ESO

Quick Reserve Summary

Supporting Information for Phase 1 A18 Consultation

27 June 2024

Following engagement with industry stakeholders we have now completed our proposed service and procurement design for the Quick Reserve service. This document has been produced in support of the formal Article18 Consultation for the introduction of the Quick Reserve service to provide industry with a detailed explanation on all aspects of the Technical and Procurement Design of the service and should be read in conjunction with the published Quick Reserve Article 18 consultation pack.

As previously communicated to industry, a phased implementation plan is proposed in line with the delivery of our strategic IT platforms, with an accelerated BM (Balancing Mechanism) only service in late 2024 (Phase 1) followed by the non-BM (non-Balancing Mechanism) service in summer 2025 (Phase 2). Further details of the phased implementation are set out in Section 3 and Appendix 2.

Throughout this document we detail the Technical and Procurement Design for the enduring Quick Reserve service for both BM and non-BM units with specific references made in **blue** to any difference between the BM service in Phase 1 and the enduring service for BM and non-BM units in Phase 2.

In line with our other Balancing Services we have incorporated (where applicable) the latest Energy Networks Association (ENA) Flexibility Services Standard Agreement (version 3) into the Service Terms and Procurement Rules for Quick Reserve.

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Contents

1. **Introduction** 4
2. **Previously Uncommunicated Changes** 4
3. **Phased Implementation of Quick Reserve** 4
4. **Quick Reserve Transition Plan** 5
5. **Technical Design Summary** 5
6. **Procurement Design Summary** 6
7. **Technical Design** 6
   - Provider eligibility 8
   - Service Utilisation & Dispatch Mechanism 8
   - Notice to Start Ramping 9
   - Time to Full Delivery 9
   - Cease Time 9
   - Activation Periods 9
   - Recovery Period 10
   - Ramping Envelope 10
   - Ramp rates for baselines for energy limited assets. 11
   - Operational Metering 12
   - Performance Metering 12
   - Performance Monitoring 12
   - Baselining 14
   - State of Energy Management 14
   - Cross-overs 15
   - Aggregation 15
8. **Procurement Design** 15
   - QR Contract (Firm Service) 15
   - Registration and Prequalification 16
   - Maximum Bid Volume 16
   - Procurement Requirements 16
   - QR Window 16
   - Daily Auctions 16
   - Co-optimised Auction 16
   - Requirements 17
   - Auction Platform 17

ESO

Auction Timing 17
Bid Submission 17
Assessment Principles 18
Auction Results 18
Linked Sell-Orders 18
Linked Buy-Orders 19
Bid Curtailment Rules 19
Stacking / Splitting 19
Locationality 20
Active Network Management Schemes 20
Availability Declarations 20
Settlement and Pricing 21
Availability Payments 21
Utilisation Payments 21
ABSVD 21
ABSVD will be applied in accordance with the published ABSVD Methodology. 21
Transfer of Quick Reserve Contracts 21

Appendix 1 - Dynamic Parameters as per Balancing Code BC1 22

Appendix 2 - Phased Implementation of Quick Reserve 23

Delivering Consumer Value 23
Systems Delivery 23

Appendix 3 - Quick Reserve Transition Plan 25

ESO

1. Introduction

Through our Reserve Reform work the ESO is updating the Reserve products we procure to comply with the Clean Energy Package and to better meet system and statutory requirements. Quick Reserve (QR) is aimed primarily at reacting to pre-fault disturbances to restore the energy imbalance quickly and maintain system frequency close to 50.0 Hz. As such, it will replace the legacy Optional Fast Reserve service. Quick Reserve aims to minimise the duration of events outside of operational limits and those outside of 0.15 Hz (the point at which response requirements are calculated).

Following engagement with industry stakeholders we have now completed our proposed service and procurement design for the Quick Reserve service ahead of formal EBR Article 18 consultation.

2. Previously Uncommunicated Changes

We shared an earlier version of this document with industry in early spring 2024. We have since added some further changes to the overall service and procurement design and therefore wish to signpost the following to industry;

- Phased Implementation of Quick Reserve – **see page 4 and Appendix 2**
- Quick Reserve Transition Plan – **see page 5 and Appendix 3**
- State of Energy Management – **see page 14**
- Linked Buy-Orders – **see page 19**
- Transfer of Quick Reserve Contracts – **see page 21**

Response Procurement Rules

As we will be procuring Quick Reserve through a co-optimised auction for both Quick Reserve and Dynamic Response products, it is necessary for the Market Welfare clause in the Response Procurement Rules to be amended in order to reflect this change and ensure both sets of Procurement Rules are consistent. Given that this change to the Response Procurement Rules will only apply when Quick Reserve is implemented, we have chosen to introduce this discrete change as part of the Quick Reserve A18 Consultation. **See 'Co-optimised Auction' on page 16.**

3. Phased Implementation of Quick Reserve

Our proposed delivery plan takes into consideration the need to provide near-term value and savings to end-consumers while acknowledging the time needed to make changes to ESO systems.

Due to IT system lead times, we are unable to launch the Quick Reserve market to non-BM parties until 2025. However, we have identified an opportunity to bring forward consumer value and deliver the service to BM parties in winter 2024, utilising our existing BM systems in combination with the new Open Balancing Platform (OBP) multi-dispatch. Therefore, we propose a phased delivery approach as follows:

- Phase 1 - BM participation in November 2024,
- Phase 2 - Non-BM participation in summer 2025.

We are committed to ensuring fair access for all market participants, individually or through aggregation, including those utilising variable renewable energy sources, demand response, and energy storage. We believe all existing market participants and new providers of flexible energy, that meet the Quick Reserve requirements, have the opportunity and necessary lead-time to register in the BM and access Quick Reserve from day one. Aside from existing BM parties and those able to join as Primary BMUs, we believe through the Wider Access route there is a clear cost effective and

efficient route to market for smaller non-traditional providers, aggregators and providers of flexibility, which allows them to access the Quick Reserve service in Phase 1.

After thorough consideration, ESO firmly believe that our decision to implement the new Quick Reserve service directly on the new OBP system with a phased approach during 2024 and 2025 is the right approach considering value to the end-consumer.

See **Appendix 2** for further details.

4. Quick Reserve Transition Plan

As we progress with the implementation of the new Quick Reserve service, we have set out how we intend to transition away from existing fast-acting reserve services.

- We will leave the existing Optional Fast Reserve (OFR) market open until December 2025.
- Quick Reserve and Optional Fast Reserve (OFR) will be operational together from November 2024 (subject to Quick Reserve A18 approval) to December 2025.
- We expect to meet our firm contracted fast-acting reserve (circa 500MW positive and 300MW negative) from the Quick Reserve service, and if additional fast-acting reserve is required, then additional optional services (OFR / Spin Gen) may be used.
- During the transition period we will include the prices of OFR units with similar parameters to QR to guide the price of alternative action to help derive the buy-order for Quick Reserve.

See **Appendix 3** for full details.

5. Technical Design Summary

Technical Design Element	Proposal
Direction	Positive and Negative
Minimum Contract Size	1 MW
Provider eligibility	Non-BM & BM units with control/ system telephone during contracted windows Phase 1: BM only
Time to full delivery	1 minute from instruction
Minimum Activation Period	Not greater than 5 minutes
Maximum Recovery Period	Not greater than 3 minutes
Energy Requirement	The unit must be able to deliver the full contracted capacity per QR Window
Operational Metering	1 Hz for both BM and non-BM units Phase 1: Existing BM requirements apply
Dispatch mechanism	BOA for BM units OBP dispatch instruction for non-BM units Phase 1: BOA for BM units only
Notice to Start Ramping	0 minutes
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 Metering	1 Hz

Technical Design Element	Proposal
	Phase 1: 30 minutes using settlement operational data
Performance Monitoring	Time to Full Delivery, Availability and Utilisation – Payment Penalties for over (>120%) and under (<95%) delivery
Baselining	As per BM – Physical Notifications 24 hours in advance. Final Physical Notifications 60-mins ahead of contracted Settlement Period. Both zero and non-zero baselines allowed.
Aggregation	Yes, per GSP group
Operational data requirements	BM units as per current BM operations Non-BM units to submit BM-like operational data
Passing through zero	Yes

6. Procurement Design Summary

Procurement Design Element	Proposal
QR Window	30-minute Settlement Period blocks.
Maximum Bid Size	300 MW
Frequency of Procurement	Daily (day-head) – QR Contract firm procurement. Within day – optional procurement (non-BM only). Phase 1: BM QR Contract firm procurement only
Locationality	National
Auction Platform	EAC
Auction Timing	TBC Phase 1: D-1 14:00
Stacking & Splitting	Same MW cannot be sold twice. Phase 1: Stacking only allowed between Positive and Negative QR
Bid Sizing	1MW≥, integer bids
Linking of bids	By QR Window and Product (Positive and Negative only)
Bid Curtailment Rules	User defined
Payment Structure	QR Contract: Availability + Utilisation Optional (non-BM only): Utilisation only
Payment Mechanism	Availability: Pay-as-Clear Utilisation: Pay-as-Bid

7. Technical Design

Positive Quick Reserve (PQR) and Negative Quick Reserve (NQR) form part of a suite of new Reserve products which ESO are developing to maintain the safe and secure operation of the network.

Reserve is needed for frequency management when there is an imbalance between supply of energy and demand for energy. When instantaneous supply is not enough to meet the demand, the frequency falls; where supply outstrips demand, the frequency rises. Additional generation or demand is needed to re-establish this balance. Initially, this is provided by Frequency Response which initiates

automatically according to system frequency. More information on our Response services Dynamic Containment, Dynamic Moderation and Dynamic Regulation can be found on the ESO website here.

Reserve is then instructed to replace the energy delivered by frequency response in accordance with system requirements. For NQR, units are instructed to increase demand or decrease generation in full within 1 minute. The inverse is true for PQR. QR is open to any technology with the ability to provide a net change in demand/generation of at least 1.0 MW.

The key technical design features for Quick Reserve are:

- Minimum 1MW capacity of generation reduction/increase or demand reduction/increase from any technology. The unit can be a single asset or an aggregated unit (aggregated at GSP group level) compromising more than one constituent asset. For BM units the BSC aggregation rules apply.
- Quick Reserve units must be able to;
    - Submit BM-like dynamic parameters, location, and prices (similar to the Balancing Code requirements).
    - Achieve full delivery of the contracted capacity within the submitted data, if instructed.
    - Be able to achieve full delivery of contracted volume in 1 minute or less from when the instruction is sent. No maximum ramp rate limit is required.
    - Have Minimum Activation Periods not greater than 5 minutes.
    - Have a Maximum Recovery Period not greater than 3 minutes.
- To ensure that a single instruction can be issued within operational limits, there will be a restriction of 300 MW maximum bid size placed on each participating unit.
- Contracts will be awarded upon acceptance of bids (QR Contract) in whole MWs (minimum 1MW) submitted into the daily auction.
- Providers with a QR Contract will receive an Availability Payment (£/MWh) and a Utilisation Payment (£/MWh) when dispatched.
- Providers will be required to provide metering data with 1Hz granularity. This requirement will be extended to non-BM providers to provide ESO with 1Hz operational metering in real time.
- All units need to provide ESO with dynamic parameters which for BM units is defined in BC 1.A.1.5. Dynamic Parameters and Physical Notifications are to be submitted 24 hours in advance, with final notifications 60-mins ahead of contracted Settlement Period at Settlement Period granularity, price bands and locations. Requirements for Non-BM TBC.
- Stacking with other active power ancillary services is not permitted during a QR Contract for initial launch but will be kept under review, however it is not the intention to prevent providers from stacking Reserve with non-active power services, such as Spin-Pump or Spin-Gen.
- QR units will be performance monitored using 1sec performance metering data submitted after the contracted day to be evaluated on availability, time to full delivery and utilisation.

For Quick Reserve Phase 1:

Participation will be restricted to Balancing Mechanism Systems (EDL/EDT or wider access equivalent). Further details on the phased approach and proposed Transition Plan can be found in Sections 3 and 4 and in Appendix 2 and 3.

QR units will be performance monitored using average 30-minute settlement metering data from Elexon to be evaluated on Availability, time to full delivery and Utilisation.

Provider eligibility

To participate in the Quick Reserve market, providers must:

1) be a BM unit (Phase 1); or non-BM unit (Phase 2).
2) have control telephony for the entire duration of contracted QR Windows, which could be Control Telephone or System Telephone as per Grid Code definitions – to allow for dispatch during planned or unplanned outages of the EDT/EDL system (or wider access equivalent).
3) be capable of providing 1MW or more of reserve volume in line with the service design. Bids must be made in integer MWs.

Both BM and non-BM participants with a connection to either the electricity transmission or distribution network will be eligible to provide Quick Reserve.

The requirement to provide integer bids of reserve volume is because our dispatch systems are not set up to instruct decimal volumes.

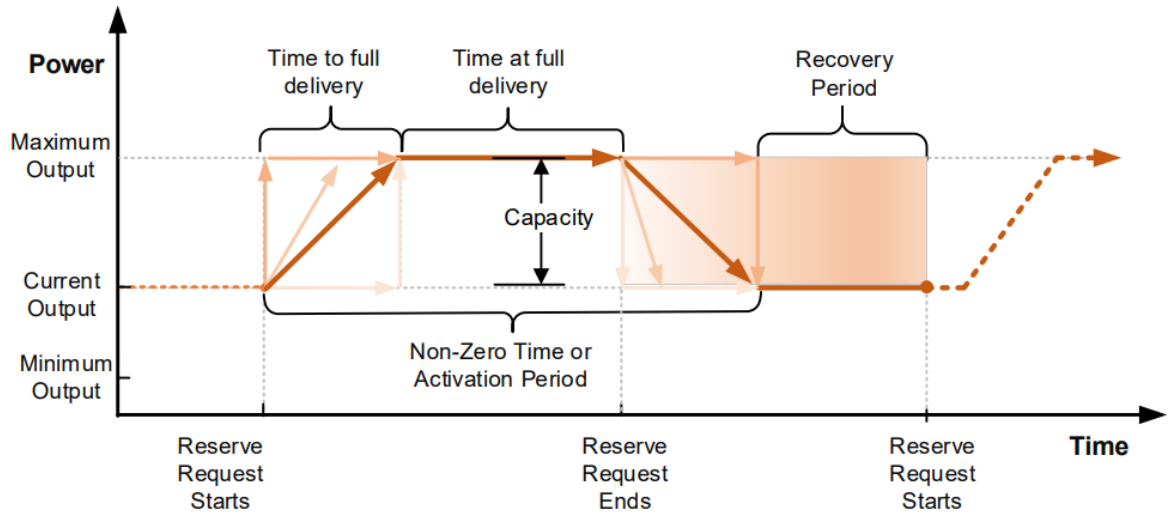
For Quick Reserve Phase 1:

For Phase 1, Quick Reserve will be delivered in combination with OBP and existing BM systems. Participation will therefore be restricted to parties with BM systems access (EDL/EDT or wider access equivalent). Further details on the phased approach can be found in Section 3 and Appendix 2.

Service Utilisation & Dispatch Mechanism

Utilisation for BM units will be in line with normal Balancing Mechanism operation in accordance with BC2 via Bid-Offer Acceptances (BOAs). Dispatch instructions to BM providers will be by way of Bid-Offer Acceptances (BOAs) via EDT/EDL or telephone instruction if required.

Non-BM providers (Phase 2) will be dispatched via the new OBP.



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Notice to Start Ramping

Units participating in Quick Reserve, both Positive and Negative, should have set their Notice to Start Ramping to 0 minutes to allow units to meet Time to Full Delivery of 1 minute from the instruction being sent.

Time to Full Delivery

The time to full delivery is recommended to be 60 seconds or less.

This recommendation rests on two separate analyses:

- an evaluation of historic frequency deviations: A time to full delivery of 60 s or less would assist in reducing the exposure to deviations of ±0.1 Hz from around 8% of the time to around 3.3% of the time (a reduction of 4.7%). This implies a drop from 700 to 290 hours per year (net reduction of around 410 hours).
- a characterisation of the capabilities of existing units: Most of the hydro pump storage (PS) units (89%) can achieve full output within 60 seconds from instruction. In terms of capacity (MW), around 90% of the PS installed capacity can deliver full output within 60 seconds from instruction (or around of 3,050MW). It is estimated that around 30% of the non-BM OFR capacity (close to 320 MW) can achieve the 1-minute time to full delivery.

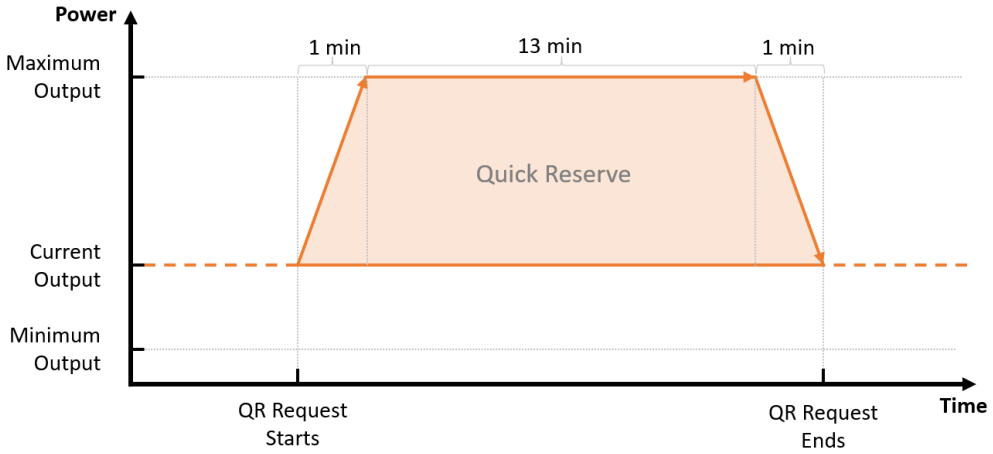
Cease Time

The cease time is defined as the reciprocal of time to full delivery. That is, the time a unit takes for a unit to ramp down from a Quick Reserve request ending to its FPN. As can be seen in the infographic above, the non-zero delivery envelope is a symmetric trapezium, meaning the ramp up and ramp down times are the same. A unit can ramp up and ramp down however it sees fit, so long as it is bound within the defined activation envelope.

Activation Periods

Minimum Activation Period is defined as the minimum duration for which an instruction can be issued, and it is specified by providers. Quick Reserve providers will be able to specify a Minimum Activation Period of between 1 and 5 minutes inclusive, which means that ESO can only issue an instruction for a minimum of between 1 and 5 minutes. This will facilitate enough flexibility in dispatching and ceasing units to respond to the operability challenges while giving providers certainty about the minimum time that they can be dispatched. A typical usage of Quick Reserve is illustrated in the below figure.

Minimum Activation Period is inclusive of ramp to instruction, time at full delivery and ramp from instruction.



Quick Reserve energy requirements state that a unit should be able to deliver the full contracted MW capacity for the entire QR Contract. A participating QR unit should therefore be capable of delivering the service for any length of time between its defined Minimum Activation Period and the full QR Contract 30-minute QR Window.

For Quick Reserve Phase 1:

QR units are expected to reflect their Minimum Activation Period through their Dynamic Parameters for each relevant contracted window.

Recovery Period

We propose a maximum Recovery Period for Positive and Negative Quick Reserve of up to 3 minutes. This means that an asset has 3 minutes to return to availability before the ESO can send another dispatch instruction.

To help explain this proposal we have published a detailed explanation for the 3-minute recovery requirement in our 'Maximum Recovery Period – justification and analysis' document.

For Quick Reserve Phase 1:

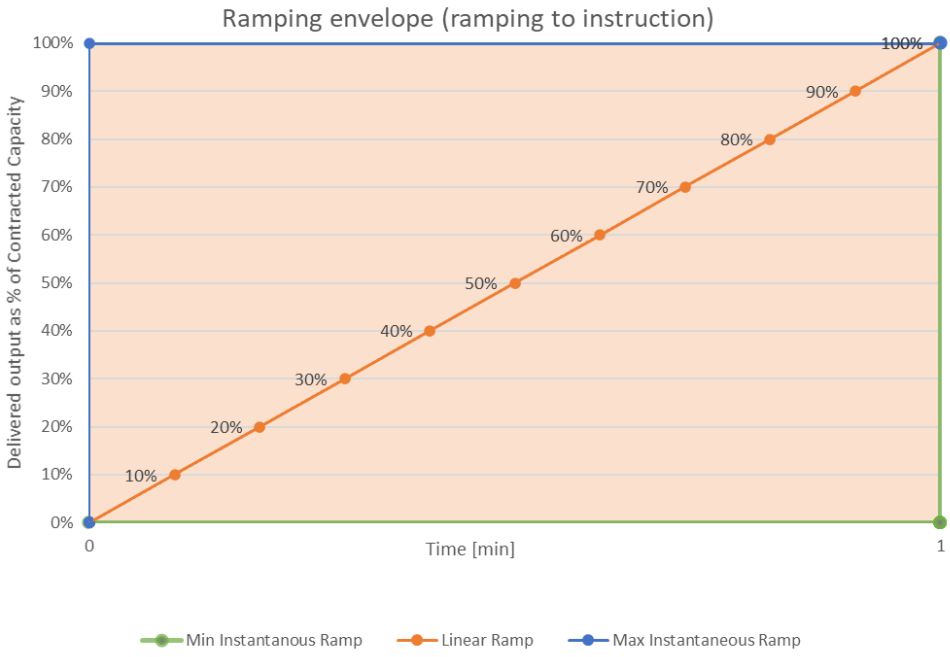
Units are expected to reflect Minimum Recovery Period (Minimum Zero Time) through Dynamic Parameters.

Ramping Envelope

Within the ramping to instruction and ramping from instruction ramp rates, participating units must deliver Quick Reserve subject to the following elements:

- No maximum ramp rate limit when ramping up or to instruction. The unit can ramp to and from instruction freely (continuously or instantaneously) with no maximum ramp rates.
- The minimum ramp up is directly set from the time to full delivery service design - the unit may not deliver at a rate less than 100% of instructed capacity per minute (minimum ramp rate). Similarly, the unit may not ramp from instruction with a rate smaller than 100% of instructed capacity per minute (minimum ramp rate).
- The unit may start delivery immediately after accepting a dispatch instruction.

Example of ramping envelope for ramping up or ramp to instruction is presented on figure below. Ramping from instruction is proposed to have identical envelope in an opposite direction.



For Quick Reserve Phase 1:

As instructions are sent on the full minute through current Balancing Mechanism (i.e., instructed at 12:05:07 but sent 12:06:00), the service will realistically have a Time to Full Delivery of up to 2 minutes from instruction. Instructions are sent in intervals of 1 minute; So, any instructions sent will have a linear 1-minute ramp up and ramp down profile. Providers are encouraged to deliver within 60s of receipt, with any imbalance risk factored into their utilisation price.

Ramp rates for baselines for energy limited assets.

The ESO understands that these restrictions have been a pain point for Dynamic Response participants, imposing opportunity cost through constraining opportunities for wholesale market participation and more efficient state of energy management of energy limited assets. Ramp rate restrictions were introduced as a way of protecting grid stability from any potential effects of herded charging or discharging behaviour following major deviations and consequently any necessary activation of energy limited asset's capacity.

After a recent review of Ramp Rates for Baselines restrictions under the Dynamic Response services (DC, DM & DR), it has been decided that the ESO will fully remove any restrictions. We have carried out analysis, including modelling, review of historical provider behaviour, and stakeholder engagement, to consider the system security impact of lifting such restrictions. We have concluded that the benefits of removing the Ramp Rates for Baselines restriction likely outweigh the cost associated with any potential additional action to protect against any herded behaviour.

As the system operator, it is essential that we take such decisions cautiously, and we will continue to monitor participant behaviour and the effects of removing this restriction. All decisions made through the Dynamic Response services on Ramp Rates for Baselines will be aligned with the Quick Reserve market and communicated to industry appropriately.

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Operational Metering

In line with frequency response services and the Balancing Mechanism, all providers (BM and non-BM) will be required to submit operational metering at a frequency of once per second (1 Hz) with a latency of no greater than five (5) seconds.

All operational metering, including active power and system frequency data, should be provided at an accuracy according to the relevant Code of Practice (e.g., 1.0% for assets >10MW & ≤100MVA).

BM providers should submit operational metering via the existing processes. It is expected that non-BM providers will submit operational metering via the new OBP system.

Performance Metering

All providers (both BM and non-BM) are required to submit data to ESO for real time monitoring of service availability and post-event performance monitoring. This data is required by ESO to ensure operational security of the network and to validate the performance where units are dispatched to deliver an instruction for the QR Contract and Optional Quick Reserve services. As the Settlements team are currently building their Performance Monitoring capability, the method of how to submit data at the end of operational day will be agreed later when more information is available.

For Quick Reserve Phase 1:

BM providers will not be required to submit any additional data for Performance Monitoring purposes as Settlements will utilise 30-minute average settlement metering data.

Performance Monitoring

Service Availability

ESO will monitor the availability of units in order to confirm that they are holding sufficient headroom/footroom and can deliver their contracted MW if instructed to. In addition to monitoring delivery against individual contracts, this monitoring can be regularly performed at various timeframes.

We will evaluate the conditions below for each contracted window through the Settlements process. Failure to declare 100% or more of contracted availability (headroom/footroom) will result in the Availability Payment being withheld for the relevant QR Window.

For Positive Quick Reserve

Provider Type	Conditions	% of availability payment received for that QR Window	K factor
Generator, Through-zero	MEL – PN ≥ (Contracted Volume)	100	1
Supplier	SIL – PN ≥ (Contracted Volume)	100	1
Power Park Module (PPM)	PA – PN ≥ (Contracted Volume)	100	1
Generator, Through Zero	MEL – PN < (Contracted Volume)	0	0
Supplier	SIL – PN < (Contracted Volume)	0	0
Power Park Module (PPM)	PA – PN < (Contracted Volume)	0	0

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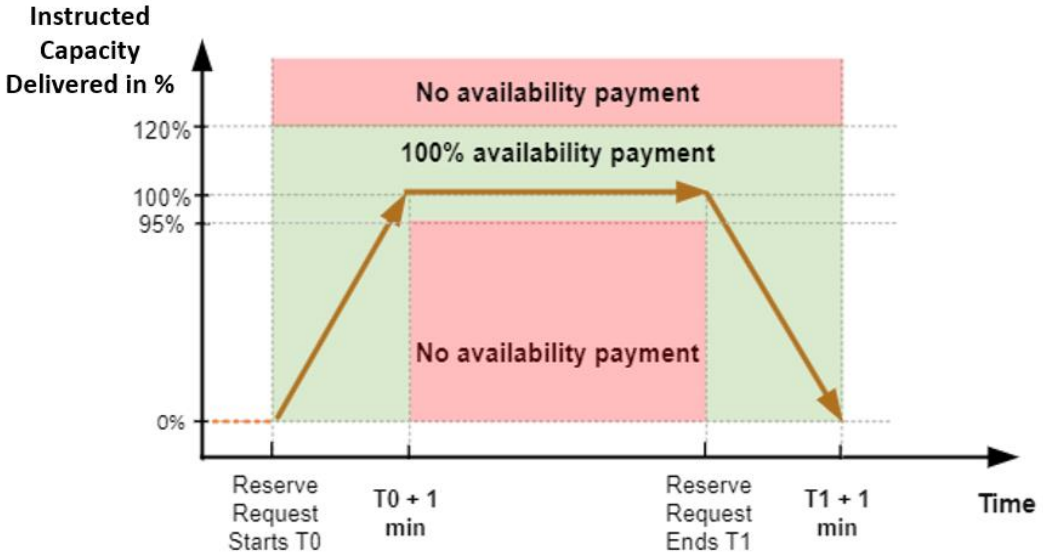
For Negative Reserve

Provider Type	Conditions	% of availability payment received for that QR Window	K factor
Generator, PPM	PN - SEL ≥ (Contracted Volume)	100	1
Supplier, Through-zero	PN – MIL ≥ (Contracted Volume)	100	1
Generator, PPM	PN - SEL< (Contracted Volume)	0	0
Supplier, Through-zero	PN – MIL < (Contracted Volume)	0	0

Service Delivery

ESO will conduct performance monitoring of service delivery for all contracted QR Windows. Consequences of non-delivery and unavailability are set out in full in the Service Terms covering the under-delivery and over-delivery penalties. The figure below presents the overall acceptable delivery envelope for the Quick Reserve service.



Under-delivery

Where a unit has a QR Contract, a minimum of 95% of the instructed MW must be delivered by the relevant unit throughout the instructed period. Failure to deliver will result in the Availability Payment being withheld for the relevant QR Contract.

Utilisation payments for QR Contracts and Optional Services (Non-BM only) will be made for energy delivered.

Over-delivery

For the avoidance of doubt, where a unit delivers between 95% and 120% of instructed MW, the Availability Payment will be made but will be capped at 100% of the contracted MW. Where a unit delivers outside of these limits the Availability Payment will be withheld for the relevant QR Contract.

In addition to the performance penalties, ESO will conduct regular performance monitoring of the reserve units service delivery over a greater period than the individual service day in order to establish overall delivery against the 95% performance measure. There will be no further financial penalties

associated with this performance monitoring, but in order to ensure that we do not award Quick Reserve contracts to reserve units with continued poor performance, we will link the performance monitoring to the reserve unit's prequalification status. Where a provider continues to deliver below their offered MW, we will ultimately seek to suspend the pre-qualification status of the Registered Service Provider or the relevant QR Unit. Depending on the root cause, we would expect either a reproving test or possibly revised base parameters (e.g. reduced maximum MW) before we would reconfirm pre-qualification status and access to the daily auction process.

Additionally, providers who do not fulfil their contract from the Day Ahead auction and do not provide the contracted headroom or footroom may be responsible for covering the costs of alternative actions taken to replace the missing volume.

Furthermore, the providers will be penalised for over-delivery and under-delivery when utilised via the usual route of imbalance charges, so there is a natural incentive for units to follow expected delivery profiles.

Baselining

All providers will be expected to provide a nomination baseline, equivalent to the Physical Notification in the BM. This is a forward-looking view of asset output and is locked in for the forthcoming two settlement periods at Gate Closure.

- Both BM and non-BM units should provide future looking data of their operational position, which should be submitted 24 hours in advance of delivery.
- For crossover purposes, the unit should submit operational baselines for one Settlement Period after the last Contracted Window in the operational day.

This provides operational visibility to the control room and acts as a datum against which performance can be monitored by Settlements.

For Quick Reserve Phase 1:

Providers should follow standard Balancing Mechanism operating procedures.

State of Energy Management

We are keen to ensure that any learning and industry feedback from other Balancing Services (such as Balancing Reserve), relating to certain behaviours from energy limited assets, are appropriately addressed for the Quick Reserve service.

Regardless of technology type, we expect all QR units to be capable of delivering the full contracted quantity for the duration of each QR Contract and that capability shall not impair any subsequent QR Contract **– see section 6.4 of the Quick Reserve Service Terms for additional clarification on this requirement.**

Through our learning from other Balancing Services we have identified instances where some energy limited assets have had insufficient energy to honour their full contracted period and have maintained market positions (such as discharging PNs) and increased their Bid-Offer prices during contracted periods such that their high prices make the units unlikely to be selected as they are economically out of merit, but ensure they continue to receive the capacity Availability Payments.

We believe that withholding the Availability Payment does not provide a sufficient sanction to deter this behaviour. Therefore, for Quick Reserve we are introducing new terms that deal with excessively

high or excessively low Bid-Offer prices and provide the ESO, at our discretion, with a range of enforceable sanctions **– see section 5.11 of the proposed Quick Reserve Service Terms.**

In line with other Balancing Services, we have provisions within the Service Terms to penalise units that pursue other commercial use of their assets, and renege on their Balancing Service contract as a consequence. We intend to introduce a similar method of recovering the cost of alternative action needed to be taken and, at our discretion, will treat instances of unavailability for a QR Contract, due to insufficient state of charge, as commercial unavailability and penalise with the cost of alternative action taken **– see section 14 'Provision of Other Services' of the Quick Reserve Service Terms with 14.1.3 added to address this requirement.**

Cross-overs

Contracted units must be able to continue delivering dispatch instructions for any subsequent settlement period following the end of a QR Contract. The maximum this could be is in line with the unit's defined Minimum Activation Period.

For Quick Reserve Phase 1:

This will not be a requirement. Instead, the use of normal BM operations will facilitate the management of crossovers past contracted windows.

Also see 'Linked Buy-Orders' in Section 8 Procurement Design.

Aggregation

Aggregated units can participate in the Quick Reserve auction. The aggregation will be allowed up to GSP group which is in line with our Grid Code requirement for aggregated BMUs.

8. Procurement Design

QR Contract (Firm Service)

Where there is a firm requirement in a QR Window, this will be defined by ESO and published on the ESO website. Where a service provider is contracted for a QR Window at day-ahead, this will be known as a QR Contract. Service Providers will be able to bid in their units to the day-ahead auction for one or more QR Windows in an operational day and if successful, will be awarded one or more QR Contracts for each discrete QR Window. This commits the asset to be available for the full duration of the QR Contract and Service Providers will be paid Availability Payments (pay-as-clear) over the duration of each contracted QR Contract, and a Utilisation Payment (pay-as-bid) if dispatched.

Historically for reserve services the QR Contract was referred to as the 'Firm Service'.

Optional Service

Where ESO do not specify a firm requirement for a QR Window at day-ahead or the service provider has been unsuccessful in their bids at day-ahead, non-BM providers will be able to submit utilisation-only bids for the Optional Service within-day via the OBP platform in Phase 2. If Service Providers are dispatched under the Optional Service, they will receive a Utilisation Payment (pay-as-bid) only.

BM providers should continue to offer reserve to ESO via the Balancing Mechanism and will be dispatched via Bid Offer Acceptances (BOAs).

Registration and Prequalification

In line with the implementation of our Dynamic Response and Balancing Reserve products, registration and pre-qualification for the new Quick Reserve services will be completed via ESO's Single Market Platform (SMP).

Maximum Bid Volume

The maximum bid volume has been limited to 300 MW. This ensures that a single instruction is limited to a maximum of 300 MW, which allows instruction of the unit within operational limits. We do not believe this excludes any provider participation at present and there might also be the additional benefit of diversifying the contracts awarded and avoiding any single points of failure.

Procurement Requirements

ESO will publish separate Market Information Reports on our website which will set out the volume of each Quick Reserve product we will look to procure (QR Contract) each day.

QR Window

The QR Window is the Contracted Service Period that providers must have their power available for instruction. Historically for reserve services this was referred to as the 'Service Window'.

Longer windows generally lead to over-holding, as the ESO would need to procure the maximum requirement over the full window length. Moreover, longer windows present a challenge for Distributed Energy Resources (DERs), typically wind and PV plants, because of the inherent variability of the resource, and to energy-limited storage assets like batteries.

Shorter windows, on the other hand, lead to a higher number of transactions and associated costs, as well as the increasing number of window crossover occasions which make it more challenging for operational teams to ensure no capacity is lost across service window transitions.

To make a trade-off between these two aspects, procuring by settlement periods (30-minute windows) is proposed. This is chosen to maximise participation, and reduce service transition risk during higher system stress periods – e.g., Remembrance Day silence and exceptional sporting events, etc.

Daily Auctions

As per our obligations under the Clean Energy Package Article 6.9, we must aim to procure most or all Balancing Services no earlier than day-ahead. Daily day-ahead auctions will be running to procure our firm requirement for Positive and Negative Quick Reserve Services.

Co-optimised Auction

We plan to procure Quick Reserve with frequency response services (DC, DM, DR) in a single, simultaneous, day-ahead, pay-as-clear auction.

Quick Reserve and frequency response services will be cleared in a simultaneous auction, with market welfare being maximised across all services.

Quick Reserve will be co-optimised with the existing frequency response services (DC, DM, DR). Where a unit can provide both frequency response services and Quick Reserve services, a provider can make alternative offers to the auction. The clearing algorithm will allocate the unit to either Frequency Response or Quick Reserve to best optimise the market clearing. See Enduring Auction Capability (EAC) Market Design Report for additional information.

Requirements

The ESO will publish separate Market Information Reports on our website which will set out the volume of each Quick Reserve product we will look to procure (QR Contract) each day. The daily requirement for Positive and Negative Quick Reserve are not yet defined.

Auction Platform

Quick Reserve auctions will be held daily on our EAC Platform.

Auction Timing

The timing of the auction refers to how long the procurement of the product is made ahead of its delivery. The auction should take place as close to real time as possible to mitigate uncertainty but leave enough time buffer to allow ESO to activate its Business Contingency Plan (BCP) if the auction process fails.

For Phase 1, to procure through a co-optimised auction we intend to keep the existing established Response auction timing. We believe there will be substantial overlap of fuel types participating in both the Response and QR services and this offers the most cost effective and efficient solution.

For Phase 2 and Slow Reserve delivery, it is recommended to explore the possibility to run the QR auction in the morning, together with the auction for Balancing Reserve. This will facilitate the co-optimisation across all Reserve products in the future. Our requirements for QR and BR can potentially be substituted. This is subject to further assessment and will be communicated to industry.

For Quick Reserve Phase 1:

Quick Reserve and Dynamic Response services (Dynamic Containment, Dynamic Moderation, and Dynamic Regulation) will be procured in a single co-optimised auction held at 14:00 each day.

Bid Submission

A Registered Service Provider can only participate in the daily auctions once they have completed pre-qualification. ESO will grant access to the Auction Platform and provide log-in details to the Registered Provider or their nominated Agent.

The Registered Service Provider will then be able to offer ESO its unit(s) for the Positive and Negative Quick Reserve QR Contract on the EAC Auction Platform by submitting sell-orders. For each product, a sell-order will include the required bid parameters, such as the availability price (£/MW/h), the volume (MW), confirmation if the bid is curtailable (the minimum capacity they are willing to accept) and any other additional parameter(s) as may be specified in the relevant EAC Market Design Report.

Bid validation, such as checking maximum (MW) not exceeding the pre-qualified asset MW, will be done at bid submission stage.

Each unit can bid for one or more of the QR Windows within an Operational Day.

ESO submits the daily buy-order to the EAC platform which specifies a maximum volume (MW) ESO willing to procure at different price levels (£/MWh) for each product and QR Window.

The auction platform will provide a Rolling Window function which means the auction gate will be open in advance such that orders can be submitted 14 days before each auction (timing to be confirmed).

Sell-Orders can be submitted, reviewed, modified, or deleted before auction gate closing.

Assessment Principles

To secure the system economically, the clearing algorithm will aim to first maximise the Total Welfare, then minimise the overall procurement cost (when there is a choice of clearing prices), as set out in the EAC Market Design Report.

A buy curve (generated for each auction or QR Window) will be applied to reflect that the volume ESO is willing to procure varies with price. The cost of taking alternative actions, such as Spin Gen will be taken into consideration when generating the buy curve.

All bids will be ranked in price ascending order against the buy curve to identify the marginal bid.

Auction Results

Auction results can be accessed after each auction via the enduring auction platform by 14:30 and ESO Data Portal by 14:45.

Linked Sell-Orders

Provider Bids (sell-orders) that are linked can only be accepted or rejected all together. There are two types of linking: link by time (i.e., QR Windows) and link by products.

Linking by QR Windows means participants can link their bids across more than one QR Window. Due to commercial reasons, for example SOC management, some participants may want to do this (i.e., submitting multiple-period orders) to avoid that their units are accepted for some non-adjacent windows. Or some providers who have high start-up costs may want to span this cost over longer delivery periods to make themselves more attractive in the market.

Linking by products means participants can link their bids across products (i.e., Positive and Negative Quick Reserve). Without this function, providers who prefer getting awarded in dual directions will offer each service at a higher price to make sure they would be happy if only one product is cleared. Additionally, this will not breach Clean Energy Package Article 6.9 requirements, as ESO are running two separate markets: providers can submit different volume and price in each market; these two markets cleared separately with different volume and price; and two contracts are produced.

Linking functions will be supported by Enduring Auction Capability. There is no strong reason for us to put additional restrictions (and therefore additional costs) on bid submission/validation to stop participants submitting linked bids. Full flexibility will be given to all participants. We are expecting this will facilitate market participation and increase market efficiency.

Thus, linking bids (by QR Window or product) will be permitted for Quick Reserve.

Linked Buy-Orders

Crossovers occur at QR Window boundaries and require significant consideration during operations. They are routinely managed to maintain power output across Settlement Period and EFA block boundaries, as otherwise we will likely see significant change in output which could lead to a low or high frequency event, if significant enough, and are a key target of the Quick Reserve service.

As a solution to effectively manage the above risks, the ESO are introducing Linked Buy-Orders. Such Linked Buy-Orders issued by the ESO state that the submission and/or acceptance of a sell-order is conditional on the submission and/or acceptance of sell-orders of identical MW volume for each QR Window described in the Linked Buy-Order section, ensuring there are consistent units contracted across key crossover periods, allowing for their effective management of the risk posed. Such Linked Buy-Orders will be communicated appropriately with market participants ahead of gate closure.

We plan to go-live without this facility being used and will keep the contracted volume under review to identify whether significant changes of units are causing operational issues at key times of day. If we see an issue then we would look to implement a linked window at that time, appreciating that minimising the duration and quantity of linked windows will maximise flexibility for the market.

All other requirements remain as defined in the Service Terms, including state of energy which applies to each QR Window, even if they are linked **– see section 6 of the Quick Reserve Procurement Rules for additional information.**

Bid Curtailment Rules

The Quick Reserve requirement could be changing considerably throughout the day. Given the design choice to allow participants to link their bids together across time it is important to have flexibility within the bidding structure to meet the ESO's Quick Reserve requirement, which changes across the day and between half hours. ESO would allow QR providers to user-define the curtailment of their bid (i.e., the minimum capacity they are willing to provide).

Stacking / Splitting

"Stacking" is defined as the ability to use the same MW to provide different products simultaneously (i.e., in the same QR Window), while "splitting" splits the unit up to use its different component MWs from the same asset across different services.

Stacking

Quick Reserve providers can stack the service with active Capacity Market (CM) contracts, the BM, Voltage and Stability services. Where a CM Notice (CMN) is issued, these providers should continue to make headroom available to us as per any active Quick 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, QR has been added to the list of Relevant Balancing Services.

Splitting

For a given QR Window, splitting is allowed between Positive and Negative Quick Reserve and the Dynamic Response Services, as long as different capacity from the asset is used for each service. Splitting is not planned between Quick Reserve and other Reserve services.

For Quick Reserve Phase 1:

Providers cannot split their capacity between the Quick Reserve market, Dynamic Response markets or any other Reserve markets during the same QR Window.

Locationality

Throughout the development of this product design, the merits and costs of introducing some locational valuation to the assessment process for the product were considered. This would be in respect to the location of individual BMUs and not in respect to aggregated units.

Locational assessment would allow the ESO to avoid contracting for reserve on units located behind an anticipated network constraint. This is not an approach that has been taken in any Balancing Services market to date.

Any future locational procurement will be subject to future ESO assessment and industry consultation.

For Quick Reserve Phase 1:

Due to the complexity of locational procurement, it will not be achievable within the accelerated delivery timeline. The accelerated version will only consider national procurement, meaning requirement setting and assessment will only be run at the national level.

Active Network Management Schemes

Eligible Assets will not normally be registered by ESO for participation in Quick Reserve if they have a condition in their DNO connection agreement whereby they are signed up to an Active Network management (ANM) Scheme / Flexibility Connection.

However, ESO will consider this on a case-by-case basis and may (at its sole discretion) enable such participation if there is reasonable evidence to demonstrate that the asset has very high forecasted availability (e.g., as shown by Curtailment Assessment Reports from DNOs). ESO shall continue to keep this under review and any changes to this position will be consulted on accordingly.

Availability Declarations

Once a QR Contract has been awarded, or the Service Provider wishes to declare themselves available for the Optional Service (Non-BM only), they will be required to submit an availability declaration for the relevant unit.

For Non-BM providers these (re)declarations will be submitted into the appropriate OBP route and must be submitted no later than ninety (90) minutes prior to each QR Window.

Availability declarations must be submitted in accordance with the Service Terms and include;

- confirmation of MW available,
- a utilisation price (£/MWh)

For BM Service Providers, declarations must be made by way of Grid Code BM unit Data submissions via EDL/EDT (or wider access equivalent), by no later than Gate Closure.

Declarations can be submitted ahead of time (either before, during or after auction/contract award) provided that the MW value in a Service Provider's QR Contract and availability declaration match. Where no (re)declaration has been submitted by the deadline, or the declared available MW value does not match the contracted MW, the unit will be assumed to be unavailable.

Unavailability for commercial or non-technical reasons is not permitted for a QR Contract.

ESO

Settlement and Pricing

There are two forms of payment that ESO will make for the Quick Reserve services.

Availability Payments

Where a Service Provider (BM and non-BM) secures a QR Contract, the ESO will make an Availability Payment subject to the relevant market clearing price (£/MW/h) for the QR Window covered by the QR Contract. Availability payments are subject to performance monitoring.

Utilisation Payments

For each Quick Reserve instruction, non-BM providers will receive a payment for the energy delivered on a £/MWh basis if instructed to deliver a QR Contract in a QR Window. Additionally, where ESO instructs an Optional Service from a Non-BM unit which is declared available for the QR Window, then it will pay for the energy delivered on a £/MWh basis.

All Utilisation Payments will be calculated using the Utilisation Price on a pay-as-bid basis submitted by the Service Provider for the relevant QR Window. Utilisation payments will include the energy delivered in ramping towards and ramping from the instructed MW level.

For BM providers, energy delivered will be settled by Elexon as part of the Balancing Mechanism. Non-BM providers will be settled by the ESO.

Availability payments and non-BM utilisation payments will be settled by ESO monthly, subject to deductions for service delivery failures following performance monitoring.

ABSVD

ABSVD will be applied in accordance with the published ABSVD Methodology.

Transfer of Quick Reserve Contracts

The QR Service Terms allow a Service Provider (Primary Service Provider) to transfer their QR contract to another unit prequalified for QR (either their own or another Service Provider (Secondary Service Provider)). This is in line with other Balancing Service contracts, however we are making some changes for QR that allow for all applicable payments to be made direct to the Secondary Service Provider, where previously ESO made such payments direct to the Primary Service Provider. When the Primary Service Provider assigns a Quick Reserve Contract to the Secondary Service Provider this effectively now means that a transfer is a full assignment, transferring all rights and obligations under the Service Terms for the Contracted Window - **see section 22 of the proposed Quick Reserve Service Terms.**

ESO

Appendix 1 - Dynamic Parameters as per Balancing Code BC1

Please refer to the Balancing Code BC1 for full details.

The Dynamic Parameters comprise:

- Up to three Run-Up Rate(s) and up to three Run-Down Rate(s), expressed in MW/minute and associated Run-Up Elbow(s) and Run-Down Elbow(s), expressed in MW for output and the same for input. It should be noted that Run-Up Rate(s) are applicable to a MW figure becoming more positive;
- Notice to Deviate from Zero (NDZ) output or input, being the notification time required for a BM Unit to start importing or exporting energy, from a zero Physical Notification level as a result of a Bid-Offer Acceptance, expressed in minutes;
- Notice to Deliver Offers (NTO) and Notice to Deliver Bids (NTB), expressed in minutes, indicating the notification time required for a BM Unit to start delivering Offers and Bids respectively from the time that the Bid-Offer Acceptance is issued. In the case of a BM Unit comprising a Genset, NTO and NTB will be set to a maximum period of two minutes;
- Minimum Zero Time (MZT), being either the minimum time that a BM Unit which has been exporting must operate at zero or be importing, before returning to exporting or the minimum time that a BM Unit which has been importing must operate at zero or be exporting before returning to importing, as a result of a Bid-Offer Acceptance, expressed in minutes;
- Minimum Non-Zero Time (MNZT), expressed in minutes, being the minimum time that a BM Unit can operate at a non-zero level as a result of a Bid-Offer Acceptance;
- Stable Export Limit (SEL) expressed in MW at the Grid Entry Point or Grid Supply Point, as appropriate, being the minimum value at which the BM Unit can, under stable conditions, export to the National Electricity Transmission System;
- Stable Import Limit (SIL) expressed in MW at the Grid Entry Point or Grid Supply Point, as appropriate, being the minimum value at which the BM Unit can, under stable conditions, import from the National Electricity Transmission System;
- Maximum Export Limit (MEL) expressed in a series of MW figures and associated times, making up a profile of the maximum level at which the BM Unit may be exporting (in MW) to the National Electricity Transmission System at the Grid Entry Point or Grid Supply Point or GSP Group, as appropriate.
- Maximum Import Limit (MIL) expressed in a series of MW figures and associated times, making up a profile of the maximum level at which the BM Unit may be importing (in MW) from the National Electricity Transmission System at the Grid Entry Point or Grid Supply Point or GSP Group, as appropriate.

ESO

Appendix 2 - Phased Implementation of Quick Reserve

The following provides supporting information to our Proposed phased delivery approach for Quick Reserve.

Delivering Consumer Value

There is a justifiable balance between the early delivery of a firm market for Quick Reserve, which delivers significant value to end-consumers as we expect savings of between £5m and £6.25m per month.

Systems Delivery

Roadmap and Prioritisation

In April 2023, we made the decision to delay the delivery of our new suite of Reserve products due to the significant changes required in our existing legacy balancing systems and supporting processes. Considering the complex and rapidly evolving systems change environment, we believed it was prudent to re-evaluate whether implementation onto our legacy systems was appropriate, as opposed to direct implementation into our Open Balancing Platform (OBP).

Our approach is to implement the new Quick Reserve service through our new OBP platform with the support from existing BM legacy systems, allowing the accelerated delivery for BM parties in 2024, and subsequently for non-BM parties in 2025 through future OBP releases. We believe this approach is the most cost-effective way to continue delivery against wider ESO objectives while considering the IT costs for both ESO and market providers.

Non-BM Delivery

- **ASDP Development:** Adapting the existing ASDP dispatch platform (currently used to dispatch non-BM parties) would require significant time and cost, which cannot be completed before mid-2025. In the meantime, we are actively working to implement full non-BM capability for Quick and Slow Reserve onto OBP by September 2025. Therefore, Phase 2 of Quick Reserve is planned for summer 2025 to utilise OBP.
  Due to the retirement of ASDP in December 2025, further development to accommodate Quick and Slow Reserve onto the platform would introduce significant regret spend without providing an accelerated time to market. Additionally, committing resource to this development would negatively impact our existing OBP Roadmap commitments.

- **BM Development:** We have explored the possibility of overcoming these ASDP limitations by modifying existing BM systems to allow non-BM assets to participate in Quick Reserve alongside BM assets in phase 1. However, we consider this route to be unviable due to extended lead-times and significant expected cost.

- **OBP Development:** Delivery of Quick Reserve will not restrict access to potential providers, who enter through the BM route (either as a BSC Party, or through Wider Access).

OBP will facilitate non-BM dispatch from spring 2025 and support both BM and non-BM natively and going forwards.

ESO

Quick Reserve Eligibility

All market providers have equal access to providing the Quick Reserve service via one of two routes during Phase 1 of the service implementation, either as a BSC Party and entering the Balancing Mechanism through the traditional route, or via the Wider Access programme.

Wider Access

Wider access is a quick and affordable alternative for non-BM providers to access the Balancing Mechanism. To date we've signed up ~1.2GW of capacity since 2020.

The Wider Access route can take 3-5 months to complete for a new provider and has a couple of cost options to use a host platform or have the host manage your BOA. Beginning the process in a timely manner should enable a non-BM provider to be Quick Reserve ready by go-live of the service.

Alternatively, registering via an aggregator is a cost-effective route and can take just weeks with the aggregator managing the service for the asset owner.

The Wider Access programme enables a route for small non-BM assets to transition into the BM and access Quick reserve from day 1.

Route to Market

Existing providers of 'faster-acting' reserve services have a clear route to market, as outlined in our accompanying Quick Reserve Transition Plan.

We believe that adopting this phased approach to implement Quick Reserve on the new OBP system is fair and balanced. This approach prioritises the timely establishment of a firm market for Quick Reserve while also considering the integration with our strategic IT platforms. Additional supporting information is provided in the accompanying Annex.

We remain committed to working collaboratively with Ofgem and industry stakeholders to achieve our shared objectives.

ESO

Appendix 3 - Quick Reserve Transition Plan

We expect Quick Reserve to be fully implemented across both BM and non-BM particpants by summer 2025.

We intend to leave the existing Optional Fast Reserve (OFR) market open until such time as either all providers have moved to alternative markets or until December 2025 when the Ancillary Services Dispatch Platform (ASDP), which supports the dispatch of non-BM units, will be decommissioned.

This will enable the ESO to:

- Avoid eliminating routes to market until the new Quick Reserve service has been fully implemented.
- Ensure ENCC access to additional reserve capacity within day, from day 1, to cover requirement outside of normal conditions.
- Ensure the OFR market remains operational should Quick Reserve registration and participation prove slower than expected from day 1.

Participation - Registration for both services

Quick Reserve and OFR will be operational together from November 2024 to December 2025. Providers will be able to offer both Quick Reserve (where eligible) and OFR service simultaneously, should they wish. This means that providers may continue to declare themselves optionally available for any OFR period where a day-ahead Quick Reserve contract has not already been awarded.

Procurement and Volume Management

It is anticipated that we will see sufficient volume for the Quick Reserve service in Phase 1 to meet our estimated total typical requirement of firm contracted fast acting reserve (circa 300-400MW) via the day ahead auction. We are seeing the majority of battery assets in the BM already submitting and being dispatched with dynamic parameters similar to the new Quick Reserve service. As a result, we intend to procure 100% of this requirement through the Quick Reserve day-ahead auction.

Control-room Management

In real-time, the control-room will manage Quick Reserve through existing legacy BM systems and the new OBP dispatch platform, with OFR dispatched on the existing ASDP platform (to be decommissioned in December 2025). As is the case today, ENCC will manage the two systems simultaneously assessing actions in merit/economic order.

As the firm procurement for Quick Reserve will effectively be a sunk cost for availability, it is likely to be more economic to use these units as opposed to accepting additional OFR and Spin Gen arming fees within day. However, if in real time the ENCC identify that additional fast-acting reserve is required, then additional optional services (OFR / Spin Gen) would be used to create that reserve at the lowest overall cost. If the requirement for additional Reserve occurs frequently, then this would form part of the information ESO use to assess whether the requirement for Quick Reserve needs increasing.

ESO

Competition across markets

In normal system conditions, it will be unlikely that extra reserve capacity will be required within day. OFR will need to price competitively to compete with the Quick Reserve market.
We will include the prices of OFR units with similar parameters to Quick Reserve to guide the price of alternative action (what the ESO need to pay if Quick Reserve was not procured) to derive the buy-order for Quick Reserve. If there is reliable volume in the OFR market routinely pricing for availability at a lower price than Quick Reserve, then the ESO may reduce the Quick Reserve buy-order and turn to cheaper OFR. In this way the ESO can generate competition between the markets.

Transition Plan Summary

Our outline plan is highlighted in the table below, with justification and reasoning in the following sections.

Stage Gate	Item	Date	Summary
Service Delivery / Retirement	Delivery of BM Quick Reserve	Nov-24	Alignment with the development and implementation of new IT infrastructure (Open Balancing Platform)
	Delivery of non-BM Quick Reserve	Summer-25	
	Retirement of Fast Reserve	Dec-25	To be replaced by the introduction of Quick Reserve in time for the retirement of the existing dispatch system, ASDP.
Transition Period	Onboarding / Transitioning Providers	Oct-24 - Dec-25	Onboarding to the Quick Reserve service is due to commence in late Oct 2024 upon acceptance of the EBR A18 consultation.
	Participation		Providers will be eligible for registration and participation in both Quick Reserve and OFR during the Transition Period.
	New OFR Registrations		Providers will be able to register for the OFR service for as long as suitably appropriate up until service retirement in Dec-25
	Control Room Management		OFR will remain operational until Dec-25 and considered in merit/economic order against all other suitable actions.
	Competition Across Markets		Opportunity for OFR to price themselves competitively against Quick Reserve actions.
	Procurement & Volume Management		ESO intend to procure 100% of its fast-acting reserve requirement through the Quick Reserve day-ahead auction.
	Provider Impact		Routes to market remain open to all existing providers. Providers that remain in OFR are likely to see a less financial attractive market than previously experienced.