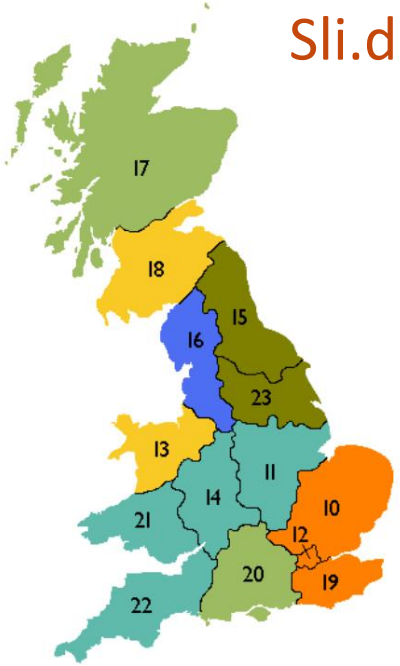
Locational Assessment

The Balancing Reserve market will **not include location-based assessment** and will assess submissions purely based on price.

- High level of complexity to develop and automate a methodology for assessing a unit based on location and submitted price would slow down the Day 1 launch.

In the future we will explore whether location based assessment is required.



Service Stacking

- For the same service window, providers can stack Capacity Market agreements and Balancing Reserve contracts.
- As the service is utilised via BOAs then the service is also implicitly stacked with BM participation.
- A unit can bid into both Positive and Negative Balancing Reserve auctions and position accordingly.
- For the Day 1 release of the service it won't be possible to split volume across the Balancing Reserve markets and response or STOR markets.

Stacking/Splitting	CM	BM	Positive BR	Negative BR	STOR	DC	DM	DR
Positive Balancing Reserve								
Negative Balancing Reserve								

Overall Design

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Design Element	Proposal
Direction	Positive and Negative
Minimum Contract Size	50 MW
Providers	BM providers and Large Power Station
Time to full delivery	As specified by Providers with minimum ramp of at least 15 MW/min
Utilisation	As per BM
Energy Requirement	The unit must be able to deliver the full contracted capacity per Service Window
Operational & Performance Metering	As per GC
Dispatch mechanism	BOA for BM units
Notice to start ramping	As per GC - 2 minutes
Ramp rates	Maximum as per GC and minimum ramp-up and ramp-down rate to be at least 15 MW/min
Performance Monitoring	As per GC - Imbalance will be settled by Elexon calculation and added “Event of Default” condition
Baselining	As per GC – Physical Notifications

Design Element	Proposal
Service Window	1-hour block
Frequency of Procurement	Daily
Auction Platform	To be confirmed
Auction Timing	Results by D-1 09:00 am
Stacking	Same MW cannot be sold twice
Linking of bids	Yes , by Service Windows
Payment Structure	Availability + Utilisation
Payment Mechanism	Availability: Pay-as-clear Utilisation: Pay through BM

Timeline

Yuting Dai

Current Plan for Balancing Reserve Go-Live

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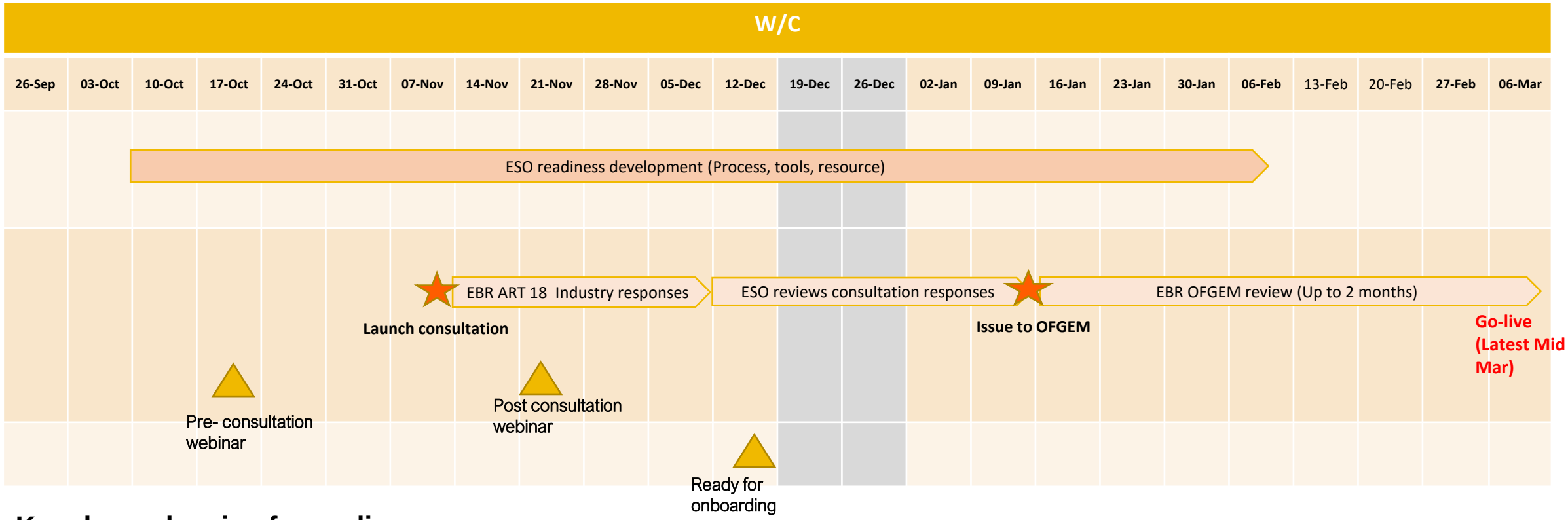

Key dependencies for go-live:

- **ESO internal readiness (Process, tools, resources)** – Timeline to be reviewed and updated depending on development progress
- **EBR Art 18 consultation** - We have been engaging with OFGEM to discuss any opportunity to accelerate the approval timescale
- **Provider onboarding and readiness** - Currently aiming to be ready to start onboarding from Mid Dec

Q&A

Vicci Page and colleagues

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Audience Q&A Session

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Next Steps and Close

Yuting Dai

Next Steps

- **Webinar slides and Q&A will be published on the ESO webpage:** Link to Balancing Reserve webpage
- **EBR Article 18 Consultation -** Plan to launch by w/c 7th Nov
- **Industry Post-consultation webinar –** By w/c 21st Nov. Exact date to be confirmed and invitations will be sent in advance
- **Provider Onboarding -** SMP is planned to be ready from Mid Dec to start onboarding
- **If you have any questions or would like to arrange a 1-2-1, contact us:** box.futureofbalancingservices@nationalgrideso.com

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Based on what you've heard today, how likely are you to participate in the Balancing Reserve market?

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Roughly how long would it take for you to be ready to participate in the Balancing Reserve market?

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Close