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Balancing Reserve Guidance Document

Version 5 – January 2025

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Version History

Version	Added Information	Date Published
V1	N/A	February 2024
V2	1. NESO rebranding. 2. Minor typographical corrections. 3. Updates to the splitting matrix for QR and SR service design decisions. 4. Clarification on Operational Metering expectations for BMUs providing BR. 5. Correction to the performance monitoring calculation for utilisation to correctly apply response energy for stacked response and reserve providers. 6. Inclusion of the Incremental Volume Cost (IVC) methodology and definitions of 'Commercial Unavailability' and 'Technical Unavailability'. 7. New ramp rate check example to include our method for testing time to full delivery on units with multiple ramp rates and elbow points.	November 2024

Version History

Version	Added Information	Date Published
V3	1. Updated the guidance following changes to the dispatch flexibility parameters and auction timings 2. New guidance on how BR providers should submit their physical data to comply with the guidance in the EDL/EDT guidance document without impeding their BR contract delivery (https://www.neso.energy/document/300231/download) this document has also been updated with the same.	October 2025
V4	New Guidance on Dispatch Parameters	November 2025
V5	1. New Guidance on Excessive Pricing Rules 2. Changes in formatting and additional content for better alignment with QR Guidance Document	January 2026

Contents

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Balancing Reserve Summary

The information in this guidance is tailored to support Balancing Reserve providers during BR service delivery. This guidance is therefore intended for service providers with access to the Balancing Mechanism.

This document complements the BR contractual documents: the Service Terms, Procurement Rules and Balancing Services Glossary as were approved by Ofgem originally in February 2024 and updated in October 2025. In the event of any conflict or inconsistency between this document and the contractual documents, the latter shall prevail.

Balancing Reserve was the first of our new suite of Reserve products. The BR market allows us to procure access to upwards flexibility (headroom) and downwards flexibility (footroom) through two new balancing services: Positive Balancing Reserve and Negative Balancing Reserve. This capacity can then be manually dispatched by NESO control engineers in real time. Balancing Reserve can be dispatched in both pre and post fault system operation scenarios. Contracted BR units can be dispatched to correct persistent energy imbalances such as when wind output is consistently above or below our forecasts. BR units could also be dispatched to replace energy from constrained generators or to help replace exhausted response or other reserve services following a fault on the network which has created a large energy imbalance.

We ran an Article 18 EBGL consultation for Balancing Reserve which concluded in February 2024 and followed this with another consultation to make changes to the service including the co-optimisation with other Reserve and Response products, which gained Ofgem approval in October 2025.

The documents include Service Terms, which describe the technical specification for the provision of Balancing Reserve, and Procurement Rules, which describe the eligibility rules for participation in the services and explain how the BR market will function.

This guidance is published to support the onboarding and continued participation in the BR service by service providers. It is designed to give additional information on the rules and recommendations regarding the delivery of these services, along with relevant use cases. This document will be updated periodically.

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Service Specification

Technical Parameters

Design Element	Detail	References
Direction	Positive Balancing Reserve (Upwards flexibility) and Negative Balancing Reserve (Downwards flexibility).	
Minimum Contract Size	1 MW	
Provider Eligibility	BM Units with a back up means of dispatch (control or system telephony) during contracted windows	
Response Times	Up to 10 minutes (including Notice to Offer (NTO) / Notice to Bid (NTB) and the Ramping Period)	BR Service Terms, Schedule 2
Energy Requirement	The unit must be able to deliver the full contracted capacity per Service Window	
Operational Metering	As per Grid Code, 1Hz is the standard required for BM participation. If units are accepted for BM participation with less granular operational metering at the sub asset level, this can also be acceptable for BR participation.	Grid Code, BC4.4
Dispatch mechanism	Bid Offer Acceptance (BOA) to contracted BM units.	Grid Code, BC2.7.1 or BC2.8

Technical Parameters

Design Element	Detail	References
Notice to start ramping (NTO/NTB)	As per Grid Code - 2 minutes. This parameter can be lower than 2 minutes.	Grid Code BC1.A.1.5
Ramp rates(Run up/down rates)	Minimum ramp-up and ramp-down rate to be in line with Time to full delivery. No maximum ramp rate.	BR Service Terms, Schedule 2
Baselining	Physical Notifications (PNs) submitted in line with Grid Code specifications.	Grid Code, BC1.A.1.1
Dispatch Flexibility	Dispatch must not be limited by Stable Import Limit (SIL)/ Stable Export Limit (SEL), Minimum Non-Zero Time (MNZT) or Minimum Zero Time (MZT). For units offering Positive BR from 0MW or through 0MW, SEL must be less than or equal to 25MW and MNZT less than or equal to 5 minutes. For units offering Positive BR from any FPN >0 this does not apply. For units offering Negative BR from 0MW or through 0MW, SIL must be less than or equal to 25MW and MZT must be less than or equal to 5 minutes. For units offering Positive BR from any FPN <0 this does not apply.	BR Service terms, section 8 BR Service Terms, Schedule 2

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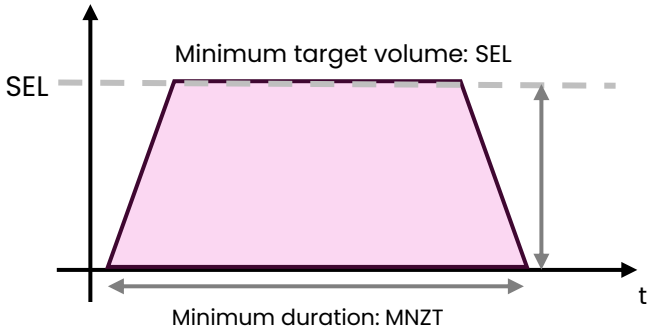
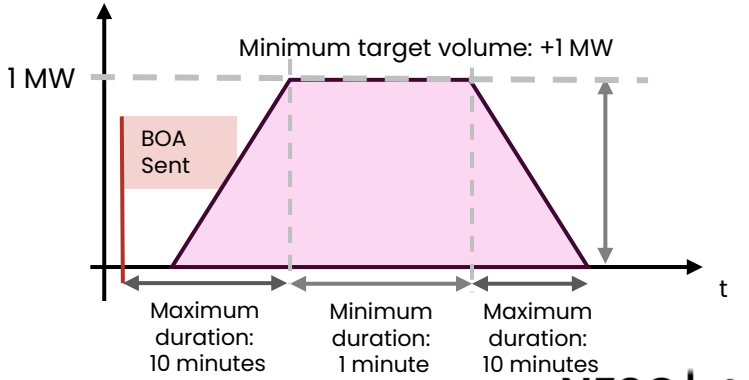
Dispatch Parameters

	Dispatching from zero FPN	Dispatching from non-zero PFN
Minimum Size of instruction (Service Terms 8.1.2)	SEL : SEL ≤25MW	1 MW
Minimum Duration of instruction (Service Terms 8.1.3)	MNZT: MNZT ≤ 5 mins	1 minute
Ramp up/Ramp down rates (Service Terms 5.13, Schedule 2)	Such that the unit can reach the SEL in the MNZT	Such the Response Time ≤ 10 mins
NTO/NTB (Service Terms Schedule 2)	NTO/NTB ≤ 2 mins	





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Joining the Service

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User Journey

Stage	Explore	Onboarding /Account Management	Participate	Contract Management	Schedule / Dispatch	Review	Payment
User Journey	Gather data and information Build business case Understand codes, markets and connections Understand Service Parameters	User, company, unit asset registration Pre-qualification Agent set up Contract Accession Asset / Unit versioning User Management	Tender Submission Action Submission Co-optimisation	Contracts awards and status Manage contracts	Availability management Instructions	Data submission / collection	Performance monitoring Settlement Penalties Disputes Financial position
NESO Systems	DEP NESO Website	SMP	EAC SMP	SMP Data Portal	OBP/BM	DEP SMP	Settlement System SMP

Acronyms:

- **DEP** – Digital Engagement Platform,
- **EAC** – Enduring Auction Capability,
- **OBP** – Open Balancing Programme,
- **STAR** – Settlement and Revenue (System)

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First Time User Registration

If you and your organisation are new to NESO and to the SMP Portal, then it is required that you register directy via the portal using the following instructions.

The User should visit and bookmark the following link: Login

As a first time user, you will need to click the "Register New Account" button. Users will be navigated to the first 'screen' to capture Registration.

Registering New Primary User

In order to access the SMP Portal, it is expected that upon initial registration the main or 'primary' contact (user) at your organisation/company will undertake the registration steps.

Registration involves submitting one's contact details and their organisation/company details. The successive order is contact details followed by company details.

When entering email addresses or telephone numbers, standardised formats are expected, if a User/Contact does not submit field values compatible with the expected format then the field will be flagged in a red border with a prompt instruction. For example, if an email address has been submitted with the incorrect format.

Once all of the fields have been completed on the User/Contact section, the "Next" button will no longer be shaded grey, instead it will be converted into a blue 'button', allowing you to proceed to the next step.

Registering the Primary User's Company

The 'Register new Account' stage involves two pathways depending on the Company Status. If the User/Contact's organisation is a UK Limited Company, they select the first checkbox. If the User/Contact's organisation is a non-UK Company then they select the second checkbox.

Once the option is selected, the user clicks on the "Next" Button.

Registering a UK Company

The User/Contact will be prompted to search for the Company Name and the Company Registration Number.

For Company Name - they will be expected to enter the name, which will trigger a lookup search/listing of similar names for the user to choose from.

For Company Registration Number - they will be expected to enter the exact reference number, which will trigger a lookup search/listing for the user to select and confirm.

Please note that only valid and accurate Registration Numbers will be accepted and appear in the search exercise. If your Company is a UK Limited Company and the search listing is unsuccessful, you will need to reach out to your NESO Account Manager by email

Once a match has been found, the User/Contact must select the "Submit" button to proceed to the next step.

If the search result is incorrect or the User/Contact wishes to undertake a new search, then they are expected to click on the "Remove Company" link to refresh the search functionality.

Once the search result is correct, then the User/Contact selects the "Submit" button on the bottom right right-hand corner of the screen.

For more information on this process, or for information on registering a non UK company click here.
For support please contact:
commercial.operation@nationalenergyso.com

User and Asset Registration

Once you have registered as a user on SMP, you can begin creating your units and assets you wish to prequalify for Balancing Reserve.

In order to do so, you should enter your SMP account via the following link: https://portal.nationalenergyso.com/smp/s/login/

If you are a first-time user, please follow the guidance on the prior slide to register yourself/your company.

If not, or you have already completed first time user registration, you can proceed to register your Units and Assets in SMP and pre-qualify them for Balancing Reserve (Positive and/or Negative).

For users who already have Assets and Units in SMP, for other services (i.e DC/DM/DR), that you wish to pre-qualify for Balancing Reserve, you can move ahead to **Pre-qualifying Units for Balancing Reserve.**

Registering New Assets and Units

You can register new Assets and Units on the SMP portal, by following the instructions in the demo video linked here: Creating Assets and Units in SMP

or by following the instructions in **Section 4 and 5** of the SMP External User Guide

This process is the same as for any other services you have pre-qualified for in SMP; such as DC, DM or DR.

Prequalifying Units for Balancing Reserve

In order to prequalify your units for Positive or Negative Balancing Reserve, you should have created your Assets and Units, and linked them together (As per the prior video and section 6 of the User Guide). You can then proceed to pre-qualification, by following the instructions in the demo video linked here (ensure you have selected the relevant Balancing Reserve service): Prequalifying Units for Balancing Services

Or by following the instructions in **Section 7** of the SMP External User Guide

Once you have submitted your unit/s for pre-qualification, they will be reviewed by the NESO team. We will check that: a signed Form B has been provided, as well as that the Unit information is correct and meets the service parameters. If all of this is true, your unit will be approved and is ready to take part in Balancing Reserve.

For technical support, and SMP queries, please contact: commercial.operation@nationalenergyso.com

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Auctions & Auction Platform

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EAC Market Design and Clearing Algorithm

Single market for response and reserve	Frequency Response services (Dynamic Containment, Dynamic Moderation, Dynamic Regulation) and the new Reserve services (Quick Reserve, Slow Reserve, Balancing Reserve) are procured simultaneously in a single, pay-as-clear auction
Co-optimisation	The auction clearing algorithm is able to select between alternative provider offers and alternate NESO requirements to better optimise the overall market clearing
EAC clearing algorithm	Our strategic partner, N-SIDE, is developing a new, bespoke market clearing algorithm to enable the new market features
Overholding	The auction clearing algorithm may clear a quantity of service in excess of NESO requirements if this better optimises the market

Auction Overview

Design	Co-optimised Response and Reserve Auction
Services Auctioned	The EAC Auction is used for the clearing of capacity (availability) for the following services: • **Frequency Response Services:** Dynamic Containment (DC), Dynamic Moderation (DM), and Dynamic Regulation (DR). • **Reserve Services:** Quick Reserve (QR), Balancing Reserve (BR) For every service, there are 2 product directions. • **For Response** these are Low (L) and High (H) products (resulting in product codes DRL and DRH, DML and DMH, DCL and DCH). • **For Reserve** these Positive (P) and Negative (N) Products (resulting in product codes PBR and NBR).
Auction Frequency	DC, DM, DR, BR and QR will be procured in a single, simultaneous **day-ahead auction** held daily at 14:00.
Auction Design	**Auction type:** Closed double-sided auction. **Objective function:** Maximisation of social welfare. **Pricing:** Uniform clearing price per product for each service window. **Locational granularity:** GB synchronous area. **Overholding** allowed (cleared quantity may exceed NESO bid quantity). **Procurement:** Capacity (MW).

Note: For more information, please see EAC Market Design Report and EAC Market Design Explainer.

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Order Submission Process

The following section will give a step-by-step guide to submitting orders on EAC. If you and your organisation are new to NESO and have yet to register to SMP, then it is required that you register there first. All participants must then be registered as a user for EAC, even after registering units on SMP.

After registering for EAC and logging in with 2-factor authentication, the first step is to select the auction that you would like to bid into. All auctions with gates open can be found under the 'Auctions' tab.

After you have selected the auction that you would like to bid into, you will need to select the unit you would like to use from the drop-down menu.

Following this, you will start to build and add your baskets (defined by EFA block). You will give your basket a name and a family name if these are looped baskets and add in the relevant information such as price volume and any child order or substitutable child orders as required.

Once all of the relevant information has been added the bid can be submitted.

After the auction, results can be found in the results tab for your relevant unit, and results will be published on the Data Portal for all units.

Please note that bids can also be submitted via API, to obtain API credentials please contact NESO.

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Order Submission Process (EAC)

The following section will give a step-by-step guide to submitting orders on EAC. If you and your organisation are new to NESO and have yet to register to SMP, then it is required that you register there first. All participants must then be registered as a user for EAC, even after registering units on SMP.

After registering for EAC and logging in with 2-factor authentication the first step is to select that auction that you would like to bid into. All auctions with gates open can be found under the 'Auctions' tab.

After you have selected the auction that you would like to bid into you will need to select the unit you would like to use from the drop-down menu.

Following this you will start to build and add your baskets (defined by 30 minutes service windows). You will give your basket a name and a family name if these are looped baskets and add in the relevant information such as price volume and any child order or substitutable child orders as required.

Once all of the relevant information has been added the bid can be submitted.

After the auction results can be found in the results tab for your relevant unit, all results will be published on the Data Portal for all units.

Please note that bids can also be submitted via API, to obtain API credentials please contact NESO.

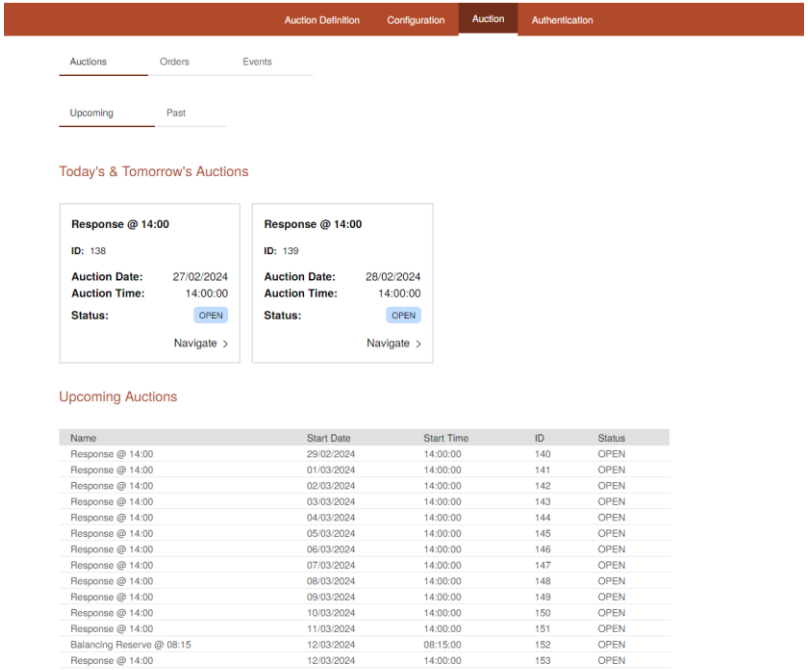

Figure: View of upcoming auctions

Order Submission Process (EAC)

Figure: Button to create new basket

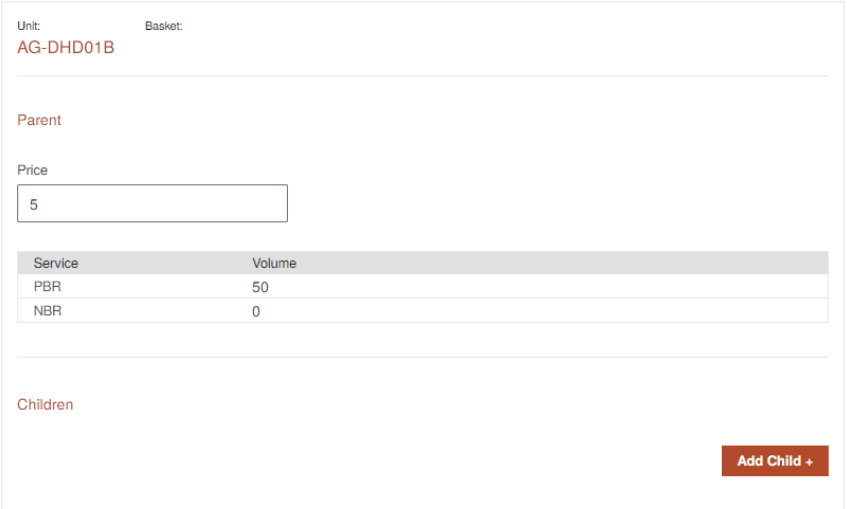

Figure: Adding parent and child orders to the basket

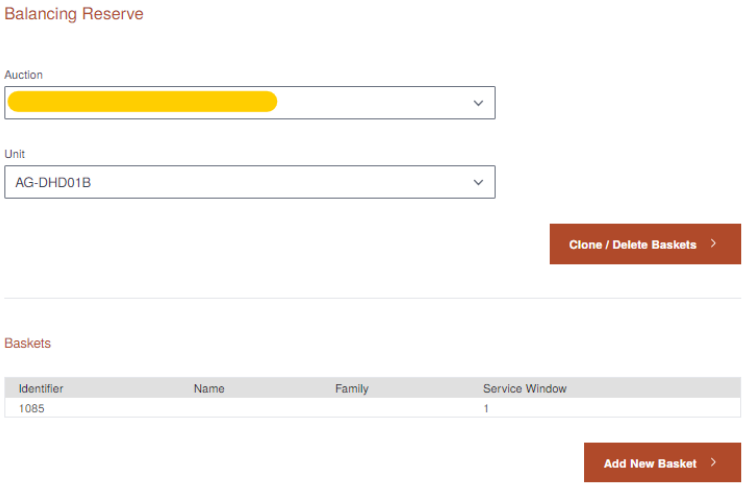

Figure: Adding parent and child orders to the basket (continued)

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Service Stacking

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Co-delivery

Definition: Being paid multiple revenues from the same asset, using the same capacity/MW, in the same time period (and in the same direction).

Note: Positive and Negative is not considered the same MW.

Co-delivery Rules

- Balancing Reserve **cannot** be co-delivered with:
  - any other frequency management Ancillary Service e.g. Reserve (including Quick Reserve) or any Dynamic Frequency Response.
- Balancing Reserve **can** be co-delivered with:
  - the Capacity Market (CM)
  - Where a CM Notice (CMN) is issued, these providers should continue to make headroom available to us as per any active Balancing Reserve commitments.
- To ensure that providers are protected from penalties for breach of their CM agreement should a System Stress Event occur following the CMN, Balancing Reserve has been added to the list of Relevant Balancing Services.

Note: Positive and Negative is not considered the same MW. Therefore, where 100% of a unit's capacity can be awarded a contract in opposite directions for the same service window, this is not considered stacking or co-delivery.

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Splitting

Definition: Being paid multiple revenues from the same asset, but with different capacity/MW, in the same time period.

Note: Positive and Negative is not considered the same MW.

Splitting Rules

- Balancing Reserve **can** be split with the same Reserve service, but in the opposite direction. Therefore;
  - Positive Balancing Reserve can be split with Negative Balancing Reserve.
  - For example, a unit with 10MW of headroom and footroom may be awarded a 10MW contract in both directions.
- Balancing Reserve cannot be Split with any other Ancillary Service
- Balancing Reserve can also be split with the BM, Voltage and Stability services.
- The Balancing Reserve auction is co-optimised with the Dynamic Response auction (EAC auction) and therefore providers may offer Balancing Reserve, Quick Reserve and Dynamic Response products during the same time periods, however they must not be in the same Sell Order or Basket

Note: Positive and Negative is not considered the same MW. Therefore, 100% of a unit's capacity can be awarded a contract in opposite directions for the same service window.

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Splitting

Splitting

'Splitting' – earning revenue and being able to deliver multiple services from the same asset in the same time period, but not from the same MW. The asset can provide different MWs at the same time, providing the ability of the asset to deliver in all contracted service(s) is not impeded.

The Energy Networks Association developed common definitions for Service Stacking breaking stacking into three sub-categories: "Co-Delivery", "Splitting" and "Jumping". See the paper with full definitions here.

The Balancing Reserve auction is now co-optimised with the Dynamic Response & Quick Reserve auction (also called the "EAC auction") and therefore providers can no longer split with Response as that is currently under review.

Providers will continue to be able to split within Balancing Reserve in opposite Directions.

Splitting Matrix

Splitting with Response

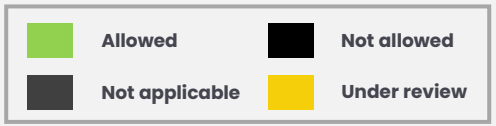
- Splitting is allowed between any frequency response products (i.e., any combination of DCL, DCH, DML, DMH, DRL, and DRH).

Splitting within Reserve

- Splitting is allowed between Balancing Reserve products (PBR and NBR), between Quick Reserve products (PQR and NQR), and between Slow Reserve products (PSR and NSR).
- However, splitting is not yet allowed between different Reserve products.

Splitting with Response

- Splitting BR with Response will be available once Performance Monitoring allows.



Splitting Matrix			Response						Reserve					
			DC		DM		DR		BR		QR		SR	
			DCL	DCH	DML	DMH	DRL	DRH	PBR	NBR	PQR	NQR	PSR	NSR
Response	DC	DCL												
		DCH												
	DM	DML												
		DMH												
	DR	DRL												
		DRH												
Reserve	BR	PBR												
		NBR												
	QR	PQR												
		NQR												
	SR	PSR												
		NSR												

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Operational Data

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Pre-gate Closure Data

Contracted BM Balancing Reserve providers are to submit BM data to NESO via EDL/EDT. This data should be submitted in accordance with the Grid Code (in particular BC1 & BC2).

NESO engineers repeatedly calculate the expected operating margin between 24 hours and 4 hours ahead of real time. The introduction of Balancing Reserve means that some contracted reserve volume is known at 14:00 the Day Ahead of delivery and therefore these contracted volumes will be included in the engineer's margin assessments.

To help us to ensure the margin assessments are as accurate as possible, we would appreciate contracted BM units submitting Day Ahead Submissions even when not mandated to do so by the Grid Code.

Data should then be revised if new information becomes available to the BM Participant.

Failure to submit any data required for the determination of contract compliance will result in payment being with-held.

Relevant Data for Balancing Reserve:

- Maximum Export Limit (MEL)
- Maximum Import Limit (MIL)
- Stable Export Limit (SEL)
- Stable Import Limit (SIL)
- Run-up Rate
- Run-down Rate
- Minimum Non-Zero Time (MNZT)
- Minimum Zero Time (MZT)
- Bid/Offer pairs
- Notice to Offer (NTO)
- Notice to Bid (NTB)
- Notice to Deviate from Zero (NDZ)
- FPN
- BO Pair Price/Volumes data

Operational Data Submissions

- The Grid Code, within Section BC1 lays out the option for Balancing Mechanism participating Units (BMUs) to provide NESO with indicative Physical Notifications (PNs) and import and export limits (MELs/MILs) well in advance of real time.
- Large and Medium Power Stations and all BMUs which are Transmission connected are **required** to submit their indicative PNs at 11:00 hours each day for every Settlement Period of the following Operational Day (which begins at 05:00 the following morning).
- NESO's scheduling teams use this data within their margin assessments to inform strategic decisions.
- Balancing Reserve contracted units know their contract award outcomes by ~14:30 for delivery in the majority of the next Operational Day. Their PNs, MELs, and MILs should be reviewed and, if necessary, revised, as soon as reasonably practical after formation of a BR contract (and in any event by no later than gate closure).
- This will help us to conduct efficient scheduling and allow the Balancing Reserve market deliver the most value.

BR Service Terms

5. Service Availability

5.1 With respect to any **Contracted BR Unit**, **NESO** may utilise **Balancing Reserve** made available by the **Service Provider** during **Contracted Service Windows** by the issue of one or more **Bid-Offer Acceptances** in accordance with the **Grid Code**.

5.2 To facilitate the issue by **NESO** of a **Bid-Offer Acceptance** in respect of a **Contracted Service Window**, and subject always to paragraph 5.9, the **Service Provider** shall, as soon as reasonably practicable but in any event by no later than **Gate Closure** for that **Contracted Service Window**, submit to **NESO** in accordance with the **Grid Code**, in respect of the relevant **Contracted BR Unit** and so as to constitute a **Mandatory Availability Declaration**, **BM Unit Data** meeting the requirements (as applicable) of paragraphs 5.3 to 5.8 inclusive.

BC1

Physical Notifications, being the data listed in **BC1** Appendix 1 under that heading, are required by **The Company** at 11:00 hours each day for each **Settlement Period** of the next following **Operational Day**, in respect of;

(1) **BM Units**:

(i) with a **Demand Capacity** with a magnitude of 50MW or more in **NGET's Transmission Area** or 10MW or more in **SHETL's Transmission Area** or 30MW or more in **SPT's Transmission Area**; or

(ii) comprising **Generating Units** (as defined in the Glossary and Definitions and not limited by BC1.2) and/or **Power Generating Modules** and/or **CCGT Modules** and/or **Power Park Modules** in each case at **Large Power Stations**, **Medium Power Stations** and **Small Power Stations** where such **Small Power Stations** are directly connected to the **Transmission System**; or

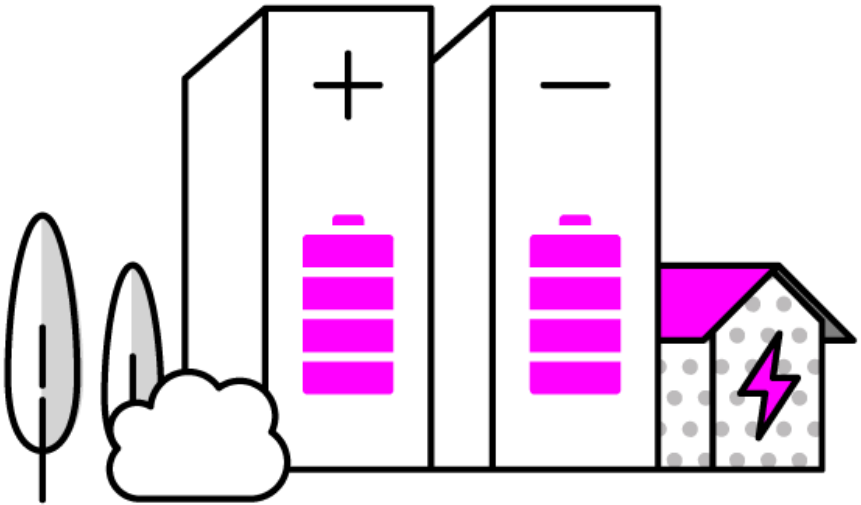
(iii) where the **BM Participant** chooses to submit **Bid-Offer Data** in accordance with BC1.4.2(d) for **BM Units** not falling within (i) or (ii) above,

Energy Limited Assets

Battery Energy Storage Systems (BESS) and Pumped Storage have energy limitations depending on the storage capacity of their equipment. BESS can participate in the BR auctions but are expected to be able to manage their state of energy to be able to deliver the full contracted quantity for the duration of the BR service window. Failure to do this could result in an IVC penalty.

We have published guidance on the submission of MEL/MIL parameters for energy limited assets, please read this guidance note to learn more.

This approach is designed to be temporary whilst the GC0166 working group design new parameters for storage. More information on this Grid Code modification proposal can be found here.



Energy Limited Assets

Submitting MEL/MIL – interactions with the 30-minute rule

The 30-minute MEL/MIL redeclaration rule guidance recommends that:

- Battery BMUs should declare their MEL and MIL open-ended such that it reflects the capacity to follow a Bid Offer Acceptance (BOA) which ramps from the current Physical Notification (PN) to the MEL or MIL and remains at the MEL or MIL for a duration of 30 minutes before ramping back to the Physical Notification. Ramping rate to be the RunUp Rate (RUR) or Run-Down Rate (RDR) as applicable.
- If a BOA is issued to MEL/MIL, the State of Energy should be recalculated, and the MEL or MIL should be redeclared as soon as possible starting from the point at which the current MEL/MIL level could not be sustained if the BOA were to be extended. This redeclaration will be a minimum of 32 minutes from the first point of instruction (30 minutes duration and 1- minute ramp either side) but may be longer.

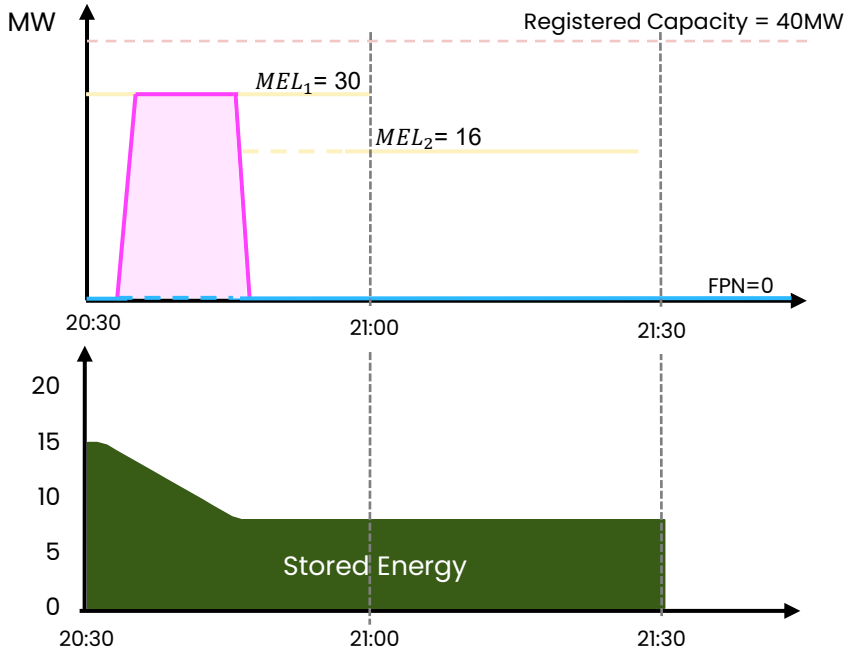
When holding a reserve contract, and state of energy changes within the contracted period, following this guidance absolutely may cause the unit to fail reserve availability performance monitoring.

We recommend adding a bullet point to this rule:

- *Where the energy limited BMU holds a firm Reserve contract (Balancing, Quick or Slow Reserve) and has sufficient energy remaining to deliver the contracted capacity for the remainder of the service window then the MEL/MIL redeclaration should indicate this capability and be reduced on the settlement period boundary to reflect a future 30-minute capability for dispatch. This approach avoids incorrect failing of the firm Reserve contract when the BMU has enough energy remaining to deliver for the remainder of the contracted window.*

Energy Limited Assets

Submitting MEL/MIL – interactions with he 30-minute rule and PBR/PWR monitoring



This BMU needs to have at least 15MWh of stored energy in the battery at 20:30 to deliver a 30MW Offer for 30 minutes (as per the BR contract).

In this example:

The unit has 15MWh of stored energy at 20:30.

It receives and delivers on an Offer for 30MW for 13 minutes (including a 1-minute ramp on either side).

Under the 30-minute rule the unit would submit a new MEL* (16MW) to be effective from 20:47 to reflect its new 30-minute capability.

This causes the unit to fail reserve contract performance monitoring, despite the unit having adequately managed its state of energy at the start of the contracted period.

We recommend that reserve contracted units should delay the effective from time of their revised MEL to the start of the next SP.

Data and Transparency

Registered Service Providers will be required to submit Operational Data, as outlined in the Service Terms.

No performance data needs to be submitted by contracted BR providers, NESO will use its own data to performance monitor the units at a 30-minute granularity. Operational data should be submitted via BM systems (e.g. EDT/EDL).

Details of the BR auction results including a breakdown of each Sell Order, NESO's Buy Order and results summaries is available on the data portal

EAC- Auction Results | National Energy System Operator

Details of unit dispatch can be found via the Dispatch Transparency dataset or through the Elexon website.

Performance Monitoring

Performance Monitoring

Availability (EoD code "AVAL")

This section provides information on the application of the performance monitoring methodology for Balancing Reserve. Units participating in the service will be subject to performance monitoring on **Availability**, **Utilisation, Time to Full Delivery**, and **Dispatch Flexibility**. In the event of any conflict or inconsistency between this document and the Service Terms, the latter shall prevail.

A contracted unit should be able to demonstrate 100% of contracted Positive Balancing Reserve (headroom) or Negative Balancing Reserve (footroom). Failure to demonstrate the contracted availability will trigger an Event of Default (EoD). When a reserve unit triggers an EOD, it will forfeit the Availability Payment for all the relevant Contracted Windows.

Positive Balancing Reserve

For a generator (or a unit with only positive output):

MEL – FPN ≥ Contracted Quantity

For a supplier (or a unit with only negative output):

SIL – FPN ≥ Contracted Quantity

For a "through-zero" unit:

MEL – FPN ≥ Contracted Quantity

For a Power Park Module powered by an Intermittent Power Source:

PA – FPN ≥ Contracted Quantity

Negative Balancing Reserve

For a generator (or a unit with only positive output):

FPN – SEL ≥ Contracted Quantity

For a supplier (or a unit with only negative output):

FPN – MIL ≥ Contracted Quantity

For a "through-zero" unit:

FPN – MIL ≥ Contracted Quantity

For a Power Park Module powered by an Intermittent Power Source:

FPN – PA ≥ Contracted Quantity

Dynamic Parameter definitions:
FPN – Final Physical Notification, MEL – Maximum Export Limit, SEL – Stable Export Limit, MIL – Maximum Import Limit, SIL – Stable Import Limit, PA – Power Available.

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Performance Monitoring

Commercial Unavailability (EoD code "IVCP")

A contracted unit should be able to demonstrate 100% of contracted Positive Balancing Reserve (headroom) or Negative Balancing Reserve (footroom). Failure to demonstrate the 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.

Where a unit fails the availability check we will determine whether the unit was Technically Unavailable or Commercially Unavailable.

Where the unit fails the availability check and is Commercially Unavailable then the **Incremental Volume Cost penalty** will be applied.

Positive Balancing Reserve

For a generator (or a unit with only positive output)

Where MEL – FPN < Contracted Quantity and;

MEL – SEL < Contracted Quantity → *Technical Unavailability;*

MEL – SEL ≥ Contracted Quantity → *Commercial Unavailability*

For a supplier (or a unit with only negative output):

Where SIL – FPN < Contracted Quantity and;

SIL – MIL < Contracted Quantity → *Technical Unavailability;*

SIL – MIL ≥ Contracted Quantity → *Commercial Unavailability*

For a "through-zero" unit:

Where MEL – FPN < Contracted Quantity and;

MEL – MIL < Contracted Quantity → *Technical Unavailability;*

MEL – MIL ≥ Contracted Quantity → *Commercial Unavailability*

For a Power Park Module powered by an Intermittent Power Source:

Where PA – FPN < Contracted Quantity and;

PA – SEL < Contracted Quantity → *Technical Unavailability;*

PA – SEL ≥ Contracted Quantity → *Commercial Unavailability*

Dynamic Parameter definitions:
FPN – Final Physical Notification, MEL – Maximum Export Limit, SEL – Stable Export Limit, MIL – Maximum Import Limit, SIL – Stable Import Limit, PA – Power Available.

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Performance Monitoring

Commercial Unavailability (EoD code "IVCP")

A contracted unit should be able to demonstrate 100% of contracted Positive Balancing Reserve (headroom) or Negative Balancing Reserve (footroom). Failure to demonstrate the 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.

Where a unit fails the availability check we will determine whether the unit was Technically Unavailable or Commercially Unavailable.

Where the unit fails the availability check and is Commercially Unavailable then the **Incremental Volume Cost penalty** will be applied.

Negative Balancing Reserve

For a generator (or a unit with only positive output)

Where MEL – FPN < Contracted Quantity and;

MEL – SEL < Contracted Quantity → *Technical Unavailability*;

MEL – SEL ≥ Contracted Quantity → *Commercial Unavailability*

For a supplier (or a unit with only negative output):

Where SIL – FPN < Contracted Quantity and;

SIL – MIL < Contracted Quantity → *Technical Unavailability*;

SIL – MIL ≥ Contracted Quantity → *Commercial Unavailability*

For a "through-zero" unit:

Where MEL – FPN < Contracted Quantity and;

MEL – MIL < Contracted Quantity → *Technical Unavailability*;

MEL – MIL ≥ Contracted Quantity → *Commercial Unavailability*

For a Power Park Module powered by an Intermittent Power Source:

Where PA – FPN < Contracted Quantity and;

PA – SEL < Contracted Quantity → *Technical Unavailability*;

PA – SEL ≥ Contracted Quantity → *Commercial Unavailability*

Dynamic Parameter definitions:
FPN – Final Physical Notification, MEL – Maximum Export Limit, SEL – Stable Export Limit, MIL – Maximum Import Limit, SIL – Stable Import Limit, PA – Power Available.

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Performance Monitoring

Utilisation

Under-delivery below 95% expected output will mean availability payments for the relevant service window will be withheld. Over-delivery is not penalised by the performance monitoring.

For units which are armed for Mandatory Frequency Response (MFR) or contracted for a dynamic response contract in the opposite direction their response energy delivered will adjust the Expected Output and ensure that units are not penalised for under-delivery when they are automatically adjusting output to manage frequency. This enables service stacking between BR and response services as per the "Service Stacking" guidelines.

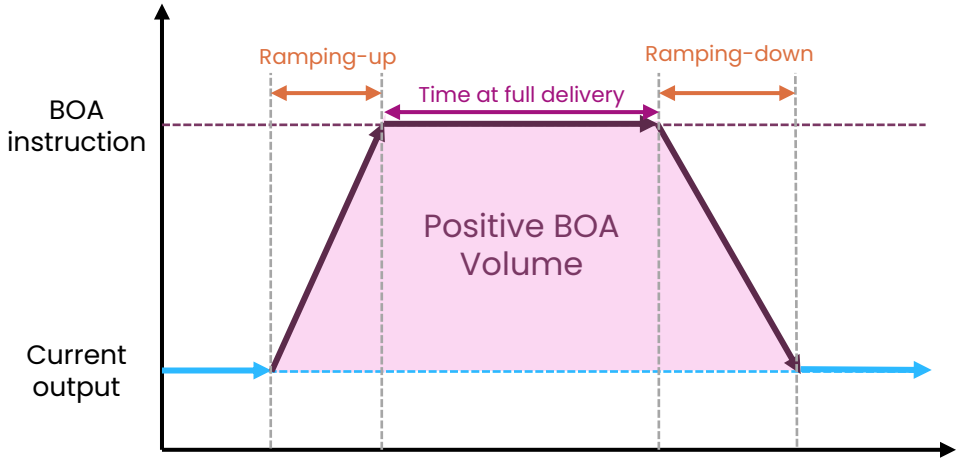
For all units:

PBR: Expected output = Positive net BOA volume (MWh)* + Response Energy (MWh)

NBR: Expected output = Negative net BOA volume (MWh)* + Response Energy (MWh)

The Check

(Settlement metering – FPN volume) / Expected output ≥ 0.95



*If two or more BOAs in opposite directions are received in a Settlement Period, utilisation performance monitoring is on the net direction. If no contract is held in that direction, then no utilisation check is made.

Dynamic Parameter definitions:
FPN – Final Physical Notification, MEL – Maximum Export Limit, SEL – Stable Export Limit, MIL – Maximum Import Limit, SIL – Stable Import Limit, PA – Power Available.

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Performance Monitoring

Time to Full Delivery (EoD code "IVCP")

A contracted unit must be capable of achieving the full contracted capacity within the Time to Full Delivery of 10 minutes this is inclusive of Notice to Offer (NTO) or Notice to Bid (NTB) parameters. Whilst NTO/NTB can be set as low as 0 minutes, the Grid Code allows an NTO/NTB of 2 minutes (see BC2.7.3).

Note that the contracted BR unit is also expected to cease delivery of the BOA within 10 minutes (NTO/NTB time does not apply in the cessation of the BOA).

Positive Balancing Reserve Example*

For a generator (or a unit with only positive output):**

Time to full delivery (minutes) = Contracted PBR capacity (MW) / Run up rate Export (MW/min)

For a supplier (or a unit with only negative output):

Time to full delivery (minutes) = Contracted PBR capacity (MW) / Run down rate Import (MW/min)

For a bi-directional unit:

(If FPN ≥ 0)

Time to full delivery (minutes) = Contracted PBR capacity (MW) / Run up rate Export (MW/min)

(If FPN < 0)

Time to full delivery (minutes) = Contracted PBR capacity (MW) / Run down rate Import (MW/min)

The Check:

Time to Full Delivery + NTO* ≤ 10 minutes**

*Run up is replaced with run down and vice versa for Negative Balancing Reserve to calculate the time to full delivery.

**Where units have multiple run-up or run-down rates then one, two or three rates are used for the relevant parts of the contracted quantity (where applicable) – see detailed example 3 for more information.

***For NBR NTB will be used in place of NTO, where the unit is delivering from a 0MW FPM, NDZ will be used.

Dynamic Parameter definitions:
FPN – Final Physical Notification, MEL – Maximum Export Limit, SEL – Stable Export Limit, MIL – Maximum Import Limit, SIL – Stable Import Limit, PA – Power Available.

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Performance Monitoring

Dispatch Flexibility

A contracted unit must be capable of being dispatched during contracted service windows in accordance with the following rules:

- being dispatched from any prevailing Stable Export Limit or Stable Import Limit (which for the avoidance of doubt may be 0MW) or from any other higher level of Output or Demand
- being dispatched for all or part of its Contracted Quantity and in one or multiple consecutive increments of one 1MW
- being dispatched for a single or multiple consecutive periods each of not less than 1 minute duration (representing a minimum activation period) which for these purposes shall exclude Ramping Periods
- Exceptions apply for units providing PBR from an FPN of 0, where the units may be dispatched from a SEL of up 25MW and for a period of up to 5 minutes as dictated by their MNZT

Positive Balancing Reserve

For a generator (or a unit with only positive output):

FPN ≥ SEL, or FPN = 0 and SEL ≤ 25 MW

For a supplier (or a unit with only negative output):

No additional check required*

For a "through-zero" unit:

If FPN > 0, FPN ≥ SEL,

If FPN = 0 then SEL ≤ 25 MW

If FPN < 0**, SIL = 0,-1 and SEL = 0,1

*BR contracted providers delivering from a negative FPN should ensure that their SIL does not impede their ability to be flexibly dispatched for all or part of the contracted quantity – this capability will be monitored via the availability check.

**When prequalifying for Balancing Reserve providers will self-declare whether they are a generator, supplier or a "through-zero" unit. If declared as a through-zero unit SIL and SEL should routinely be 0,1 or -1 to avoid failing this check when delivering BR from an FPN<0.

Dynamic Parameter definitions:
FPN – Final Physical Notification, MEL – Maximum Export Limit, SEL – Stable Export Limit, MIL – Maximum Import Limit, SIL – Stable Import Limit, PA – Power Available.

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Performance Monitoring

Dispatch Flexibility

A contracted unit must be capable of being dispatched during contracted service windows in accordance with the following rules:

- being dispatched from any prevailing Stable Export Limit or Stable Import Limit (which for the avoidance of doubt may be 0MW) or from any other higher level of Output or Demand
- being dispatched for all or part of its Contracted Quantity and in one or multiple consecutive increments of one 1MW
- being dispatched for a single or multiple consecutive periods each of not less than 1 minute duration (representing a minimum activation period) which for these purposes shall exclude Ramping Periods.
- Exceptions apply for units providing NBR from an FPN of 0, where the units may be dispatched from a SEL of up 25MW and for a period of up to 5 minutes as dictated by their MNZT

Negative Balancing Reserve

For a generator (or a unit with only positive output):

No additional check required*

For a supplier (or a unit with only negative output):

FPN ≤ SIL, or FPN = 0 and SIL ≥ -25

For a "through-zero" unit:

If FPN > 0, SIL = 0,-1 and SEL = 0,1

If FPN = 0 then SIL ≥ -25

If FPN < 0, FPN ≤ SIL

*BR contracted providers delivering from a positive FPN should ensure that their SEL does not impede their ability to be flexibly dispatched for all or part of the contracted quantity – this capability will be monitored via the availability check.

Dynamic Parameter definitions:
FPN – Final Physical Notification, MEL – Maximum Export Limit, SEL – Stable Export Limit, MIL – Maximum Import Limit, SIL – Stable Import Limit, PA – Power Available.

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Incremental Volume Cost (IVC)

The IVC is a penalty amount levied on BR contracted units which are determined by NESO to have failed the BR availability checks due to reasons of Commercial Unavailability.

The IVC is calculated in accordance with the formula in the BR service terms and NESO interpretation where the service terms are not specific.

There are two IVCs calculated for each Settlement Period – one which applies to PBR contracts deemed to be commercially unavailable and one for NBR contracts deemed to be commercially unavailable.

"Incremental Volume Cost"	for a **Settlement Period**, the amount calculated as the higher of: (1) (A multiplied by B multiplied by 0.5) minus C and (2) zero Where: A is the highest accepted **Offer Price** or **Bid Price** in the **Balancing Mechanism** in that **Settlement Period** (ignoring any system-tagged **Bid-Offer Acceptance** and any **Bid-Offer Acceptance** issued in error), or (if higher) any price for that **Settlement Period** agreed by **NGESO** and its counterparty pursuant to a grid trade under a Grid Trade Master Agreement; B is the **Contracted Quantity**; C is the settlement value calculated for that **Settlement Period** pursuant to Schedule 2 to these **BR Service Terms** which would otherwise have been payable to the **Service Provider** but for the operation of paragraph 15.2 and Schedule 2 to these **BR Service Terms**;

Figure: Excerpt from BR Service Terms

Incremental Volume Cost (IVC)

Rules for calculating Incremental Volume Cost for NBR:

1) Only consider actions from the **Sell Stack** for NBR - these are the actions with a negative volume.

2) As Negative bid prices are expensive for NESO we should search for the **lowest price** in the sell stack.

3) Remove all system flagged bids.

4) Remove actions that have flowed through from DISBSAD (Sell trades on the interconnectors taken by ESO for energy reasons).

5) Remove actions taken in error (where DMAT is set to 0).

6) Adjust the figure to be a £/MW/SP rather than £/MWh.

7) Subtract the clearing price for NBR from the result and floor at £0.

Rules for calculating Incremental Volume Cost for PBR:

1) Only consider the actions from the **Buy Stack** for PBR – these are the actions with a positive volume.

2) As Positive offer prices are expensive for NESO we should search for the **highest price** in the buy stack.

3) Remove all system flagged offers.

4) Remove actions that have flowed through from DISBSAD (Trades and NBM actions from OFR via PAS dispatches). Although trades could be included, they only set the PBR IVC 0.5% of the time, so we have decided to remove all trading actions.

5) Remove actions taken in error (where DMAT is set to 0).

6) Adjust the figure to be a £/MW/SP rather than a £/MWh.

7) Subtract the clearing price for PBR from the result and floor at £0.

8) If the IVC for the half hour ends up being higher than £500/MW/SP, cap it at £500/MW/SP.

Performance Monitoring

Excessive pricing

NESO has implemented the Excessive Pricing Service Term clause, drawing on insights gained from other Balancing Services. It seeks to ensure that BR units remain available through contracted periods and do not intentionally deter NESO from dispatch by submitting excessively high or low pricing

BM- Balancing Mechanism, SP- Settlement period

The formula

For the purpose of monitoring, our tool considers whether a unit bid/offer price submitted is excessively high/low when compared to the calculated statistical threshold value for the relevant fuel category in a particular settlement period.

The Price Threshold Formula we apply (which NESO reserves the right to review periodically) is as follows:

- The BM Bid Price Threshold Formula is:

= Median BM Bid (for the relevant SP and unit fuel category) - 3 * the Standard Deviation (for the relevant SP and unit fuel category)

- The BM Offer Price Threshold Formula is:

= Median BM Offer Price (for the relevant SP and unit fuel category) + 3 * the Standard Deviation (for the relevant SP and unit fuel category)

Note: These formulas are used to define the thresholds that help NESO assess whether the BM Bid Price or BM Offer Price may be excessively high or excessively low, pursuant to Paragraph 5.11 of the BR Service Terms.

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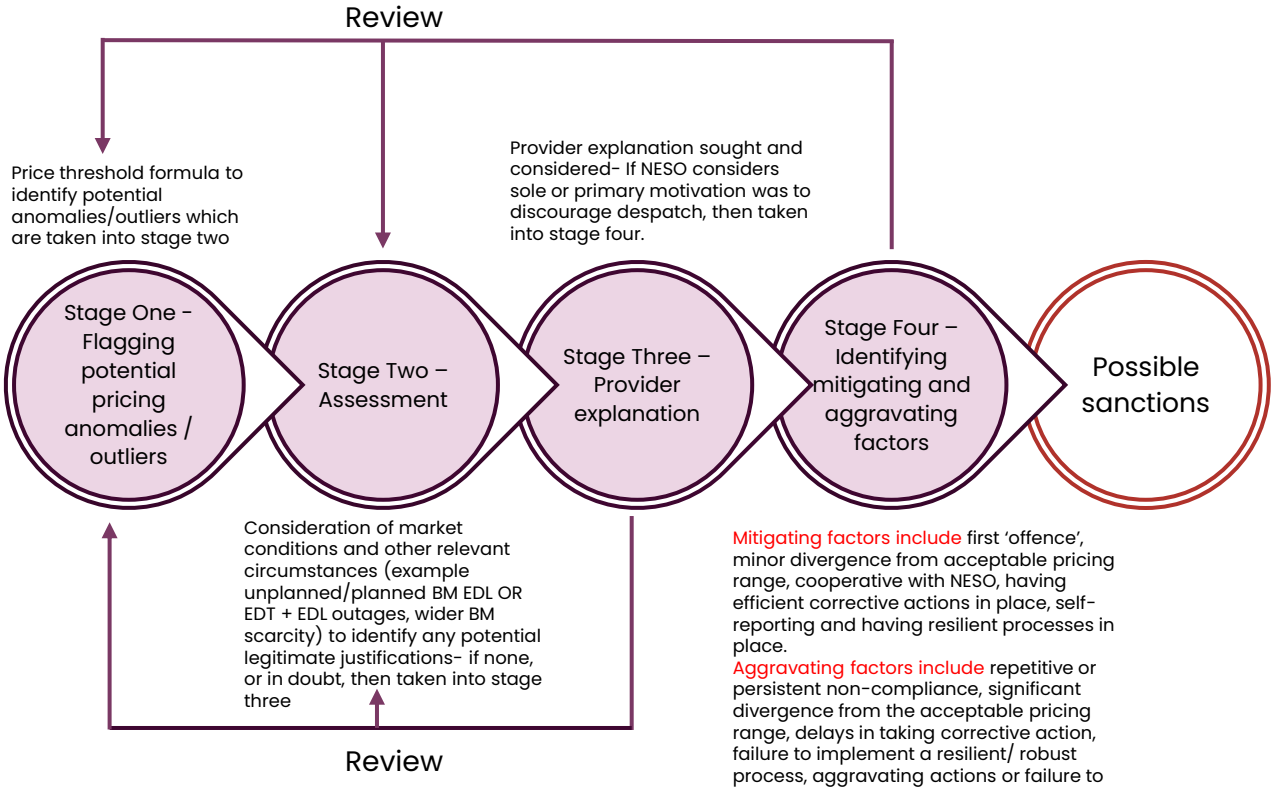
Excessive Pricing – Process flow



Mitigating factors include first 'offence', minor divergence from acceptable pricing range, cooperative with NESO, having efficient corrective actions in place, self-reporting and having resilient processes in place.

Aggravating factors include repetitive or persistent non-compliance, significant divergence from the acceptable pricing range, delays in taking corrective action, failure to implement a resilient/ robust process, aggravating actions or failure to act in a timely manner after becoming aware of the breach either before or during NESO's investigation

Possible sanctions

- No action
- No availability fee for affected service window
- Refer to Ofgem (via Market Monitoring team)

If same or similar facts in preceding 90 days (same or different asset), then also:

- Deregister relevant asset on SMP from affected service
- Deregister provider on SMP from affected service
- Deregister provider on SMP for all services

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Settlement

Availability Payments

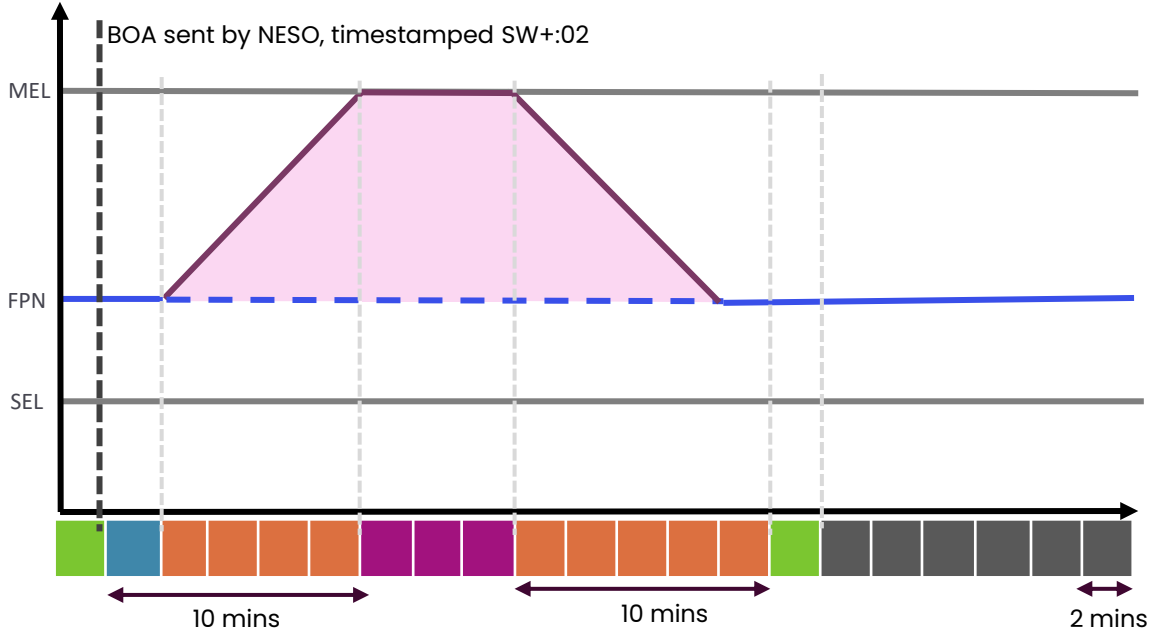
Availability Payments

- The day ahead BR auction is Pay-as-Clear and uses EAC infrastructure.
- Forty-eight 30-minute service windows for both Positive Balancing Reserve and Negative Balancing Reserve.
- Market participants submit their availability prices and BR offered volumes before 14:00 Gate Closure time.
- NESO submits a buy order which represents the willingness to pay for a given volume of firm BR volume.
- An auction is conducted by auction partners NSIDE using the same auction as for EAC.
- A cohort of accepted sell orders and buy orders is determined to maximise market welfare.
- A clearing price is determined to maximise market welfare whilst minimising total cost of procurement.

Availability payments are made by NESO's settlements team to successful market participants.

Detailed information about the day ahead auction can be found in this market explainer document.

Utilisation Payments



Final Physical Notification
Maximum Export Limit/ Stable Export Limit
BOA sent by NESO
Available to be dispatched, contracted through DA auction
Notice to Offer (NTO)
Maximum ramping time
Delivering against BOA
Next service window
Offer volume (in MWh)

Utilisation Payments

- Utilisation of BR is through bids and offers in the BM.
- Holding a BR contract is not a guarantee of dispatch – in some periods reserve will not be required, or the unit may not adequately meet the system need (e.g. we may not be able to dispatch units located behind constraints).
- Submitted dynamic parameters, MEL, SEL and FPN should reflect contract terms.

Payments for utilisation are made from Elexon via the usual BOA settlements processes.

Detailed information about trading charges can be found in
Elexon BSC - Trading Charges

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Get in touch

Email us with your views on this guidance document:

box.futureofbalancingservices@neso.energy

And one of our team members will get in touch

Access our current Reserve documents here:

Balancing Reserve

Quick Reserve

Slow Reserve

Short Term Operating Reserve

Connect with us on social media:

X

LinkedIn

YouTube

Appendix

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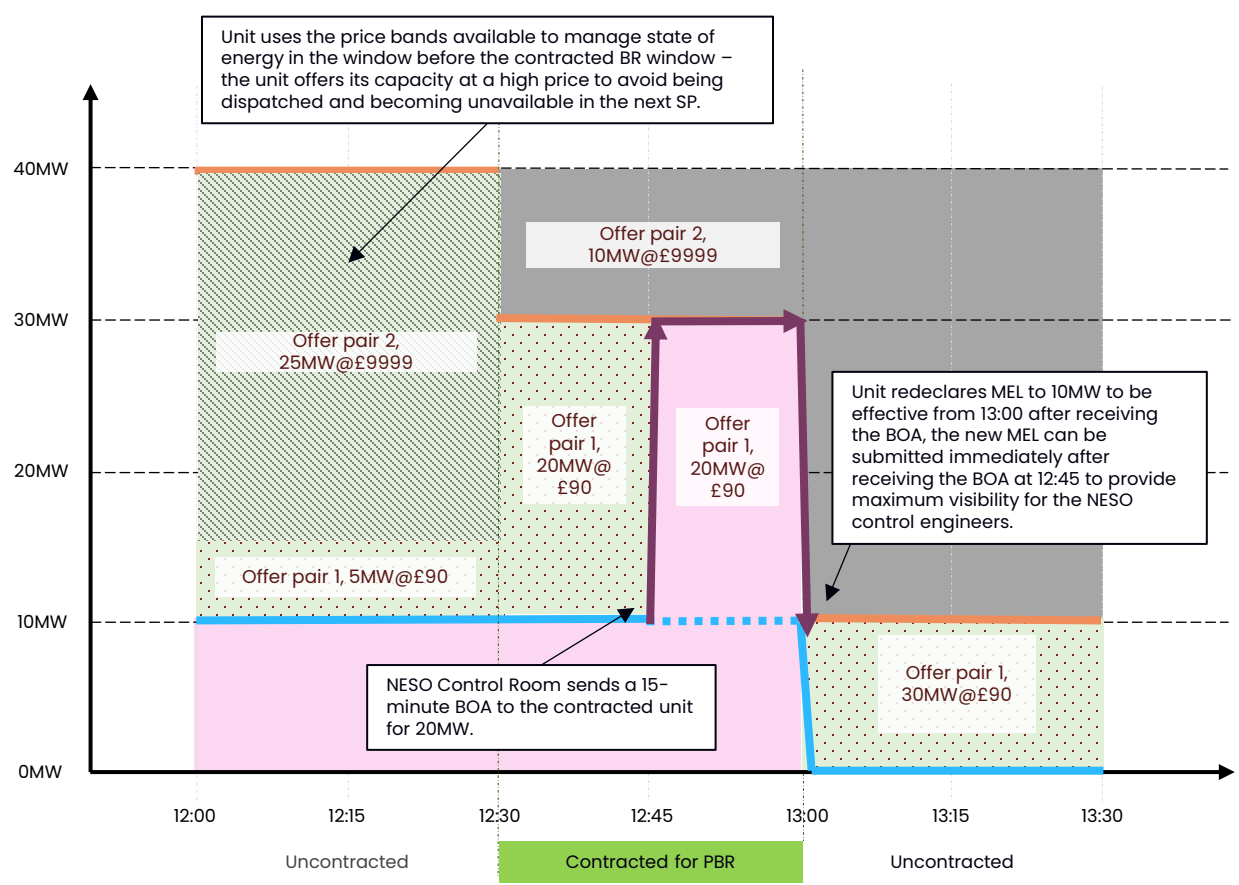
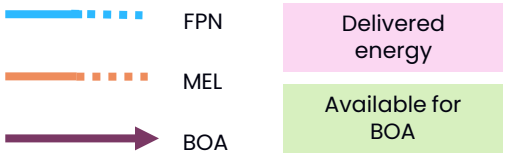
A. Performance Monitoring - Examples

Example 1 – using price bands to manage state of energy (30-minute rule)



Unit characteristics

- The BESS has a maximum generation capacity (GC) of 40MW.
- The unit has submitted a run up rate of 40MW/minute. (although is assumed to ramp instantaneously)
- The unit does not have any response contracts.
- The unit is contracted for 20MW of Positive Balancing Reserve in BR Service Window 28.
- **At 12:00 the unit has 20MWh of stored energy available for discharge.**
- Settlement metering for SP26 (12:30 – 13:00) = 9.9MWh (a small under delivery)



Unit revenue

- The clearing price for SP26/SW28 in the DA BR auction was £15/MW/hour. For the contracted window the provider expects to be paid (£15*20)/2 = £150.
- The offer price of £9999/MWh for Offer pair 2 protects the provider from incurring an IVC penalty for not having available PBR capacity in SW28 due to state of energy limitations.

Example 1 – performance monitoring

Performance check (PBR) SP26:

Availability

→ MEL – FPN ≥ 20MW
→ (30 – 10) ≥ 20
→ **CORRECT**

This unit has slightly underdelivered: Settlement Metering = 9.9MWh but FPN + Offer volume = 10MWh. However, this is within the 5% tolerance and so there is no impact on the units' availability payments for BR. Any BOA under delivery may still be penalised under the BSC.

Utilisation

→ Settlement Metered volume – FPN volume >= Expected Output*0.95
→ 9.9 - 5 ≥ (5)*0.95
→ **CORRECT**

Time to full delivery

→ Contracted quantity / Run up Rate + NTO <= 10 minutes
→ (20 / 40) + 2 <= 10
→ 2.5 <= 10
→ **CORRECT**

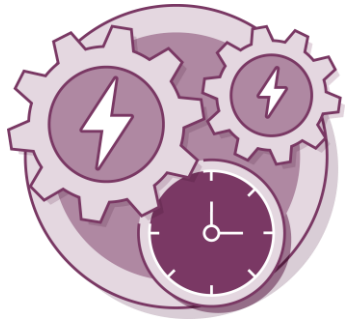
Flexible dispatch

→ FPN ≥ SEL (if FPN >0)
→ SEL= 0MW for this BESS BMU
→ **CORRECT**

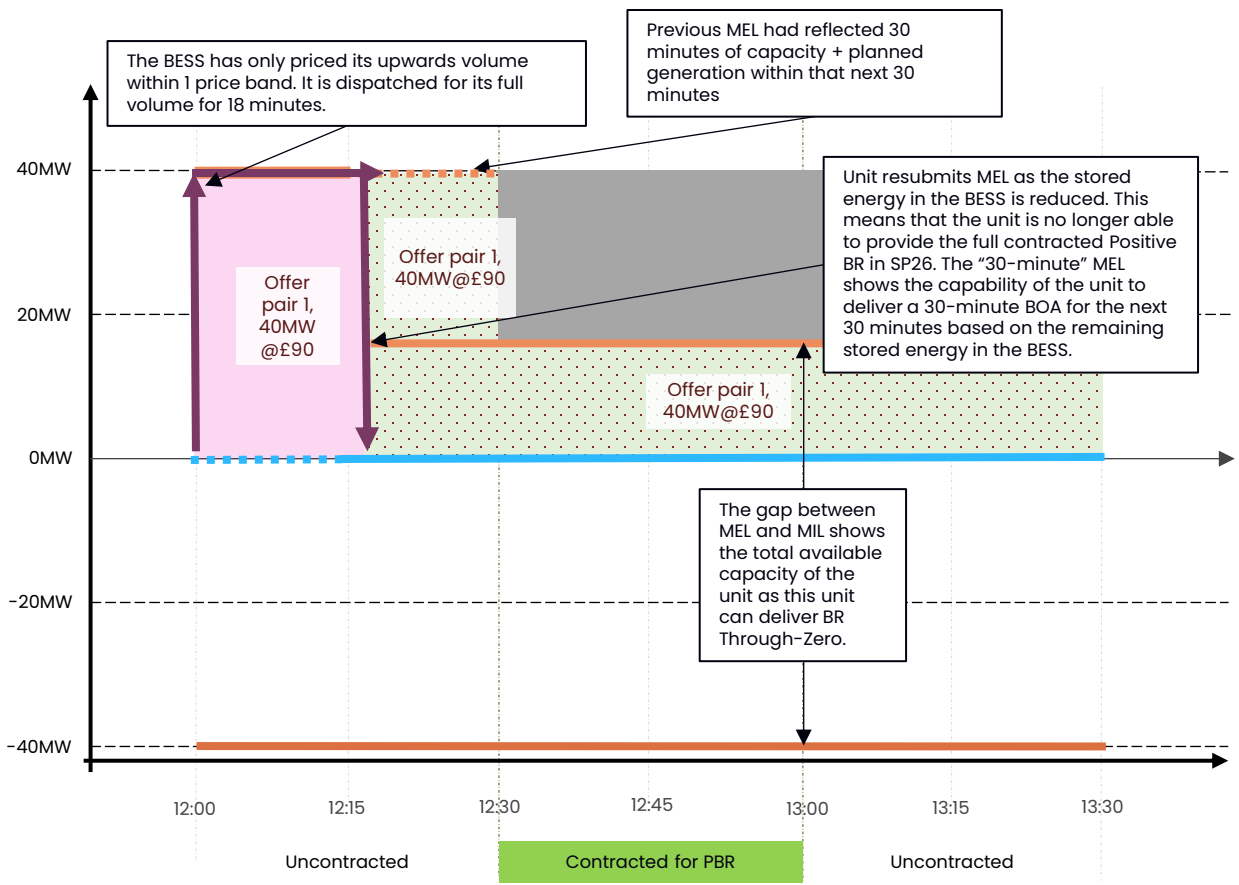
Unit revenue

- The unit passed all 4 of the performance monitoring checks.
- BR Availability payment = £150
- BM Offer payment = 20MW*0.25hour*£90/MWh = £450

- Total revenue (BOA + BR availability payments) from 12:00 – 13:30 = £600

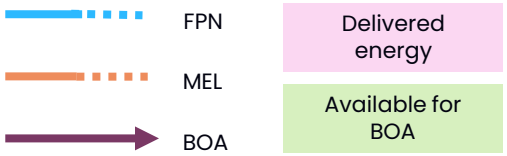


Example 2 – Commercial Unavailability and the Incremental Volume Cost (IVC)



Unit characteristics

- The BESS has a maximum generation capacity (GC) of 40MW.
- The unit has submitted a run up rate of 40MW/minute. (although is assumed to ramp instantaneously)
- The unit does not have any response contracts.
- The unit is contracted for 20MW of Positive Balancing Reserve in BR Service Window 28.
- At 12:00 the unit has 20MWh of stored energy available for discharge.
- Settlement metering for SP26 (12:30 – 13:00) = 0MWh



Unit revenue

- The clearing price for SP26/SW28 in the DA BR auction was £10/MW/hour. For the contracted window the provider expects to be paid (£10*20)/2 = £100.
- The offer the unit received at 12:00 allowed total revenue of 40*0.3*£90 = £1,080.

Example 2 – performance monitoring

Performance check (PBR) SP26:

Availability
→ MEL – FPN ≥ 20MW
→ (16 – 0) ≥ 20
→ **INCORRECT**

Availability Type Check (only conducted when a unit fails the Availability Check)
→ If MEL – MIL ≥ 20MW
→ 16 – (-40) ≥ 20
→ 56 ≥ 20 → **COMMERCIAL UNAVAILABILITY**

If a unit is deemed to be commercially unavailable for BR, then the Incremental Volume Cost (IVC) penalty is applied.

Utilisation → **PBR NOT CHECKED**

Time to full delivery → **CORRECT**

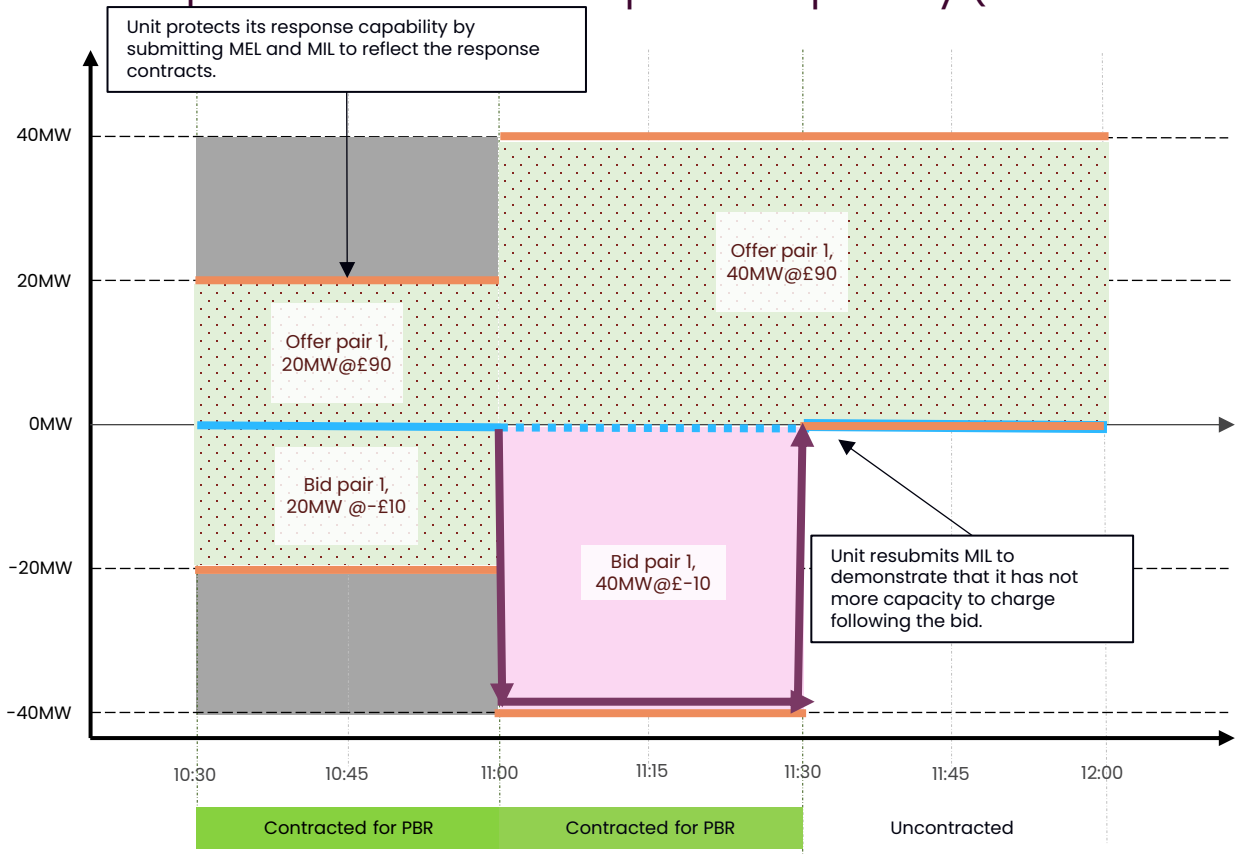
Flexible dispatch → **CORRECT**

Unit revenue

- The unit failed the check on availability. 100% of the BR availability is withheld.
- BR Availability payment = £0
- Incremental Volume Cost for PBR was calculated as £55/MW/SP for this SP.
- Total IVC charge = £55*20 = -£1100
- BM Offer payment = £1,080
- Total revenue from BR & BM from 12:00 – 13:30 = **-£20**

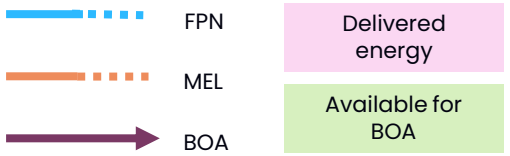
Note:
To avoid incurring this penalty charge the unit should structure price bands to avoid being dispatched in the uncontracted window immediately before their contracted window.
It may be difficult to price in the impact of an IVC penalty charge as it is calculated ex post based on actions taken within the specific settlement period in question.

Example 3 – contracted response capability (30 minute rule)



Unit characteristics

- The BESS has a maximum generation capacity (GC) of 40MW.
- The unit has submitted a run up and run down rate of 40MW/minute. (although is assumed to ramp instantaneously)
- The unit has a DCL and DCH contract for EFA 3 each for 15MW.
- The unit is contracted for 20MW of Positive Balancing Reserve in BR Service Window 25.
- At 10:30 the unit has 20MWh of stored energy available for discharge.
- Settlement metering for SP22 (10:30 – 11:00) = 0MWh [high and low response contracts cancel each other out in this example]
- Settlement metering for SP23 (11:00 – 11:30) = -20MWh



Example 3 – contracted response capability (30 minute rule)

Performance check (PBR) SP23:

Availability

→ MEL – FPN ≥ 20MW
→ (40 – 0) ≥ 20
→ **CORRECT**

Utilisation

→ Settlement Metered volume >= (BOA + FPN volume)*0.95
→ net negative BOA volume → **PBR NOT CHECKED**

Time to full delivery

→ Contracted quantity / Run up Rate + NTO <= 10 minutes
→ (20 / 40) + 2 <= 10
→ 2.5 <= 10
→ **CORRECT**

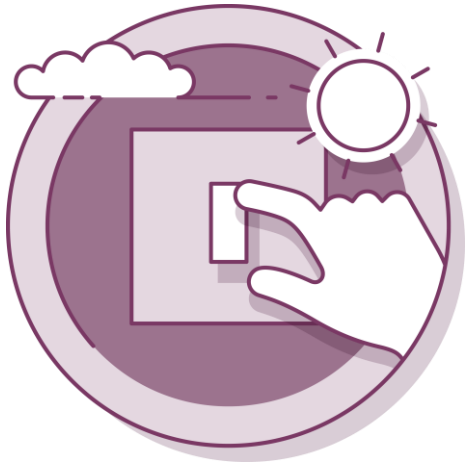
Flexible dispatch

→ FPN ≥ SEL (if FPN >0)
→ SEL= 0MW for this BESS BMU
→ **CORRECT**

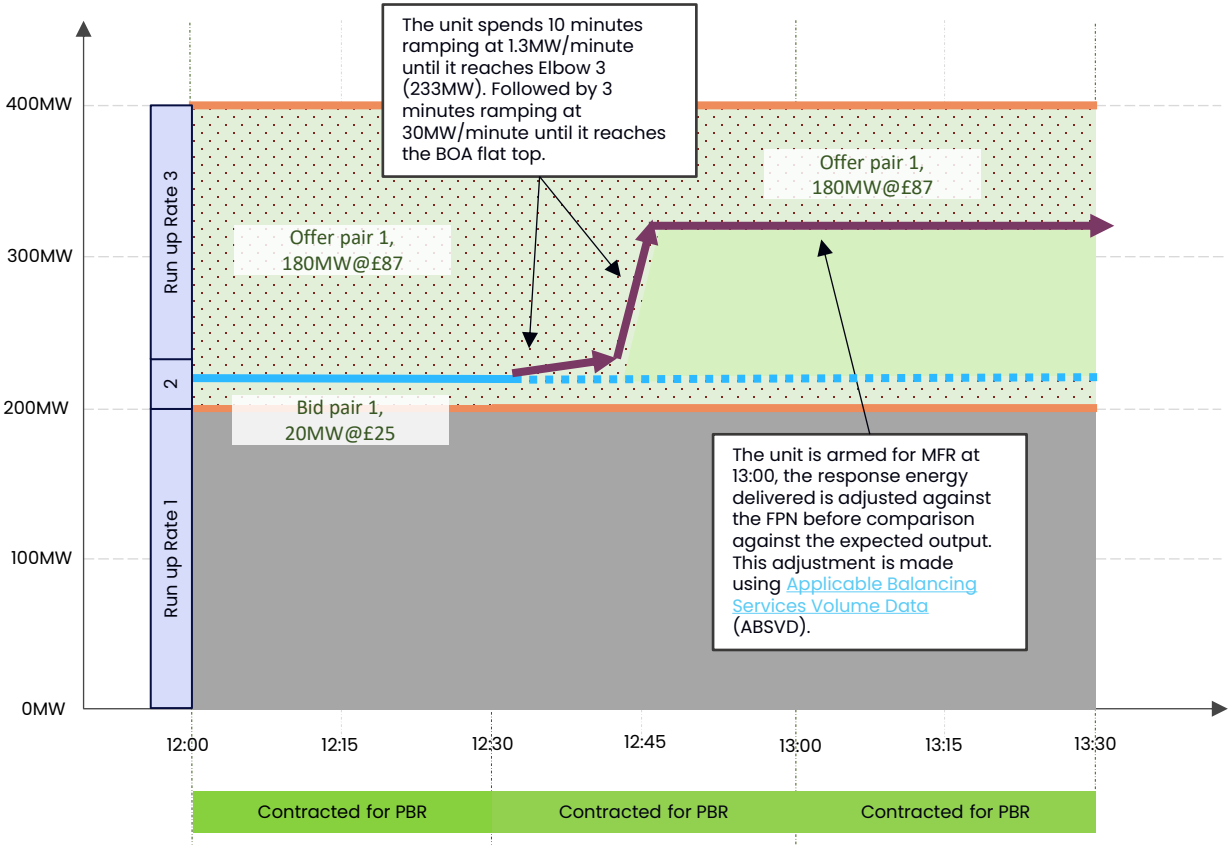
Unit revenue

- The unit passed all 4 of the performance monitoring checks.
- BR Availability payment = £270
- BM bid payment = -40MW*0.5hour*-£10/MWh = £200
- DCL revenue for 10:30 – 11:00 = 15MW*0.5hour*£0.58/MW/hr = £4.35
- DCH revenue for 10:30 – 11:00 = 15MW*0.5hour*£1.98/MW/hr = £14.85

- Total revenue from ESO from 10:30 – 12:00 = £489.20



Example 4 – ramp rate checks



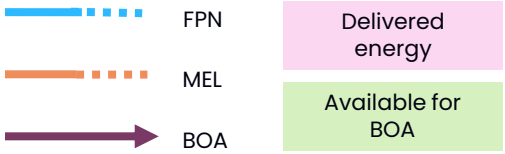
Unit characteristics

- This CCGT unit has a maximum generation capacity of 400MW and a SEL of 200MW.
- The unit is contracted for 50MW of Positive BR
- Settlement metering for SP25 (12:00 – 12:30) = 110MWh
- Settlement metering for SP26 (12:30 – 13:00) = 139.08 (2dp)MWh
- Settlement metering for SP27 (13:00 – 13:30) = 161.5MWh
- ABSVD for SP27 (13:00 – 13:30) = 5MWh

Ramp Rates and Elbow Points:

- Run up Rate 1: 10MW/min (0 – 200)
- Run up Rate 2: 1.3MW/min (200 – 233)
- Run up Rate 3: 30MW/min (233 – 400)

Where run up Elbow 2 is 200 and Elbow 3 is 233.



Detailed example 4 – ramp rate checks

Performance check (PBR) SP25, 26, 27

Availability
→ MEL – FPN ≥ 50MW
→ (400 – 220) ≥ 50
→ **CORRECT**

Time to full delivery
→ Contracted quantity at Rate 2 / Run up Rate 2 + Contracted quantity at Rate 3 / Run up Rate 3 + NTO <= 10 minutes
→ (13 / 1.3) + (37 / 30) + 2 <= 10
→ 13.2$\dot{3}$ <= 10
→ **INCORRECT**

Flexible dispatch
→ FPN ≥ SEL (if generator)
→ 220 ≥ 200
→ **CORRECT**

Unit revenue

- The total PBR contracted volume of 50 is split across 2 run up rates.
- This unit has overcommitted PBR volume achievable in 10 minutes from its 220MW FPN. It would have been better off operating from an FPN >=233 where it could take advantage of its faster ramp rates.
- The unit will not receive availability payment for the PBR contract in any of the contracted windows.

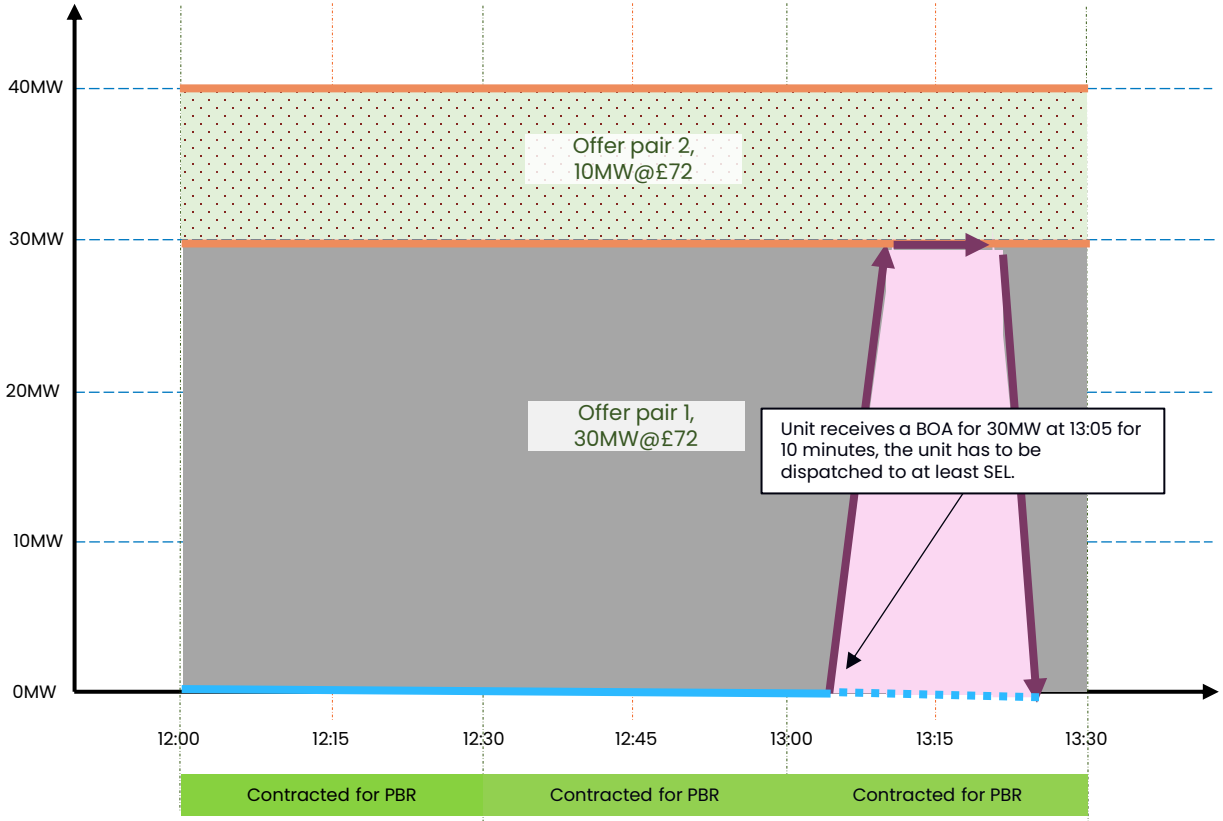
Performance check (PBR) SP25
Utilisation
→ Expected output = 0
→ **NOT CHECKED**

Performance check (PBR) SP26
Utilisation
→ Settlement metering – FPN volume ≥ Expected output * 95%
→ 139.08 – 110 ≥ -29.08*0.95
→ **CORRECT**

Performance check (PBR) SP27
Utilisation
→ ABS(161.5 – (110 + 5)) ≥ ABS(51.5*0.95)
→ **CORRECT**

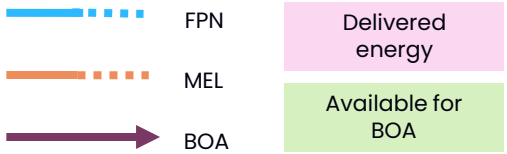
ABSVD volume has been applied to make an adjustment to the FPN volume. This removes the effect of response energy from the check.

Detailed example 5 – dispatch flexibility



Unit characteristics

- This BM unit has a maximum generation capacity of 40MW and a SEL of 30MW.
- The unit has submitted a run up and run down rate of 8MW/minute.
- The unit is contracted for 10MW of Positive Balancing Reserve
- Settlement metering for SP25 (12:00 – 12:30) = 0MWh
- Settlement metering for SP26 (12:30 – 13:00) = 0MWh
- Settlement metering for SP27 (13:00 – 13:30) = 3.2MWh



Detailed example 5– dispatch flexibility

Performance check (PBR) SP25, 26, 27

Availability
→ MEL – FPN ≥ 10MW
→ (40 – 0) ≥ 10
→ **CORRECT**

Time to full delivery
→ Contracted quantity / Run up Rate + NTO <= 10 minutes
→ (10 / 8) + 2 <= 10
→ 3.25 <= 10
→ **CORRECT**

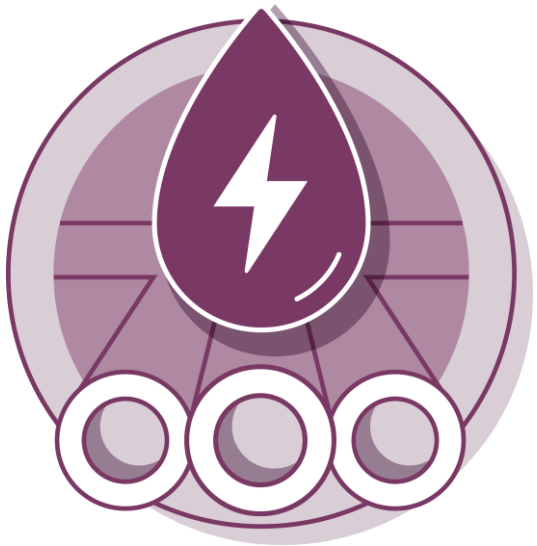
Flexible dispatch
→ FPN ≥ SEL (if generator)
→ 0 ≥ 30
→ **INCORRECT**

Unit revenue

- This unit has failed the dispatch flexibility check as it cannot be dispatched incrementally between its FPN of 0MW and its SEL of 30MW. This means that the contracted reserve is not flexible.
- The unit should deliver Positive Balancing Reserve from its SEL of 30MW, it could then be incrementally dispatched between FPN=SEL=30MW and its MEL of 40MW.
- The unit will not receive availability payment for the PBR contract in any of the contracted windows.

Performance check (PBR) SP25, 26
Utilisation
→ Expected output = 0
→ **NOT CHECKED**

Performance check (PBR) SP27
Utilisation
→ 3.2 – 0 ≥ 3.2*0.95
→ **CORRECT**



Detailed example 6a : Excessive Pricing

Context

Provider **A** – Unit X wins a Balancing Reserve Contract for the 09 Dec 2025
Settlement Period 31
BM Offer price: £415
Technology type: Battery

Note: the provided example and values are purely illustrative and should not be considered factually accurate

NESO Assessment

Stages	Detail
Stage One - Flagging potential pricing anomalies / outliers	Price Threshold Formula results is £336.37 Offer price is greater than threshold, stage 2 assessment is required
Stage Two – Assessment	Consideration of market conditions and other relevant circumstances. Day Ahead Nordpool Price = £330.07 Average Intraday price = £977.92 Peak BM Price = £5,750 On the 9th December 2025, a day of tight margins. Average Intraday price was higher than the BM offer price of £415. Which can be understood as Provider A was pricing accordingly to market conditions. No further assessment is required.

Outcome → No action

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Detailed example 6b : Excessive Pricing

Context

Provider **B** – Unit Y wins a Balancing Reserve Contract for the 10th Dec 2025
Settlement Period 31
BM Offer price: £9,999
Technology type: OCGT

Note: the provided example and values are purely illustrative and should not be considered factually accurate

NESO Assessment

Stages	Detail
Stage One – Flagging potential pricing anomalies / outliers	Price Threshold Formula results is £373.94 Offer price is greater than threshold.
Stage Two – Assessment	Consideration of market conditions and other relevant circumstances. Day Ahead Nordpool Price = £104.42 Average Intraday price = £103.16 Peak BM Price = £144.9 Provider B offer pricing exceeded market prices. Non unplanned/planned EDL BM outages observed that could have impede provider to adjust MIL/MEL to reflect unavailability.
Stage Three – Provider explanation	Provider B declared that BM price was used to discourage BOA.
Stage Four – Identifying mitigating and aggravating factors	This was the first offence from Provider B and after becoming aware of the failure provider has put corrective action

Outcome → No availability fee for affected service window.
Incident recorded in case of further breaches

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B. Acronyms

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Acronyms

ABSVD	Applicable Balancing Services Volume Data
API	Application Program Interface
AVAL	Settlements Code for Availability
BESS	Battery Energy Storage Systems
BM	Balancing Mechanism
BMU	Balancing Mechanism Unit
BOA	Bid Offer Acceptance
BOD	Bid Offer Data
BR	Balancing Reserve
BSC	Balancing and Settlements Code
CCGT	Combined Cycle Gas Turbine
D*	DCH, DCL, DMH, DML, DRH and DRL collectively
DA	Day Ahead
DCH/DCL	Dynamic Containment High/Low
DEP	Digital Engagement Platform
DMAT	De Minimus Acceptance Threshold
DMH/DML	Dynamic Moderation High/ Low
DRH/DRL	Dynamic Regulation High/Low
EAC	Enduring Auctions Platform
EBGL	European Balancing Guidelines
EDL	Electronic Data Logging
EDT	Electronic Data Transfer

Acronyms

EFA	Electricity Forward Agreement
EoD	Event of Default
GC	Grid Code
FPN	Final Physical Notification
IVC	Incremental Volume Cost
IVCP	Settlements Code for IVC Penalty
MEL	Maximum Export Limit
MIL	Maximum Import Level
MNZT	Minimum Non-Zero Time
MZT	Minimum Zero Time
NTB	Notice to Bid
NTO	Notice to Offer
OBP	Open Balancing Program
PA	Power Available
PN	Physical Notification
QR	Quick Reserve
SEL	Stable Export Limit
SIL	Stable Import Limit
SMP	Single Markets Platform
SP	Settlement Period
SR	Slow Reserve
STOR	Short Term Operating Reserve
SW	Service Window
SEL	Stable Export Limit