Balancing Reserve
24th August 2023

The webinar will start at 10.02

Agenda

- Introduction
- Benefits of BR – LCP Delta CBA Methodology
- Balancing Reserve with Response update
- Cap on Reimbursement
- Telephony requirements
- Overview of revised service design
- Consultation Documentation
- Delivery Timeline
- Q&A

LCPDelta

Balancing Reserve CBA

National Grid ESO

AUGUST 2023

Executive Summary
Balancing Reserve CBA

Background

LCP Delta conducted a Cost Benefit Analysis (CBA) on the initial proposals for Balancing Reserve, which was published earlier in 2023.

National Grid ESO has proposed changes to the design of the Balancing Reserve service, to address concerns raised during the consultation on the initial proposals.

These changes will widen the pool of providers which are eligible to participate in Balancing Reserve.

What's changed from the previous analysis?

Balancing Reserve service design changes

- The minimum unit size has been reduced from 50MW down to 1MW
- A webinar on Balancing Reserve hosted by NGESO in June 2023 includes a discussion of the full list of changes proposed as part of the updated service design

Refresh of modelling inputs

- We have used the latest commodity input prices, which have fallen markedly since the initial CBA
- Our scarcity pricing assumptions have been calibrated to recent market conditions – with less price volatility meaning that we assume a lower scarcity premium added on to power prices during tight periods
- We have widened the pool of generation technologies that can participate in Balancing Reserve, to reflect the changes made to the design of the service

Key messages

- **We continue to see Balancing Reserve delivering value for consumers over 2024 – 2027**

  Our modelling indicates that using the Balancing Reserve service to procure the full positive reserve requirement in every period would save consumers a total of £639m across the four years.

- **Additional benefit could be unlocked if Balancing Reserve can be deployed in a more targeted way**

  Additional consumer benefit could be realised by accurately forecasting periods where the wholesale price impact of Balancing Reserve outweighs the balancing cost saving.

- **Balancing Reserve is shown to be particularly cost effective for consumers during the winter months**

  This is one example of how the probability that Balancing Reserve would benefit consumers on any given day could be reliably assessed by looking at certain key variables.

Modelling Approach
Overview of scenarios

Status Quo scenario Positive Reserve procured through Balancing Actions (BOAs and forward trading)	**Balancing Reserve scenario** Positive Reserve procured through Balancing Reserve product, prior to day-ahead auctions
Modelling horizon: **2024-2027**	
LCP's **stochastic dispatch model** is used to simulate the wholesale and balancing markets (5 simulations of each year to capture weather variations)	
Reserve requirement varies according to factors such as time of day and forecast wind output	

Reserve secured through balancing actions

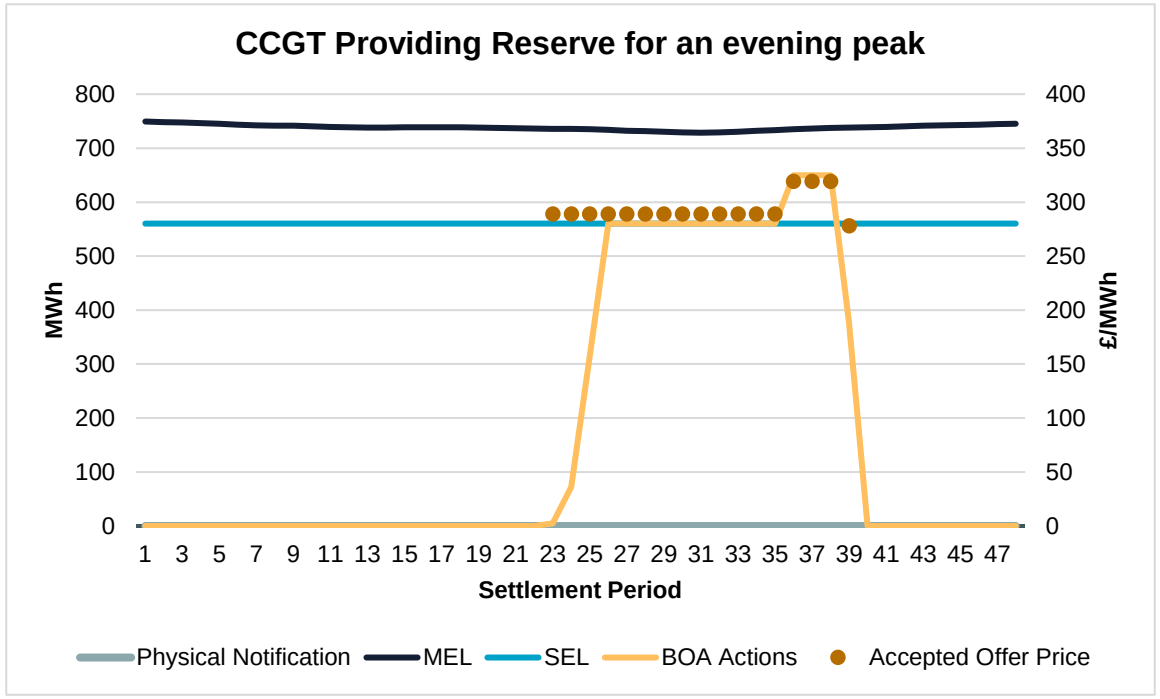
- Plant are turned down or up through balancing actions – bid-offer acceptances (BOAs) and trades
- Typically decreasing from Maximum Export Limit (MEL) to Stable Export Limit (SEL), and from off to SEL
- CCGT (Combined-cycle gas turbine) plant tend to provide the bulk of positive reserve, as they offer good on-load flexibility and are often the marginal units on the system, so it's rational for them to the first to be turned up or down
- These balancing actions can incur high costs, due to the premium included in BM prices (which are pay-as-bid)
- This premium has been calibrated based on recent historic data

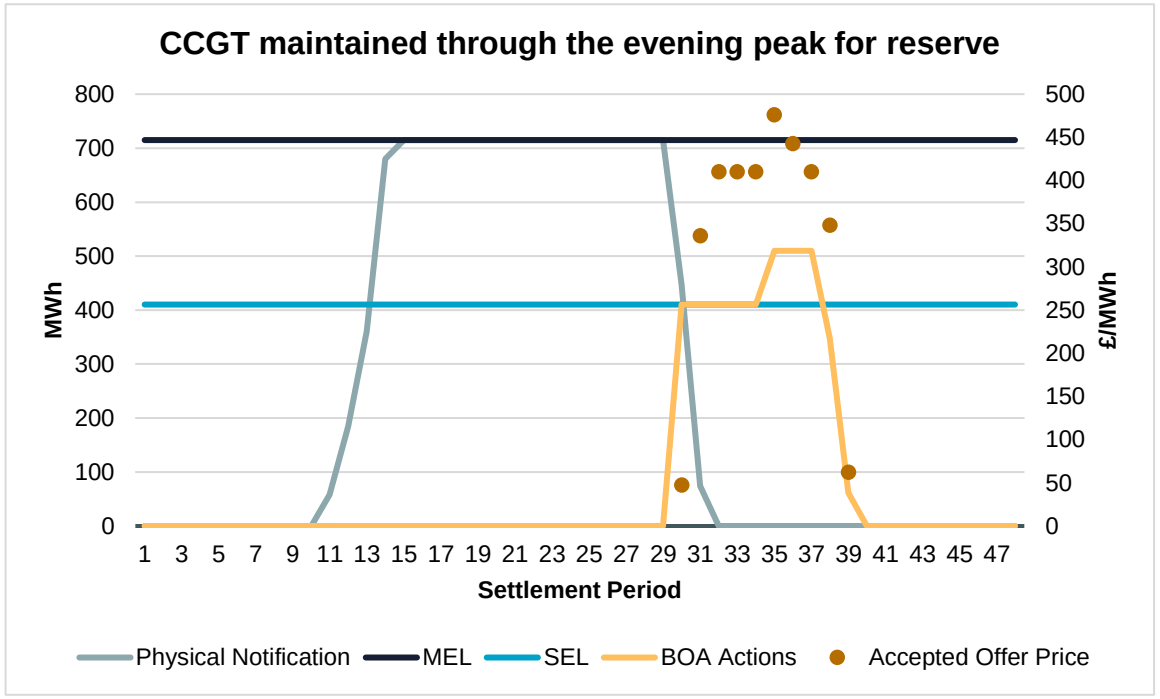
Balancing Reserve

- Competitive auction to procure reserve at lowest cost, under pay-as-clear format
- Plants bid based on cost of provision including opportunity cost of lost wholesale revenues
- It follows that the plant that are on or near the margin in wholesale market will have lowest bids
- This will result in similar providers to Status Quo, but lower cost of provision due to lower premiums in bids
- Volume exiting day-ahead auctions (to part-load and provide reserve) will push up the auction clearing price
- Higher day-ahead wholesale prices means higher wholesale costs passed on to consumers

Status Quo scenario

Currently, the ESO takes balancing actions to meet the reserve requirement





- Reserve is typically provided by CCGTs being bid down from MEL to SEL, or turned-on up to SEL
- These turn-ons for reserve often come at a high cost due to the premium added to BM offer prices, as well as plant dynamics – such as Minimum Non-Zero Time (MNZT) and Minimum Zero Time (MZT) – which mean plant has to be run for longer than needed in order to meet the additional reserve requirement over the demand peak
- We calibrate this balancing market premium in our modelling, based on recent historic data

Balancing Reserve scenario

Reserve procured through Balancing Reserve service

How will units bid into Balancing Reserve?

Availability prices would be determined by the **opportunity cost** of committing to Balancing Reserve, plus any additional costs from running less efficiently at part-load

The opportunity cost of participating in Balancing Reserve is the **expected wholesale market revenue** from generating at full-load, which is determined by day-ahead auction prices

The **marginal unit** (in the wholesale market) would typically bid into Balancing Reserve at the most competitive price – because it makes minimal margin from wholesale dispatch, so has a lower opportunity cost than more efficient units (while having lower costs to recover than less efficient units)

How would this impact the wholesale market?

Units which are accepted for Balancing Reserve are **replaced** in the wholesale market by **units with a higher SRMC** – which increases the wholesale price

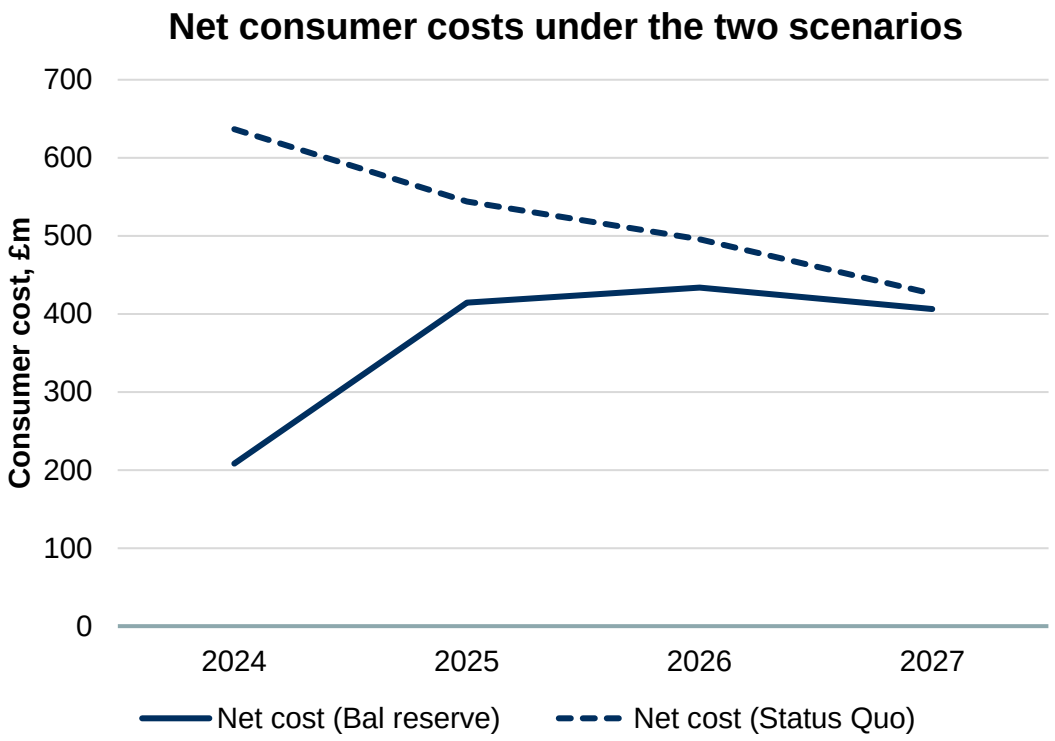
But we assume that in the **Status Quo** scenario, the additional balancing actions taken to create reserve have some inflationary impact on wholesale prices, due to units factoring potential BM revenue into the price they look to dispatch at in the wholesale market

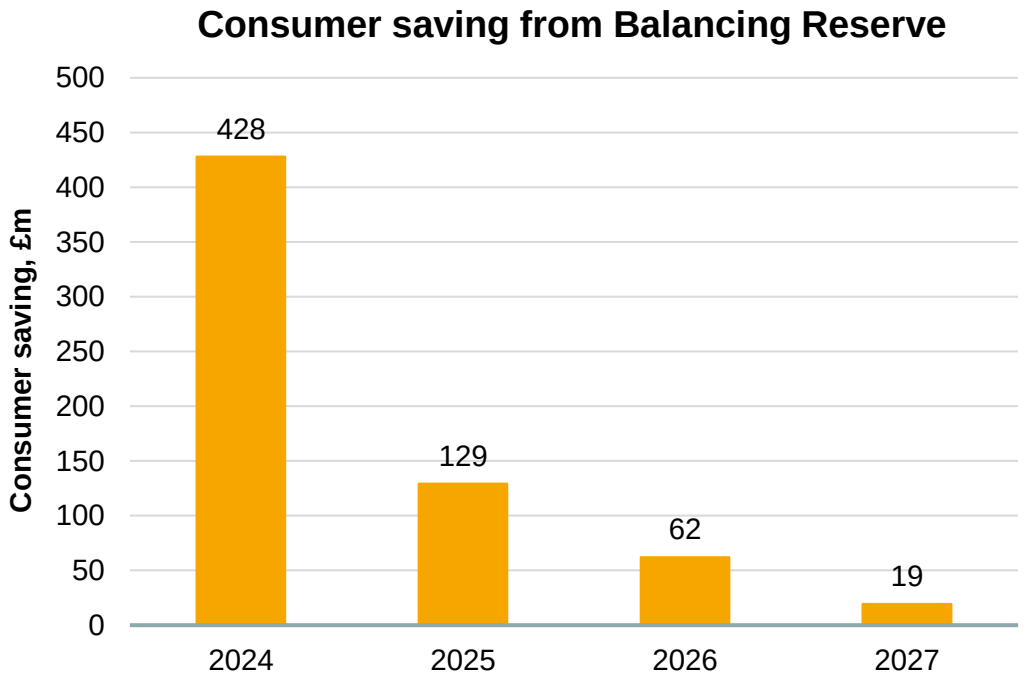
Balancing Reserve aims to deliver a reduction in balancing costs that outweighs the impact of increased wholesale prices and represents an overall **saving for consumers**

Results – Base Case

Total consumer cost impact

- **Balancing Reserve** delivers a net benefit to consumers of **£639m** across the four years
- **BM prices** trend downwards over time, reducing the cost of repositioning units to secure reserve under the status quo arrangements
- Meanwhile, the wholesale price impact of **Balancing Reserve** increases due to changes in the generation stack – with the SRMC of mid-merit plant increasing more steeply in 2027 than in 2024





Balancing Reserve Service Design

Updates and Clarification

Decision: Do not procure Balancing Reserve with Response through BR market

We have made a decision to not procure Balancing Reserve with Response capability through Day Ahead BR market

- Transparency of ESO reserve requirements
- Simplified approach of Balancing Reserve procurement
- Removing barriers to entry for providers
- Clearer investment signals to industry
- Developing real-time response services procurement strategy

Cap on reimbursement

	Initial proposal	Previous Proposal	Final Proposal
Per Settlement Period (SP) cap on reimbursement	£250,000 per unit per SP	£10,000 per MW per SP	Max {BM Accepted Offer/Bid Price for Energy* or ESO Trade for Energy} per MW per SP
Applicable to	Each Contracted and Undelivered MW	Each Contracted and Undelivered MW	Each Contracted and Undelivered MW

*Subject to excluding any erroneous Offers/Bid sent by ESO.

The advantages of an indexed cap on reimbursement approach are:

- The ESO are not exposed to unprecedent spikes in Balancing Mechanism or ESO trades that could render the £10,000 per MW per Settlement Period reimbursement insufficient.
- The cap on reimbursement is market-reflective and in time of low prices in BM or Trades, the reimbursement cap rate is disproportional punitive.
- There is no need to routinely review the suitability of the reimbursement cap rate.

Telephony

To participate in Balancing Reserve, providers must

- Have a Control Point, which is staffed for all Service Windows for which the BMU holds a Balancing Reserve contract. This Control Point must have either “Control Telephony” providing secure point to point telephony with a backup power source and/or “System Telephony” which is an alternate method by which User's Responsible Engineer/Operator and The Company’s Control Engineers speak to one another.
- Control Telephony and System Telephony are defined in the Grid Code (see ECC/CC 6.5.2)

Extract from BR Procurement Rules (to be consulted on):

5 Pre-qualification of BR Units

5.1 To be eligible for pre-qualification as a **BR Unit** (for either **Auction Product**), **Plant** and **Apparatus** must at all relevant times:-

5.1.1 be registered as a **Primary BM Unit** or **Secondary BM Unit** under the **BSC** for which the **Registered BR Participant** is the **Lead Party** (which, for the avoidance of doubt, in relation to any **Registered BR Participant** which is a **Supplier** shall include any of its **Additional BM Units** but shall exclude its **Base BM Units**);

5.1.2 be capable of despatch via **Control Telephony** and/or **System Telephony**; and

5.1.3 be capable of operating in accordance with the **BR Service Terms** (including without limitation the **BR Service Parameters**).

Extract from BR Service Terms (to be consulted on):

5.12 Without prejudice to paragraph 5.11, and with respect to any **Contracted BR Unit** and **Contracted Service Window**, **Balancing Reserve** shall be deemed unavailable for the entirety of that **Contracted Service Window** if, at any time during that **Contracted Service Window**:-

5.12.1 the prevailing **Dynamic Parameters** (or any of them) submitted by the **Service Provider** are in any way inconsistent with the **Dispatch Flexibility Rules**; or

5.12.2 the **Contracted BR Unit** becomes incapable of delivering the full **Contracted Capacity** for the remainder of that **Contracted Service Window**; or

5.12.3 there is no, or ceases to be any, personnel employed by or contracted to the **Service Provider** present and tasked with responding to signals from **Control Telephony** or **System Telephony** relating to that **Contracted BR Unit**.

Overview of our Revised Service Design

Design Element	Proposal
Direction	Positive and Negative
Minimum Contract Size	1 MW
Providers	**BM Units with a back up means of dispatch (control or system telephony) during contracted windows ~~with optional MFR capability for Balancing Reserve with Response~~**
Time to full delivery	10 minutes
Energy Requirement	The unit must be able to deliver the full contracted capacity per Service Window
Operational Metering	As per GC
Dispatch mechanism	BOA for BM units
Notice to start ramping	As per GC - 2 minutes
Ramp rates	Minimum ramp-up and ramp-down rate to be in line with Time to full delivery No maximum ramp rate
Performance Monitoring	"Event of Default" on Availability, Time to full delivery and Utilisation of Providers in Service Windows Imbalance will be settled by Elexon calculation
Baselining	As per GC – Physical Notifications

Design Element	Proposal
Service Window	30 minutes block
Frequency of Procurement	Daily
Auction Platform	Enduring Auction Capability (EAC) Platform
Auction Timing	Results by D-1 09:00 am, Gate Closure at 08:15
Stacking & Splitting	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
Bid Curtailment Rules	User-defined curtailment
Aggregation	**Yes, per GSP group**

Consultation update

Plan forward

Consultation Documentation

These documents will be published on our Balancing Reserve web page

Service Terms & Conditions

- Service Terms
- Procurement Rules

General Balancing Services T&Cs

- Balancing Service Glossary of General Terms
- Common Flexibility Service T&Cs

Service Overview

- Letter to Industry and Mapping Document

Article 6 CEP compliance

- Pricing Proposal

Proforma

- Article 18 Consultation Response Proforma

Changes since previous consultation

- Redline Service Terms
- Summary Document

Single Market Platform registration

- Form B
- Form C

Consultation Timeline

Future of Balancing Services (FoBS)
sign up link

Sli.do #BR5

Launch consultation via FoBS distribution list

1 calendar month later

Deadline for YOU to submit your proforma to box.futureofbalancingservices@nationalgrideso.com

Submit to Ofgem

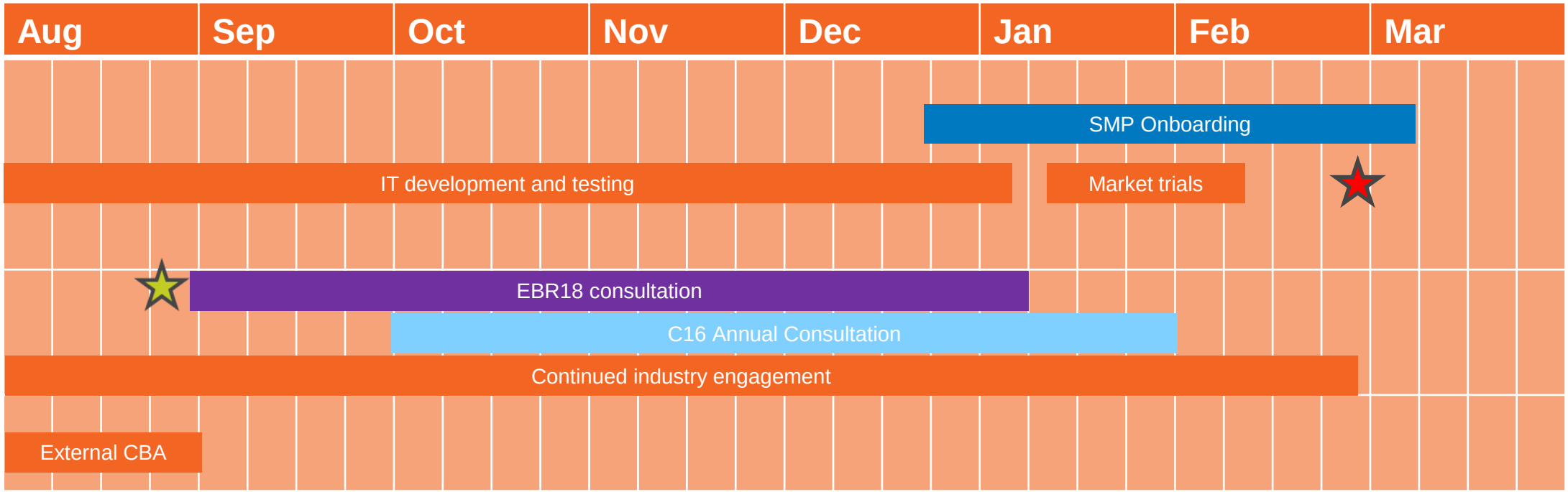
~ 3 weeks later

2 calendar months later

Ofgem decision

Submissions from 2022 consultation will NOT be carried over into this consultation!

Delivery timeline



Industry webinar

Go Live Q1 2024

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Audience Q&A Session

ⓘ Start presenting to display the audience questions on this slide.

Next Steps

- Webinar slides and Q&A will be published on the ESO webpage: Balancing Reserve
- If you have any questions, contact us: box.futureofbalancingservices@nationalgrideso.com