LCPDelta

Valuing Ancillary Services: GB and Beyond

Power Insights – Report sample

APRIL 2025

Introduction

This report provides a review of the current value of ancillary market services.

It will help you:

- Understand the full suite of ancillary services available to GB power generators including:
  - Frequency Response
  - Reactive Power
  - Restoration
  - Stability
  - Reserve markets
- Identify potential revenue streams by providing the total market value of each service over the previous 5-years
- Allow you to identify potential revenue streams available with a breakdown of requirements
- Give you a historic view of volumes procured and pricing in each market
- Understand the full suite of ancillary services available to international markets including Belgium, Germany, Ireland, Italy, Netherlands and Spain.

LCP Delta can help you maximise revenue streams available in the ancillary markets through our data tools and market forecasting. Get in touch if you would like to find out more.

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Ancillary Services Overview and Market Value

Reactive Power
Frequency Response
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Reserve
Stability
Constraint Management
Demand Flexibility Service

- Included in this report

Reserve

Overview

What is it?

At certain times of day, the NESO require access to additional power sources (Reserve Services) to increase generation or reduce demand. This allows the NESO to manage situations whereby demand is greater than forecasted. The NESO procure this Reserve through:

- **Balancing Reserve:** Procured to ensure that sufficient volumes are available in the Balancing Mechanism (BM) to manage imbalances in supply and demand at the day-ahead stage.
- **Short Term Operating Reserve (STOR):** Used to bridge the gap between Frequency Response activation and the ability to instruct units in the BM and is due to be replaced by Slow Reserve in Q4 2025. STOR is procured through two products:
  - **Committed STOR:** Open to both BM and non-BM units and offers availability and utilisation payments.
  - **Optional STOR:** Open to non-BM units only and only offers utilisation payments.
- **Fast Reserve:** Open to both BM and non-BM units, Fast Reserve provides rapid, reliable delivery of active power and is procured within day through the Optional Fast Reserve Service. This service is intended to end in Dec-25, at which point, Quick Reserve will be fully implemented.
- **Quick Reserve:** A bi-directional service primarily procured for reacting to pre-fault disturbances to restore the energy imbalance quickly and restore system frequency close to 50Hz. Quick Reserve is being implemented in two phases – phase 1 (BM units only) went live in Dec-24, with phase 2 due to be implemented in Summer 2025 (BM and non-BM units).

Live Services (p44 – 53)

- Balancing Reserve
- Short Term Operating Reserve (STOR)
- Fast Reserve
- Optional Fast Reserve
- Optional Spin Gen (Fast Reserve product)
- Quick Reserve Phase 1
- BM Start Up
- Super SEL

Future Services (p69 – 70)

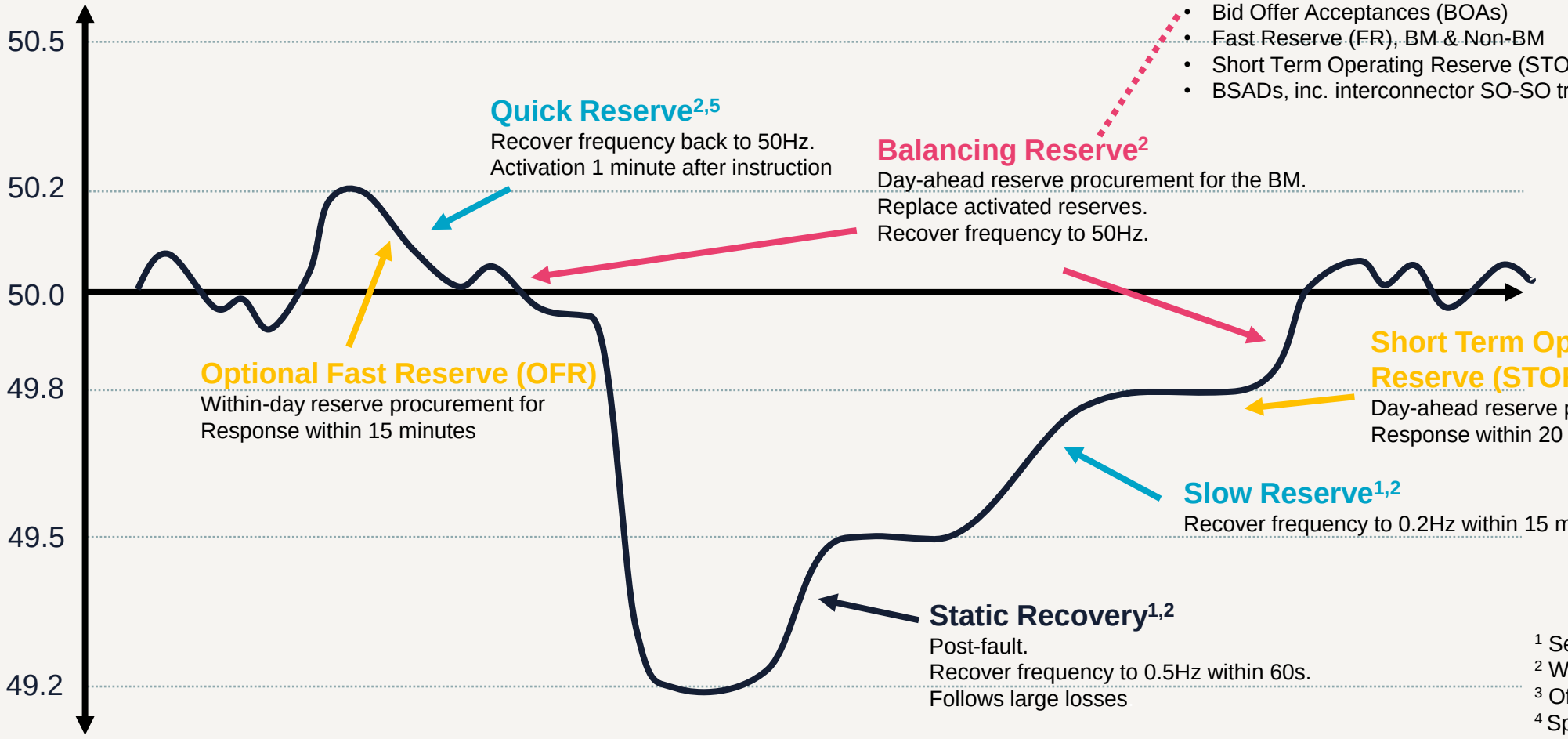
- Quick Reserve Phase 2
- Slow Reserve

Legacy Services (p86)

- Firm Fast Reserve

Reserve Services

Live Services: Response timeline



Balancing Mechanism
Including:
- Bid Offer Acceptances (BOAs)
- Fast Reserve (FR), BM & Non-BM
- Short Term Operating Reserve (STOR), BM & Non-BM
- BSADs, inc. interconnector SO-SO trades

Quick Reserve[2,5]
Recover frequency back to 50Hz.
Activation 1 minute after instruction

Balancing Reserve[2]
Day-ahead reserve procurement for the BM.
Replace activated reserves.
Recover frequency to 50Hz.

Optional Fast Reserve (OFR)
Within-day reserve procurement for
Response within 15 minutes

Short Term Operating Reserve (STOR)
Day-ahead reserve procurement for
Response within 20 minutes

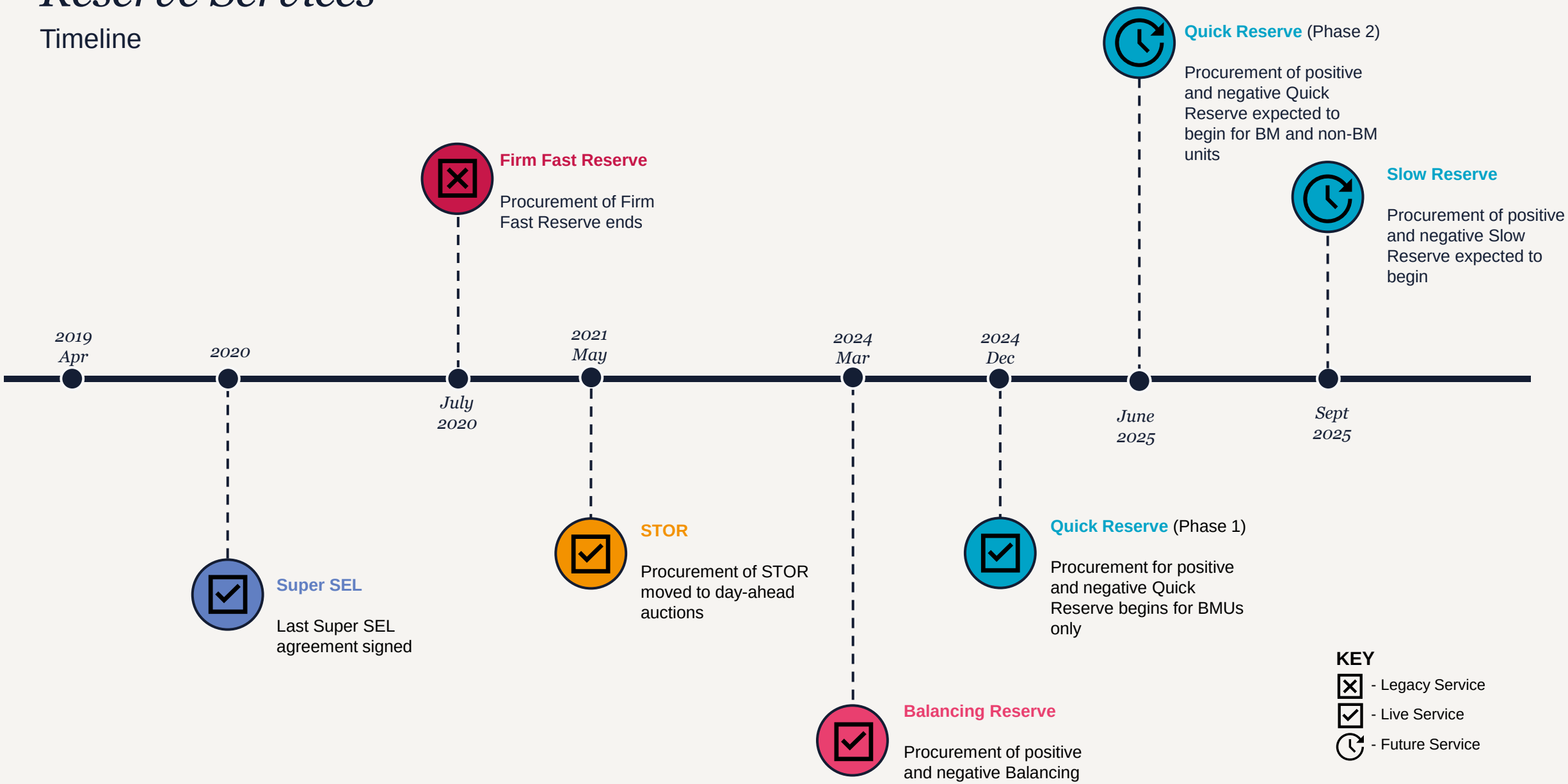
Slow Reserve[1,2]
Recover frequency to 0.2Hz within 15 mins

Static Recovery[1,2]
Post-fault.
Recover frequency to 0.5Hz within 60s.
Follows large losses

[1] Service coming soon.
[2] Within EAC.
[3] Ofgem granted derogation.
[4] Split into high/low services
[5] Phase 2 due summer 2025.

Reserve Services

Timeline



Live Services

Reactive Power
- Obligatory Reactive Power Service
- Enhanced Reactive Power Service
- Voltage Pathfinder – Mersey (Long-Term)
- Voltage Pathfinder – Pennies
- Stability Pathfinder – Phase 1

Frequency Response
- Dynamic Services
- Static Firm Frequency Response – Daily auction
- Mandatory Frequency Response

System Security
- Restoration Tenders
- Restoration Services – South-West & Midlands Tender
- Intertrips
- SO to SO

Reserve
- Balancing Reserve
- BM Start-up
- Short Term Operating Reserve (STOR)
- Fast Reserve
- Optional Fast Reserve
- Optional Spin Gen (Fast Reserve Product)
- Quick Reserve – Phase 1
- Super SEL

Stability
- Stability Pathfinder – Phase 1, 2 & 3

Constraint Management
- Constraint Management Tenders
- Megawatt Dispatch

Demand Flexibility Service
- DFS 2024/25

- Included in this report

Reserve

Balancing Reserve - Positive Balancing Reserve

NESO procures Regulating Reserve to correct energy imbalances on the electricity system and historically, this has been procured through bids and offers in the Balancing Mechanism (BM).

Balancing Reserve (BR) was introduced following exceptionally high balancing costs over Winter-21 and Winter-22. BR allows the NESO to procure Regulating Reserve on a firm basis at day-ahead, helping to reduce balancing costs and improve system security by removing the scarcity rent of accessing this flexibility at short notice within-day and guaranteeing reserve capacity for the control room to access when needed.

To provide Balancing Reserve, service providers must

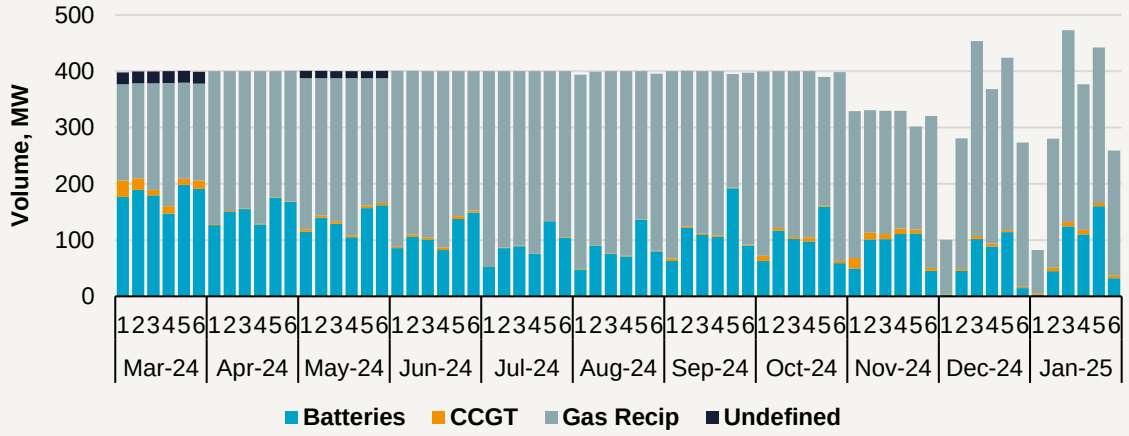
- Be a BM unit
- Have a minimum capacity of 1MW and be able to ramp-up at least 10MW/min
- Have a minimum time to full activation of 10 minutes

The NESO procures both positive and negative BR through the **EAC platform** for each settlement period, with contracted service providers receiving an **availability payment** (£/MW/h) set at the marginal clearing price.

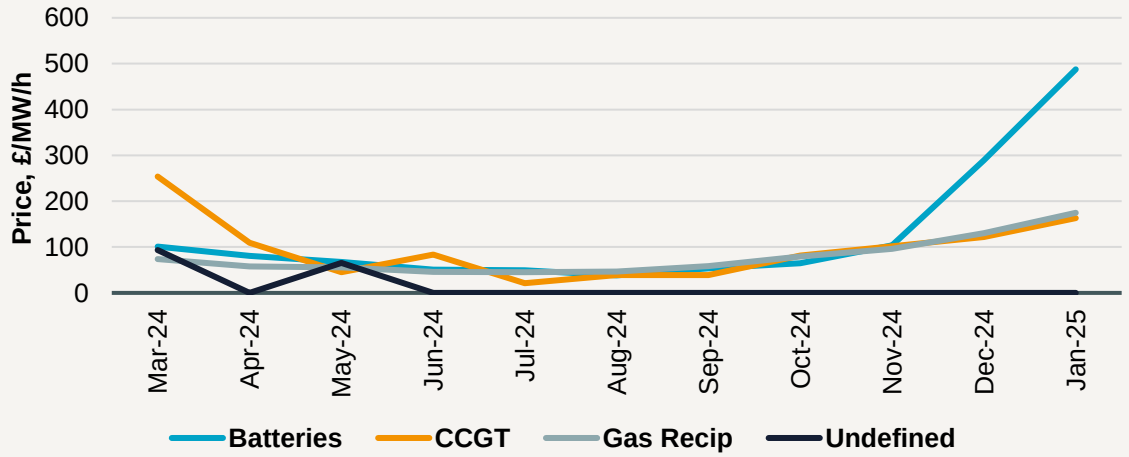
Following concerns regarding positive BR contracted limited-duration (LD) assets submitting "out-of-merit" offer prices (>120% highest accepted energy offer), the NESO implemented penalties for instances where this arises.

From Apr-24, the NESO procured an average 400MW of positive BR per settlement period. In Dec-24, the NESO changed their procurement strategy to have a shaped requirement, reducing the volume in periods identified as lower value and increasing volumes at more valuable times (i.e. the morning and evening peaks, EFA3 & EFA5). This has reduced the procured monthly average to 320MW for positive BR.

Average monthly clearing volumes per EFA block



Average monthly availability prices per technology type



Reserve

Balancing Reserve - Negative Balancing Reserve

Compared with positive BR, the volumes procured for negative BR have been more variable. On average, the NESO has procured around 50-100MW per EFA block of negative BR since Mar-24. However, the maximum volumes that NESO has procured in any single settlement period is also 400MW.

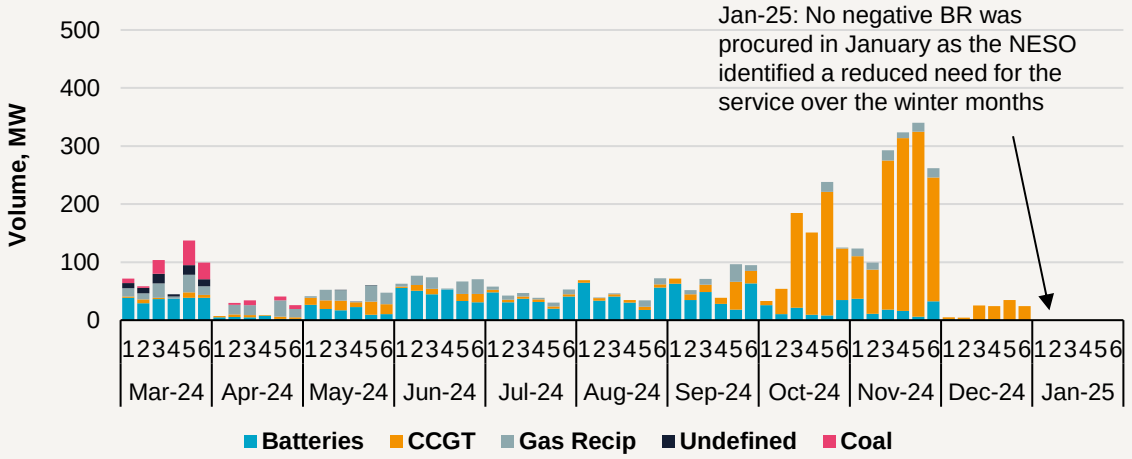
The NESO placed a price cap on negative BR as this type of reserve can often be more easily procured elsewhere at intraday timescales (e.g. by curtailing wind).

Positive BR prices have increased since the service's introduction, while negative BR has remained relatively flat and decreased in Winter-24 due to a drop in procurement volume.

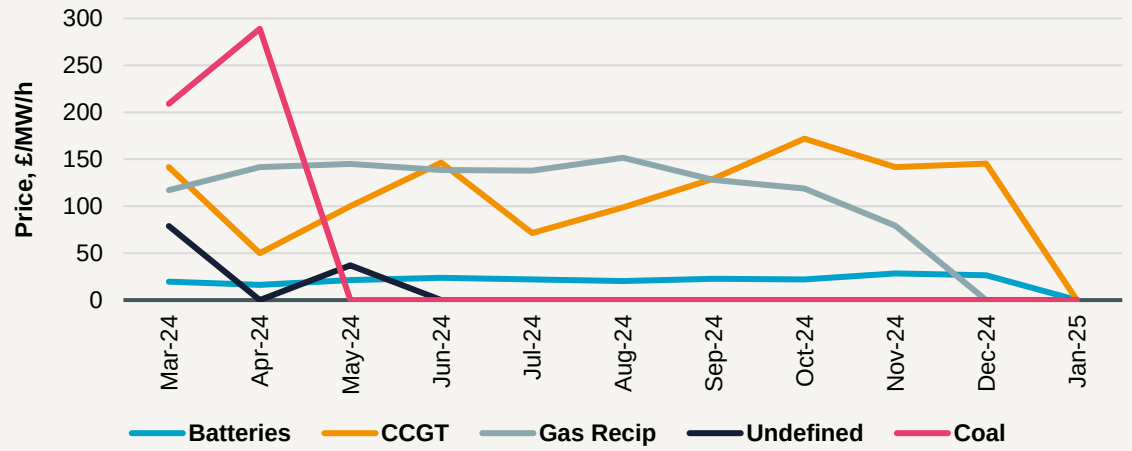
Payment for positive and negative BR:

- **Availability (£/MW/h)** – A single clearing price is determined for each service window. All contracted providers receive this price for the capacity provided across the duration of the service window.
- **Utilisation (£/MWh)** - The NESO can activate the BR service by accepting bids/offers in the BM. Assets are paid for their utilisation at their submitted bid and offer prices in the BM.

Average monthly volumes per EFA block



Average monthly availability prices per technology type



Reserve

BM Start-up

BM Start-up instructs generating units to bring themselves to a state where it's capable of synchronising with the system within BM timescales (89 minutes).

Contracts are brokered individually and are based on generic terms with specific service parameters and costs. Start-up providers can submit changes to their prices once a week.

The BM Start-up service is comprised of two elements:

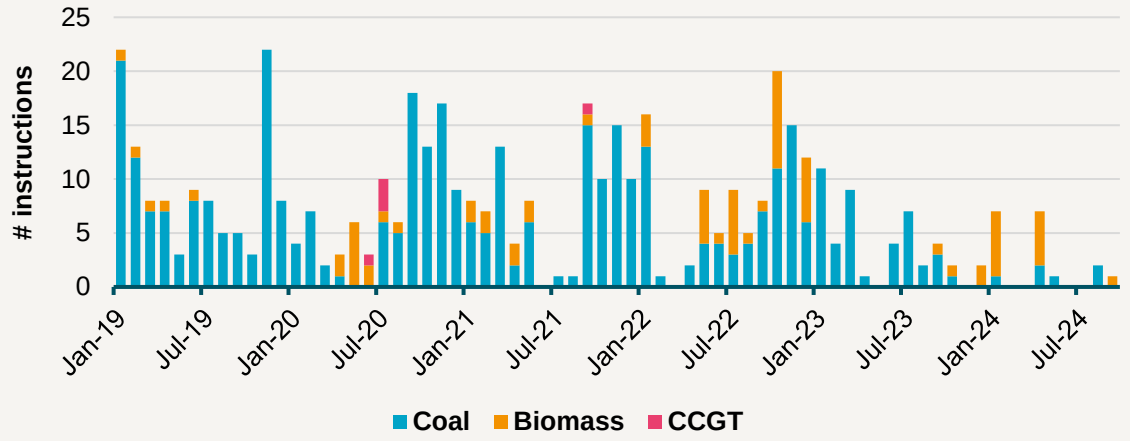
- **Start-up:** the process of readying a unit to synchronise with the system within 89 minutes.
- **Hot standby:** a process which holds the generating unit in this state of readiness either until the end of its capability, or until it's instructed to run via an offer in the BM.

Payment:

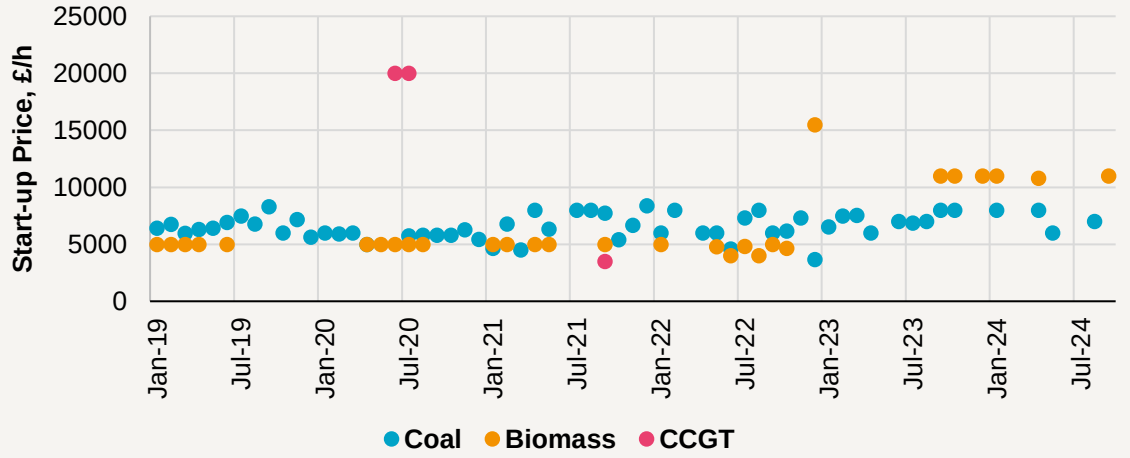
- **BM Start-up (£/h):** This covers the cost of starting the unit and the additional risk that the unit is stood down – and therefore cannot recover its costs in the BM. Payment is made irrespective of whether the unit is synchronised or not and is made for the period of time covered by the start and cease instructions.
- **Hot Standby (£/h):** This covers the cost of holding the unit in readiness.

The NESO are no longer procuring this service.

Number of instructions per month



Average start-up price per month



Reserve

Short Term Operating Reserve – Total Market Value And Volume

Short Term Operating Reserve (STOR) is used to bridge the gap between Frequency Response activation and the ability to instruct units in the BM. STOR has no locational component.

Participating assets must have the capability to:

- offer more than 3MW of generation or (aggregated) steady demand reduction.
- respond to instructions within 20 minutes.
- sustain the response for a minimum of two hours and be able to respond again within 20 hours. (*These conditions may limit the competitiveness of batteries.*)

The spend on STOR mirrors the evolution of wholesale power pries, which peaked in 2022 due to the high level of commodity prices following Russia's invasion of Ukraine. Units which provide STOR cannot use the same generation capacity to enter wholesale and balancing markets and STOR prices reflect the opportunity cost of foregoing generating in these markets.

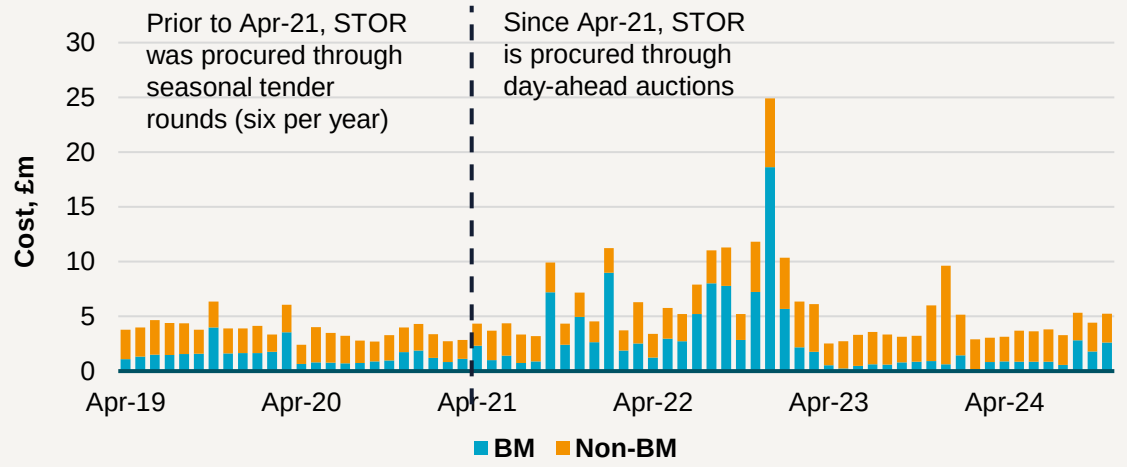
STOR is due to be **phased out** with the introduction of Slow Reserve and the NESO are currently exploring two options for this:

- **Hard stop** (preferred by the NESO): Positive STOR procurement would cease after the Slow Reserve go live and will transition to positive Slow Reserve with full requirement.
- **Phasing out**: Positive STOR procurement will continue until Aug-25. From then, 900MW of STOR and 900MW of Slow Reserve will be procured from Sept-25 until the GMT 2025 clock change, after which, the full 1,700MW volume requirement will be procured from Slow Reserve.

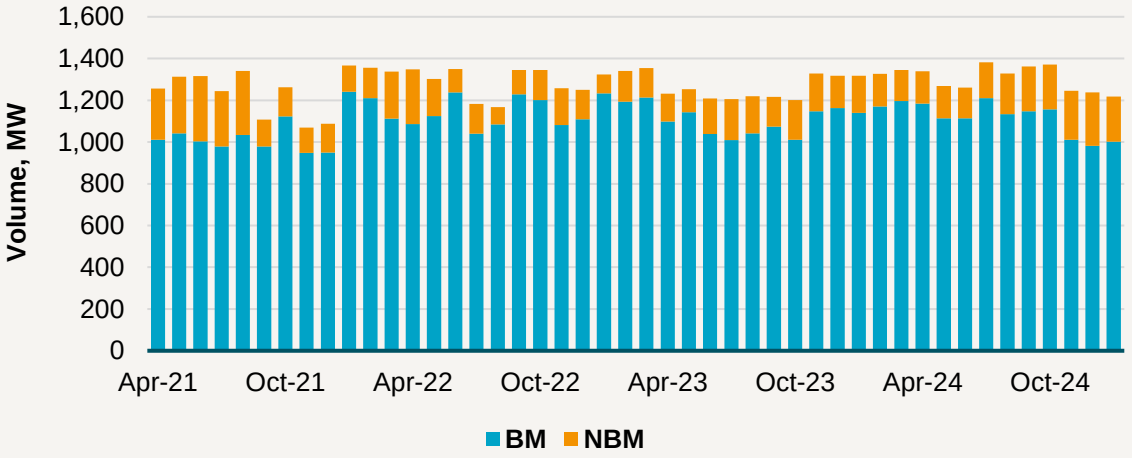
Total yearly NESO spend on STOR

Total	19/20	20/21	21/22	22/23	23/24	24/25
£m	52.6	39.1	66.2	109.4	48.6	32.5

STOR - Total Spend



BM / Non-BM volume



Reserve

Short Term Operating Reserve – Day-Ahead

Since Apr-21, STOR has been procured through daily, pay-as-clear auctions to align with the CEP rules on the procurement of balancing volumes (at the day-ahead stage). Prior to this, STOR was procured via a competitive tender process with three tender rounds held per year. Participants could tender for one or more STOR seasons (with six STOR seasons in each year) with up to two-year contracts being awarded.

Following the expiration of the existing long-term contracts on 31st March 2025, STOR is now procured solely through daily auctions. The NESO have increased the STOR requirement from Apr-25 to 1,700MW, up from 1,650MW in the years prior.

STOR is procured as two products:

Committed STOR:

- is open to assets regardless of participation in the Balancing Mechanism
- makes payments for asset availability (£/MW) and utilisation (£/MWh)
- covers two daily "Committed Windows" (one each in the morning and afternoon)

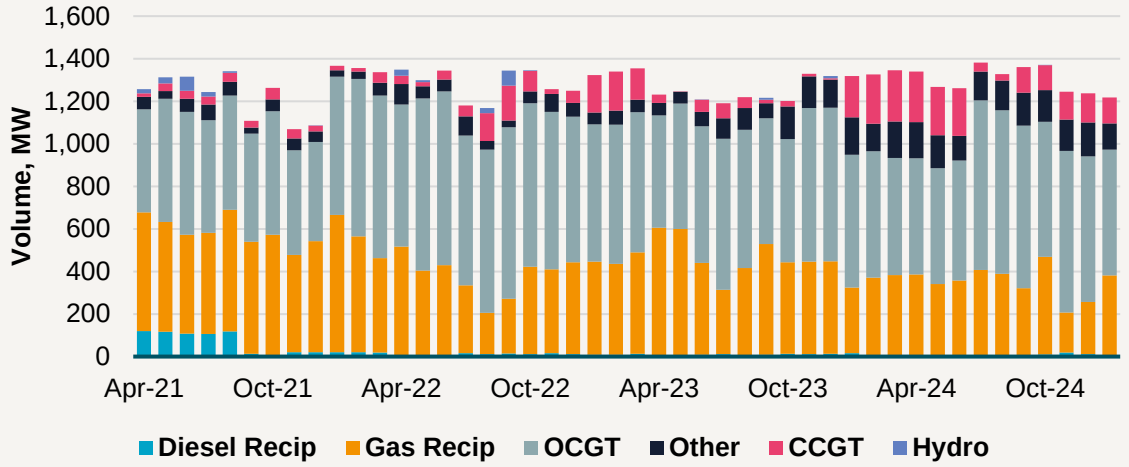
Optional STOR:

- is open to assets outside the Balancing Mechanism
- makes payments only for *utilisation (£/MWh)* which is procured through the Platform for Ancillary Services

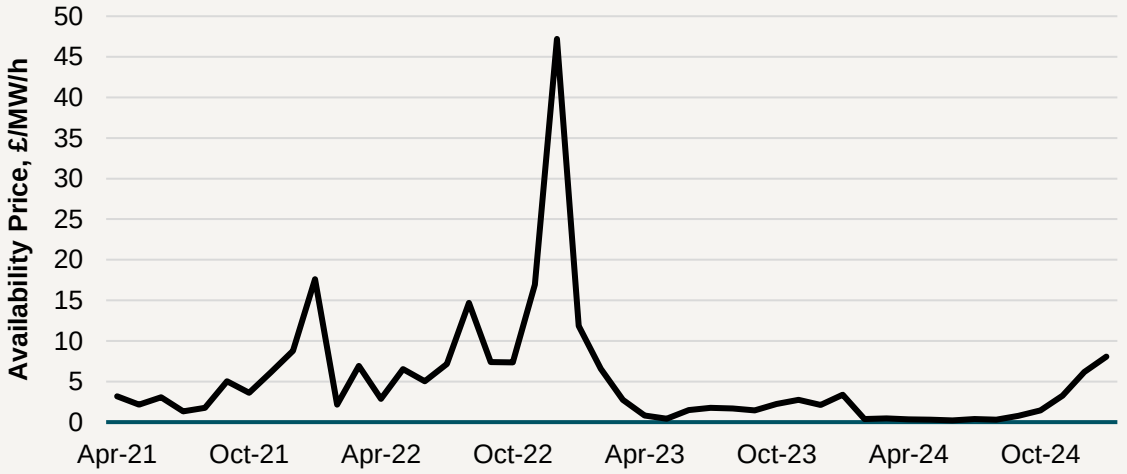
Utilisation payments for BM units are made with respect to each Bid/Offer Acceptance made in the relevant availability period by a specific plant. Utilisation payments for non-BM units are made with respect to each Balancing Service Adjustment Data (BSAD) made for the relevant committed or optional period by a specific plant.

In periods with tight system margins, STOR utilisation prices may be uplifted using the Reserve Scarcity Price (RSVP). This is a function of the De-Rated System Margin at gate closure.

Average clearing volume per month



Average availability price per month



Reserve

Fast Reserve – Total Market Value

The Fast Reserve service provides rapid delivery of active power through increasing output from generation or reducing consumption from demand assets. This service is utilised to control frequency changes that result from sudden changes in supply and/or demand.

The service is open to BM and non-BM providers located on both the transmission and distribution systems.

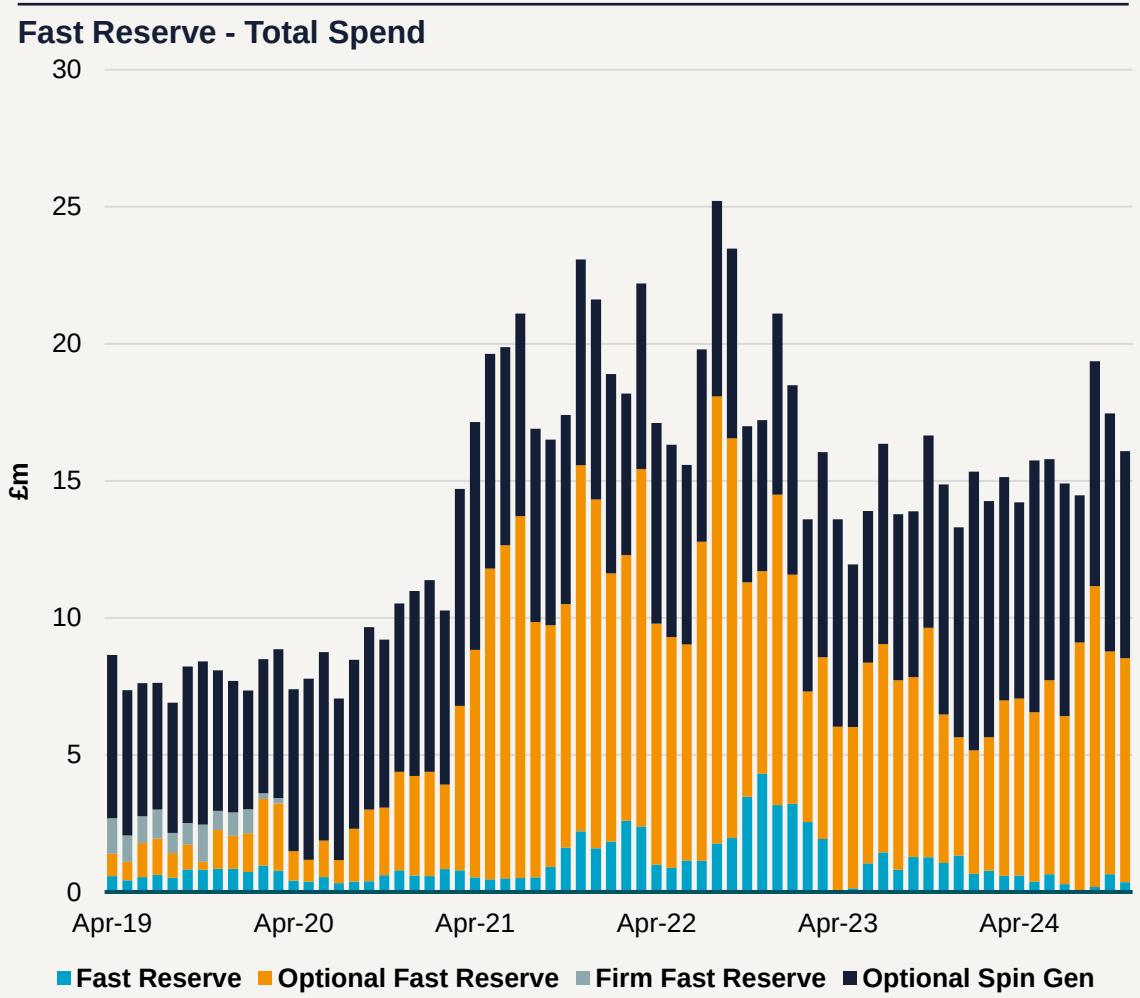
Providers must be able to:

- begin active power delivery within two minutes of instruction
- ramp in excess of 25MW per minute
- sustain delivery for a minimum of 15 minutes
- deliver a minimum of 25MW

Providers are paid an **availability fee** (£/hour) if called upon to provide the service and a **utilisation payment** (£/MWh) if dispatched, based on the actual level of energy delivered in a given instruction.

Total yearly NESO spend on Fast Reserve

Total	19/20	20/21	21/22	22/23	23/24	24/25
£m	95.3	116.2	232.6	221.0	173.1	128.0



Reserve

Fast Reserve – Number of Instructions and Volume

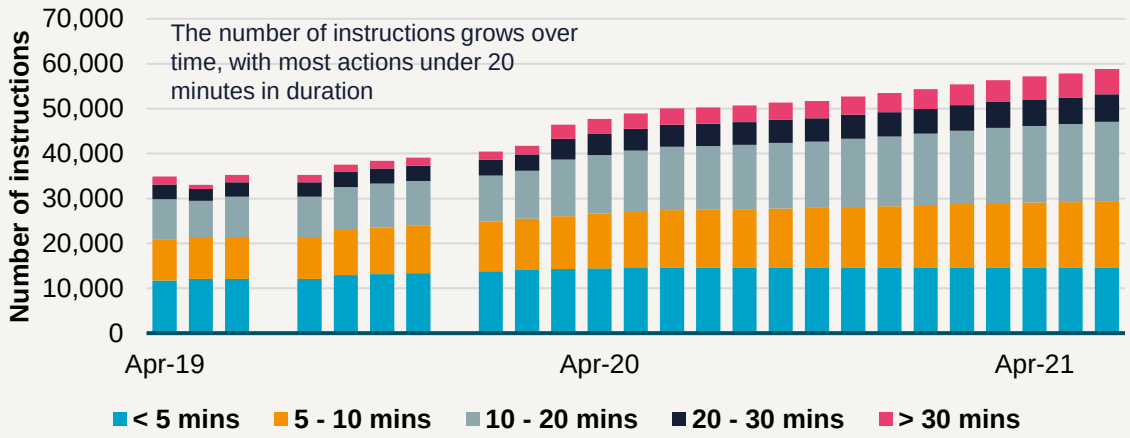
Optional Fast Reserve:

Initially intended as a top-up for Firm Fast Reserve, Optional Fast Reserve is procured within-day and providers are remunerated through availability and utilisation fees.

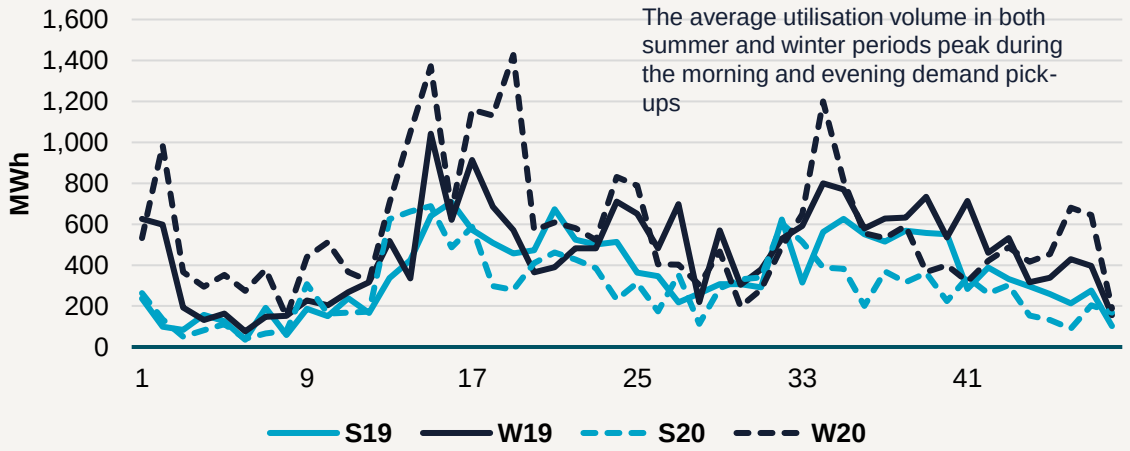
In the market information reports for 19/20, the Fast Reserve requirement remains constant at 300MW.

Optional Fast Reserve is due to end in Dec-25, at which point Quick Reserve will be fully implemented.

Fast Reserve - number of instructions by duration



Fast Reserve - average volume per settlement period



Reserve

Fast Reserve – Optional Spin Gen

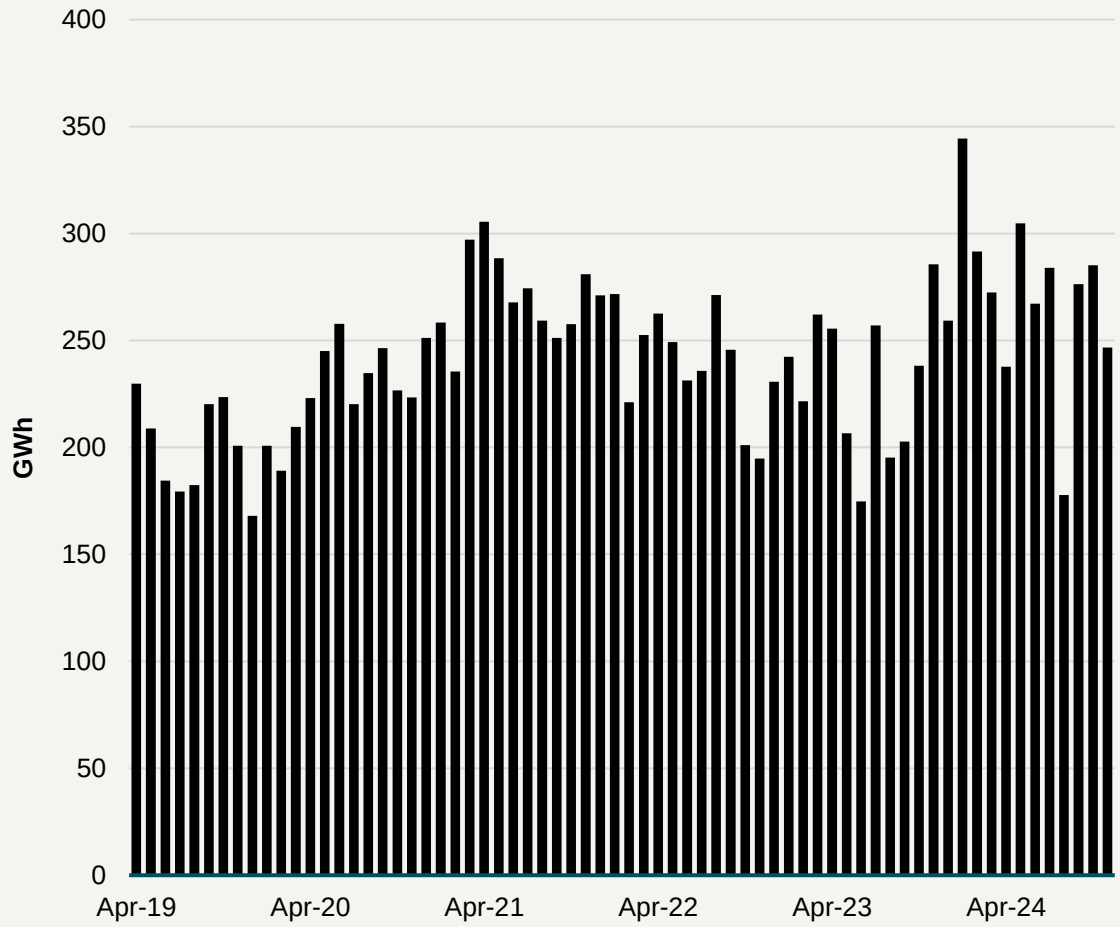
Optional Spin Gen:

Optional Spin Gen is a Fast Reserve service procured by the NESO.

It is procured from **pumped storage assets only through bilateral agreements** with the services being called upon through requests from the National Grid Electricity Control Centre (not the BM).

Volumes procured by the NESO have remained relatively consistent from the 2020/21 financial years onwards at c. 3TWh per annum.

Optional Spin Gen - Volume



Reserve

Quick Reserve

Quick Reserve (QR) is aimed primarily for reacting to pre-fault disturbances to restore the energy imbalance quickly and return the frequency close to 50Hz. QR Phase 1 (BMUs only) went live in Dec-24, with Phase 2 (BMUs & non-BMUs) due to be implemented in June-25 (see page 20). Once fully implemented, QR is due to replace Optional Fast Reserve in Dec-25.

Providers of positive and negative QR must:

- have a minimum contract size of 1MW
- submit BM-like dynamic parameters, location and prices
- have a time to full delivery of up to 1 minute from the instruction receipt
- have a minimum action period of up to 5 minutes
- have a maximum recovery period of up to 3 minutes

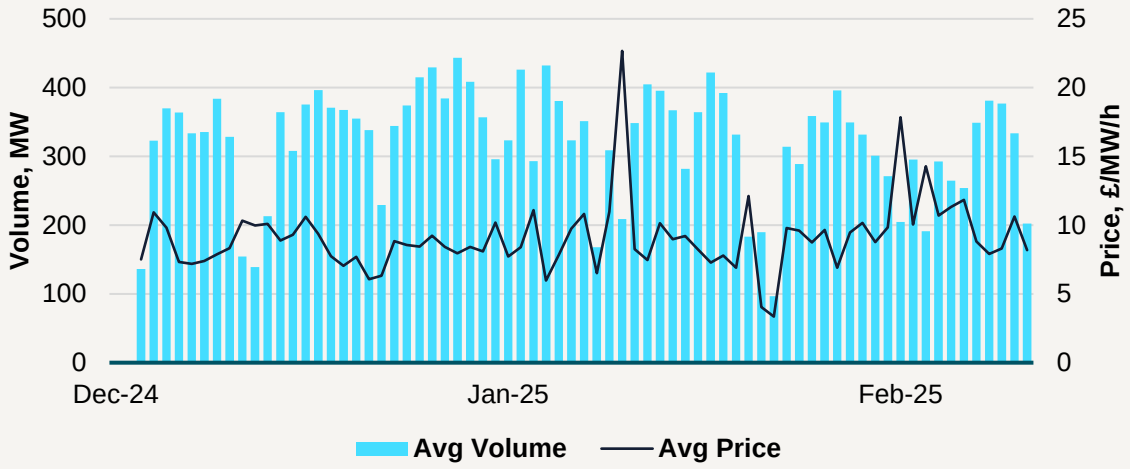
There is a minimum positive QR requirement of 300MW between 23:00 and 04:59 and 500MW between 05:00 and 22:59. The minimum negative QR requirement is 300MW across the whole day.

Service procurement is at day-ahead through the EAC platform, which co-optimises the clearing of DC, DM, DR and QR.

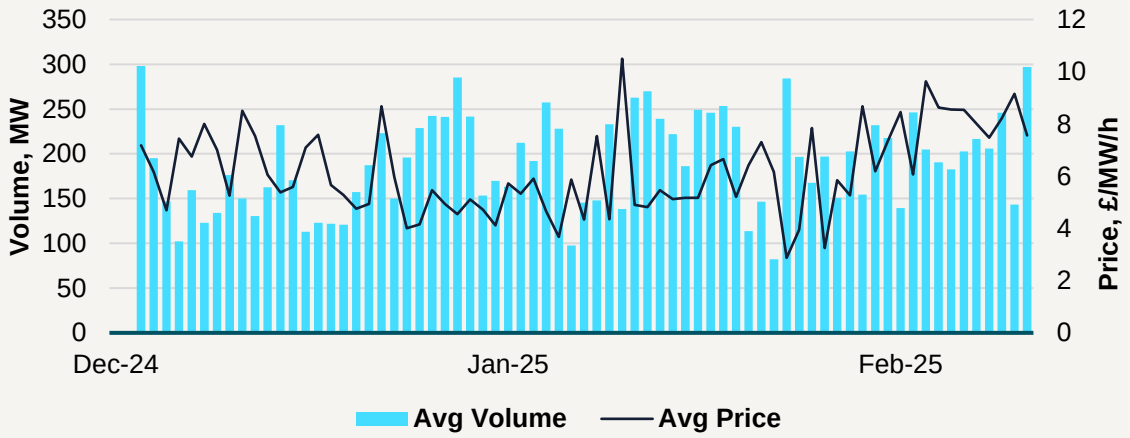
Successful providers receive:

- **Availability payment (£/MW/h):** pay-as-clear auction at day-ahead
- **Utilisation payment (£/MWh):** pay-as-bid if dispatched

Positive Quick Reserve – volumes and prices



Negative Quick Reserve – volumes and prices



Reserve

Super Stable Export Limit (SEL)

Super SEL is used to decrease the minimum generation level (Stable Export Limit (SEL)) of generators.

Providers must:

- deliver a minimum of 10MW of Footroom; and
- have a maximum notice period of 6 hours before SEL reduction

Providers receive an **Enactment Payment** (£/MW/h) paid for the periods in which the service is utilised.

Super SEL is no longer actively procured.

Total yearly NESO spend on Super SEL

Total	19/20	20/21	21/22	22/23	23/24	24/25
£m	n/a	0.73	0.05	0.05	0.04	0.01

Providers with existing agreements

Generator	Station	Year Agreed
VPI Immingham	Immingham	2017
Drax Power Limited	Drax	2017
EP UK (formerly Centrica)	South Humber Bank 2	2017
EP UK (formerly Centrica)	Langage	2017
Calon Energy	Sutton Bridge	2017
Uniper UK Limited	Grain	2017
Drax Generation Enterprise	Damhead Creek	2018
Rocksavage Power	Rocksavage	2018
Saltend	Saltend	2020
Uniper UK Limited	Cottam Development Centre	2020
Uniper UK Limited	Connah's Quay	2020
EP UK	South Humber Bank 1	2020

Future Services

Reactive Power

- Voltage 2026
- Future of Reactive Power

Reserve

- Quick Reserve Phase 2
- Slow Reserve

Stability

- Stability Market – Long-term (Y-4) – Long-term 2029 (Stability & Reactive Power)
- Stability Market – Mid-term (Y-1)
- Stability Market – Short-term (D-1)

- Included in this report

Reserve

Quick Reserve – Phase 2

Quick Reserve (QR) is aimed primarily for reacting to pre-fault disturbances to restore the energy imbalance quickly and return the frequency close to 50Hz. QR Phase 1, which went live in Dec-24, was for the BMUs only with participation taking place through combined BM/OBP systems. QR Phase 2 is due to be implemented in June-25 and will see an additional OBP only toute to participation for both BMUs and non-BMUs. Once fully implemented, QR is due to replace Optional Fast Reserve in Dec-25.

Providers of positive and negative QR must:

- have a minimum contract size of 1MW
- submit BM-like dynamic parameters, location and prices
- have a time to full delivery of up to 1 minute from the instruction receipt
- have a minimum action period of up to 5 minutes
- have a maximum recovery period of up to 3 minutes

There is a minimum positive QR requirement of 300MW between 23:00 and 04:59 and 500MW between 05:00 and 22:59. The minimum negative QR requirement is 300MW across the whole day.

Service procurement is at day-ahead through the EAC platform, which co-optimises the clearing of DC, DM, DR and QR.

Successful providers receive:

- **Availability payment (£/MW/h):** pay-as-clear auction at day-ahead
- **Utilisation payment (£/MWh):** pay-as-bid if dispatched

Service Technical and Procurement Design

Design Element	Proposal
Minimum Activation /Maximum Recovery Period	Not greater than 5-minutes/not greater than 3-minutes
Dispatch Mechanism	BOAs for BMUs and via OBP for non-BMUs
Notice to start ramping	0 minutes
Time to full delivery	1 minute from instruction
Ramp rates	No maximum ramp up or ramp down rates. Minimum ramp-up and ramp-down rate to be in line with Time to Full Delivery.
Performance Monitoring	Time to Full Delivery, Availability and Utilisation – Payment Penalties for over (>120%) and under (<95%) delivery
Frequency of Procurement	Daily (day-ahead) – QR Contract firm procurement. Within day – optional procurement (non-BM only).
Auction Timing	Auction gate closure: D-1 14:00
Cross-Overs	Units are expected to be available for instruction into a subsequent settlement period (including where noncontracted) up to its Minimum Activation Period
Stacking/Splitting	Same MW cannot be sold twice
Linking of Bids	By Service Window and Product (positive and negative only)

Reserve

Slow Reserve

Slow Reserve (SR) is primarily aimed at reacting to post-fault disturbances to restore energy imbalances to ±0.2Hz of 50Hz within 15 minutes of a loss event. Once live, Slow Reserve will replace STOR. The NESO are currently requesting feedback from industry on the transition plan for this.

Due to having a liquid day-ahead market for STOR in place, Quick Reserve has been prioritised ahead of Slow Reserve, which is planned to go-live in Sept-25. The service will be available to any technology with the ability to provide a net change in demand/generation of at least 1MW.

Procurement is at day-ahead through the EAC platform with successful providers receiving:

- **Availability payment (£/MW/h):** pay-as-clear auction at day-ahead
- **Utilisation payment (£/MWh):** pay-as-bid if dispatched

Service Technical and Procurement Design

Design Element	Proposal
Minimum Activation /Maximum Recovery Period	Up to 30 minutes
Dispatch Mechanism	BOAs for BMUs and via OBP for non-BMUs
Notice to start ramping	Up to 14 minutes
Time to accept instruction	Up to 2 minutes
Ramp rates	Max ramp rate of 100% contracted capacity/minute. Max instantaneous ramp rates cannot exceed >50% contracted capacity in a 30s ramping period. Min ramp-up/down rate to be in line with Time to Full Delivery, including notice to start ramping
Performance Monitoring	Time to Full Delivery, Availability, Ramp rates, Utilisation – Penalties for over (>120%) and under (95%) delivery
Service Window	Minimum 2 hours at 30-minute granularity
Frequency of Procurement	Daily – Firm procurement Within day – optional procurement
Auction Timing	Auction gate closure: D-1 14:00
Stacking	Same MW cannot be sold twice
Linking of Bids	Yes, by Service Window and Product (positive SR and negative SR only)

Legacy Services

Reactive Power
- Voltage Pathfinder – Mersey (Short-Term)

Frequency Response
- Enhanced Frequency Response
- Firm Frequency Response (dynamic) – monthly auction
- Firm Frequency Response (dynamic & static) – weekly auction trial

System Security
- Nationwide Wind Tender
- Northern Tender (Apr-22 to Mar-25)
- Northern Tender (Nov-25 to Nov-30)
- South-East Tender (July-25 to July-30)
- Maximum Generation

Reserve
- Firm Fast Reserve

Demand Flexibility Service
- DFS 2022/23
- DFS 2023/24

- Included in this report

Reserve

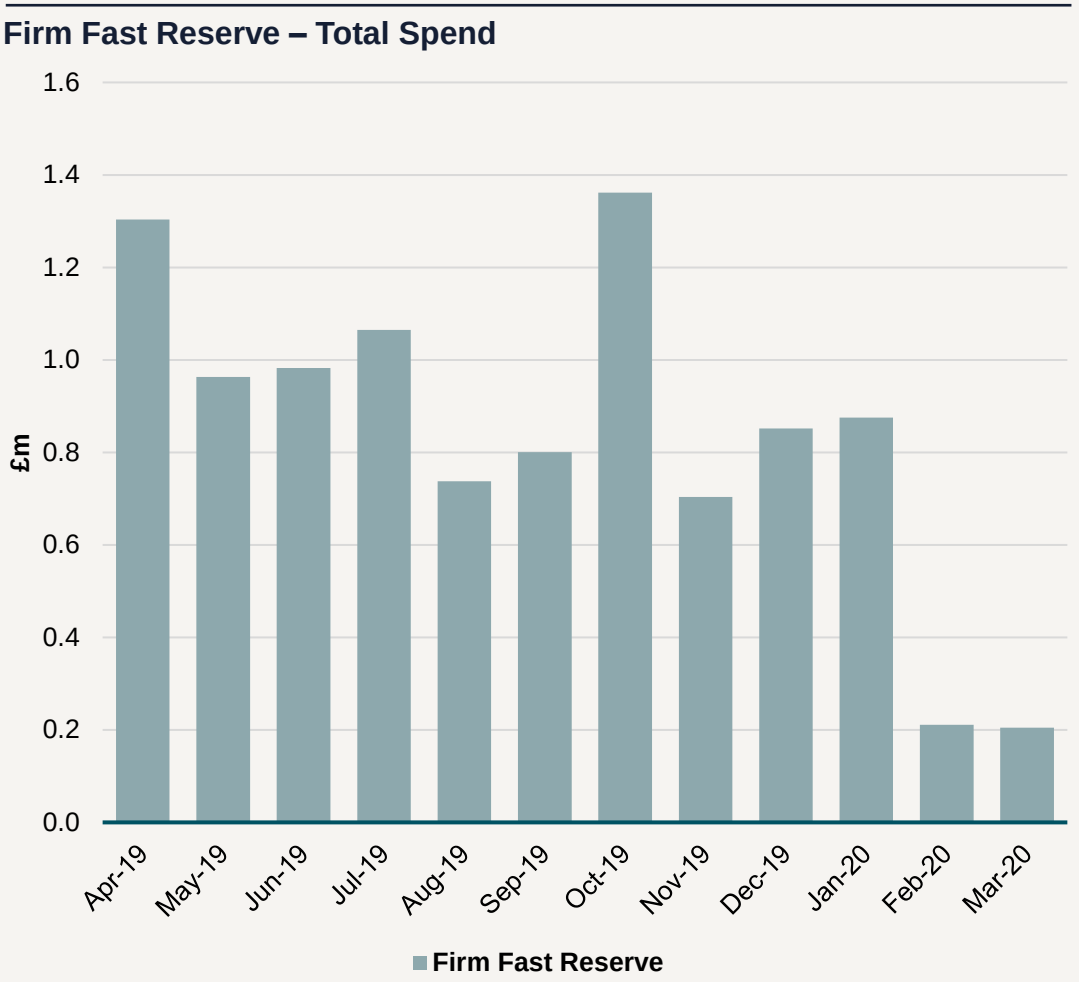
Firm Fast Reserve

Firm Fast Reserve was a monthly tender for the provision of Fast Reserve at EFA block granularity for the month-ahead. Contracts could span a single month or multiple months ahead and providers received payments through the use of two fees:

- **Availability Fee (£/h)** – paid for each hour the unit is available to provide Fast Reserve
- **Utilisation Fee (£/MWh)** – paid for energy delivered

In July-20 it was announced that the NESO planned to cease procurement of Firm Fast Reserve, as it did not comply with Clean Energy Package (CEP) requirements. These requirements restrict the procurement of balancing capacity to no more than one day ahead of delivery.

Instead, the NESO meet the Fast Reserve requirement through the Optional Fast Reserve product (dispatched within-day).



Data sources

Data Sources

Reserve

Category	Service	Granularity	Comment
Reserve	Balancing Reserve	• Price and Volume by NGC ID	• **Live Service**
Reserve	BM Start-up	• Start-up instructions	• **Live Service**
Reserve	Short Term Operating Reserve	• Price and Volume by BM / non-BM action type	• **Live Service**
Reserve	Optional Fast Reserve	• Overall spend	• **Live Service**
Reserve	Optional Spin Gen	• Overall spend	• **Live Service**
Reserve	Super SEL	• Price and Volume by NGC ID	• **Live Service**
Reserve	Quick Reserve	• Price and Volume by NGC ID	• **Live Service (Phase 1)** • **Future Service (Phase 2)**
Reserve	Slow Reserve	• N/A	• **Future Service**
Reserve	Firm Fast Reserve	• Auction results by participant	• **Legacy service**

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