Public

Quick Reserve Service Summary

Version 5.0 - July 2025

Document Purpose:

On 4th July 2025 Ofgem approved the European Balancing Regulation (EBR) A18 Consultation from the National Energy System Operator (NESO) for the enduring QR service (Phase 2), introducing participation in Quick Reserve from non-Balancing Mechanism (non-BM) units alongside the existing Balancing Mechanism (BM) units that provided the service during Phase 1.

This document supports the Quick Reserve (QR) Service Terms and Procurement Rules as published on the NESO website.

Please note, in line with our other Balancing Services we continue to incorporate (where applicable) the latest Energy Networks Association (ENA) Flexibility Services Standard Agreement into the Service Terms and Procurement Rules for Quick Reserve.

Background

Through our Reserve Reform work, NESO are updating the Reserve products we procure to comply with the Clean Energy Package and to better meet system and statutory requirements. Quick Reserve is aimed primarily at reacting to pre-fault disturbances to restore energy imbalance quickly and maintain system frequency close to 50.0 Hz. 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).

To align this document with the key terms used in the QR Service Terms we have made some changes to the references in this document.

Term	Definition
QR Contract(s)	Contract(s) for the delivery of Quick Reserve from an Auction Unit either formed through the daily auction (Firm Service) or upon utilisation by NESO of the Optional Service.
Contracted Service Period	A QR Window which is the subject of a QR Contract as procured through the daily auction (Firm Service).

SR Window(s)	Each consecutive thirty (30) minute period commencing at 23.00 hours. This is equivalent to each Settlement Period in an EFA day.
Service Day	each twenty-four (24) hour period commencing at 23.00 hours otherwise referred to as Operational Day.

Contents

1. Quick Reserve Summary

Positive Quick Reserve (PQR) and Negative Quick Reserve (NQR) form part of a suite of new Reserve products which NESO are developing to maintain the safe and secure operation of the network. They are aimed primarily at reacting to pre-fault disturbances to restore energy imbalance quickly and maintain system frequency close to 50.0 Hz. As such, Quick Reserve will replace the legacy Optional Fast Reserve service.

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 NESO website.

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. Quick Reserve is open to any technology with the ability to provide a net change in demand/generation of at least 1MW.

2. 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 telephony during contracted QR Windows
Time to full delivery	1-minute from instruction start time
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, up to 5s latency
Dispatch mechanism	BOA for BM units OBP dispatch instruction for non-BM units

Technical Design Element	Proposal
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
Performance Monitoring	Time to Full Delivery, Availability and Utilisation – Payment Penalties for over (>120%) and under (<95%) delivery
Baselining	All providers will be expected to provide a nomination baseline, equivalent to the BM Physical Notification, with Final Physical Notifications 60-mins ahead of contracted QR Windows. 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 availability declarations (including price and MW), PN's, and Operational Metering.
Ramp rates for baselines	Aligned with Dynamic Response – no limit proposed
Passing through zero	Allowed
Crossovers	Units are expected to be available for instruction into a subsequent QR Window (including where non-contracted) up to its Minimum Activation Period

3. 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).
Locationality	National
Auction Platform	EAC
Auction Timing	Results by D-1, 14:30

Procurement Design Element	Proposal
Stacking & Splitting	Same MW cannot be sold twice. See Revenue Stacking section for more detail
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

4. Technical Design

The key technical design features for Quick Reserve are:

- The service is open to BM (Balancing Mechanism) and non-BM (non-Balancing Mechanism) market participants.
- 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.
- All Quick Reserve units must be able to;
    - Submit relevant service parameters, location, and prices (similar to the Balancing Code requirements).
    - Be able to achieve full delivery of contracted volume in 1-minute or less from the instruction start time. No maximum ramp rate limit is required.
    - Have Minimum Activation Periods not greater than 5-minutes and a Maximum Recovery Period not greater than 3-minutes.
    - Be able to deliver throughout the whole Contracted Service Period, including where back-to-back contracts are held. BM units to submit Physical Notifications as per Grid Code obligations. Non-BM units to submit Physical Notifications as specified.
    - BM units to submit Operational Metering as per Grid Code obligations. Non-BM units to submit Operational Metering throughout the Service Day where contracted, (or the declared periods where optional), plus the subsequent QR Window.
- Units can be aggregated at GSP Group level to meet the 1 MW minimum participation threshold, with location submitted during pre-qualification.
- The maximum bid volume has been limited to 300 MW. This is so that a single instruction is limited to a maximum of 300 MW, which allows dispatch of the unit within operational limits.
- Contracts (QR Contract) will be awarded upon acceptance of bids in whole MWs (minimum 1 MW) submitted into the daily auction.
- Providers with a QR Contract will receive an availability payment (£/MW/hour) and a utilisation payment (£/MWh) when dispatched.

- Providers will be required to provide Operational Metering data with 1Hz granularity at a latency of no more than 5s. This requirement is inclusive of BM and non-BM providers and is specified at the unit level. Therefore, it is possible with staggered polling with a large enough group of assets to achieve the required accuracy and latency with assets that have less granular metering.
- BM units need to provide NESO with dynamic parameters which are defined in BC 1.A.1.5. Their Dynamic Parameters and Physical Notifications are to be submitted 24 hours in advance, with final notifications 60-mins ahead of gate closure and relevant price bands.
- Non-BM units must submit Operational Data, including, Availability Declarations (including price and MW), PN's, and Operational Metering.
- Splitting Quick Reserve with other ancillary services will not be allowed in this phase of implementation due to current IT limitations, however we do intend to broaden splitting capabilities with other services including Response, Balancing Reserve and Slow Reserve in the future.
- Non-BM providers will have their energy position corrected through the ABSVD process.
- QR units will be performance monitored using 1s performance metering data submitted after the Service Day to be evaluated on availability, time to full delivery and utilisation.

Provider eligibility

To participate in the Quick Reserve market, providers must:

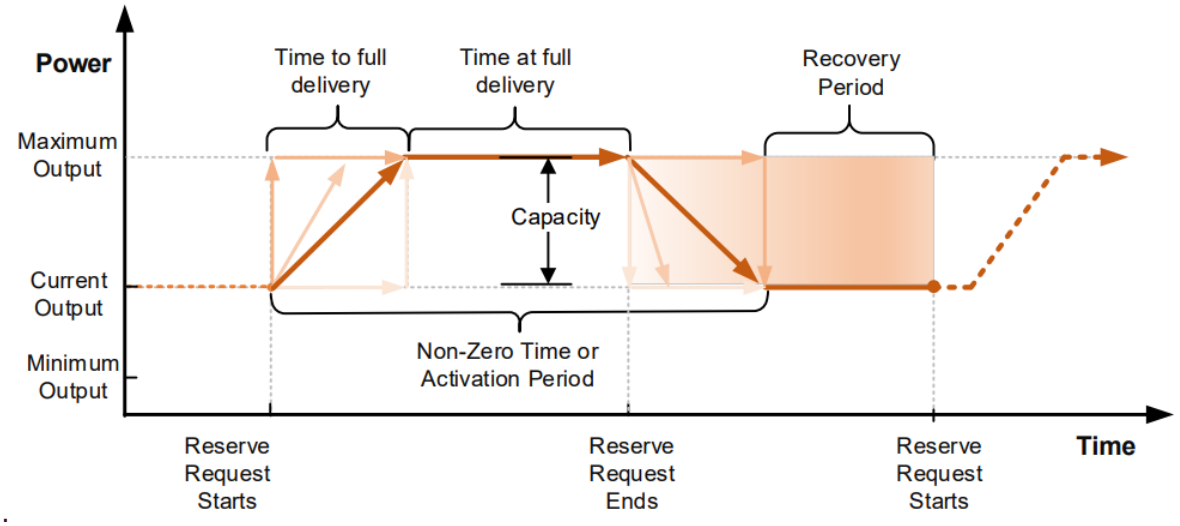
1) have control telephony for the entire duration of a Contracted Service Period, which could be Control Telephony or System Telephony as per Grid Code definitions – to allow for dispatch during planned or unplanned outages of the EDT/EDL system (or wider access equivalent). For non-BM this will require an operational telephone so that NESO can contact the non-BM unit to allow for dispatch during planned or unplanned outages of the OBP system interface.
2) be capable of providing 1 MW 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.

Service Utilisation & Dispatch Mechanism

Utilisation for BM units is in line with normal Balancing Mechanism operation in accordance with BC2 via Bid-Offer Acceptances. 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 are dispatched via the Open Balancing Platform (OBP) system and will be issued a start instruction followed by a stop instruction at a later point. The Start and Stop instructions may be sent in advance, with an effective date-time for action. The non-BM providers control point will need to receive these instructions and only action at the specified effective date-time points.



Notice to Start Ramping

BM units participating in Quick Reserve, both Positive and Negative, should have their Notice to Start Ramping (NTO/NTB) set to 0-minutes to allow units to meet Time to Full Delivery of 1-minute.

Non-BM units are not required to provide an NTS as this is already submitted via the prequalification process.

Time to Full Delivery

The time to full delivery is 60-seconds or less, inclusive of any notice to start ramping.

This justification rests on two separate analyses:

- **an evaluation of historic frequency deviations:** A time to full delivery of 60-seconds 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 around 30% of the non-BM OFR capacity (close to 320 MW) can achieve the 1-minute time to full delivery, with much of the remaining capacity working towards this requirement in order to participate in Quick Reserve. We also believe that batteries, wind generation and secondary response capable conventional machines can meet this requirement.

Cease Time

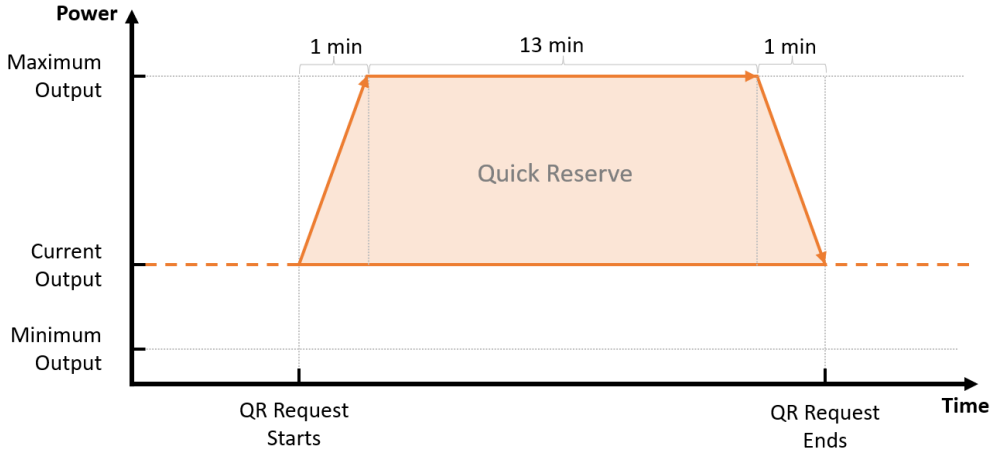
The cease time is defined as the converse of time to full delivery. That is, the time it takes for a unit to ramp down from a Quick Reserve request and return to its FPN. As can be seen in the infographic above, the non-zero delivery envelope is a symmetric trapezium, meaning the ramp up and ramp down 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.

NESO will issue Cease Instructions where required. For non-BM units, instructions will contain a 'STOP time' and will honour required parameters (e.g., MAP, etc.) for the unit.

Minimum Activation Period (MAP)

The 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 NESO can only issue an instruction for a minimum of between 1 and 5-minutes for that unit. 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.

BM providers are expected to reflect their Minimum Activation Period through their Dynamic Parameters for each relevant Contracted Service Period, or as part of the prequal process if participating as a non-BM provider.

Recovery Period

The maximum Recovery Period for Positive and Negative Quick Reserve is up to 3-minutes. This means that an asset has 3-minutes to return to availability before NESO can send another dispatch instruction.

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

BM providers are expected to reflect Minimum Recovery Period (Minimum Zero Time) through Dynamic Parameters for each relevant Contracted Service Period, or as part of the prequal process if participating as a non-BM provider.

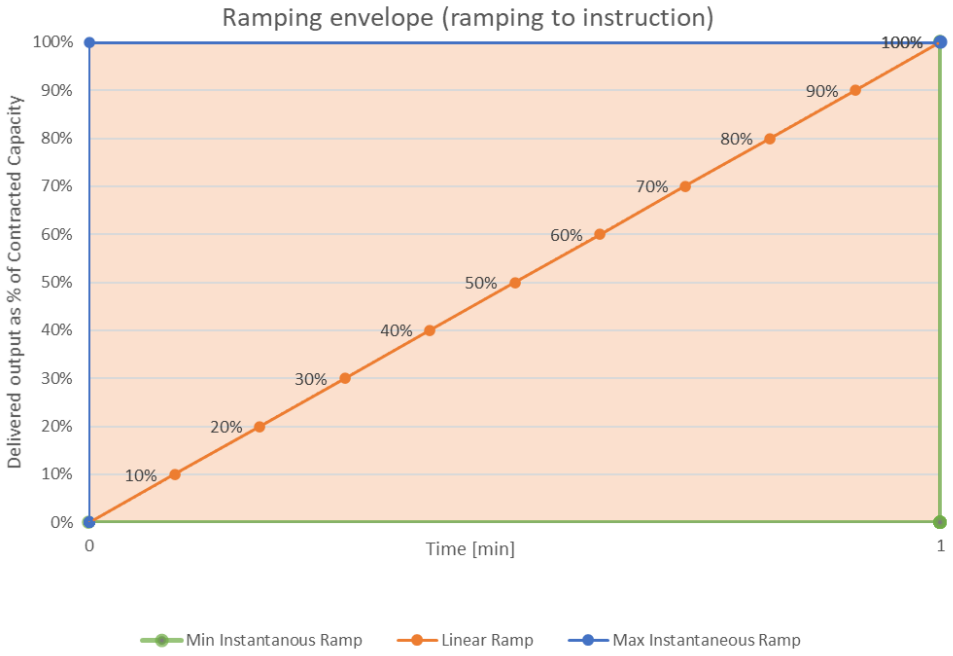
Ramping Envelope

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

- The unit starts delivery from the Start Time within the instruction.

- No maximum ramp rate limit when ramping to or from 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).

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



Instructions will have a 1-minute ramp up and ramp down period. Providers should deliver within 60-seconds from the start time of an instruction, with any imbalance risk factored into their utilisation price.

Ramp rates for baselines for energy limited assets.

The Maximum Ramp Rate limits the rate of change of power for energy limited assets as shown by Performance Baselines. Previous Dynamic Response (DR) Service Terms stated a Maximum Ramp Rate of 5% of the contracted MW/minute but this has been removed from the DR Service Terms, and we have therefore removed this restriction from the QR

Service Terms – ***this decision is subject to review and may become a future requirement.***

We understand the Maximum Ramp Rate requirement has represented a pain point for participants, imposing an opportunity cost through constraining opportunities for wholesale market participation and more efficient state of energy management. We recognised this cost may have driven higher prices and ultimately caused costs to be passed on to energy consumers. We introduced the Maximum Ramp Rate to protect against effects of herded energy recovery. Service Terms previously required units to recover their state of energy if they do not have enough energy (or capacity to import energy). Following a large high/low frequency event where units charge/export (respectively) to deliver the response service, many or all units may be required to recover energy at the same time. The Maximum Ramp Rate was to protect against the cumulative effect of such behaviour. We have carried out analysis, including modelling, review of historical provider behaviour, and stakeholder engagement, to consider the system security impact of changing or removing the ramp rate restriction. We concluded the benefits of removing the Maximum Ramp Rate likely outweighed the cost associated with additional actions to protect against herded energy recovery. As the system operator, it is essential we take such decisions cautiously and we will continue to monitor participant behaviour and the effect of removing this restriction. Quick Reserve ramp rates for baselines are aligned with the Dynamic Response services. Ramp rates for baselines are therefore not required for Quick Reserve until such time as if and when these requirements are updated for the Dynamic Response services, should they be required for system security purposes.

Operational data Requirements

BM units are to submit operational data as current BM operations.

Non-BM units to submit availability declarations (including price and MW), PN's, and Operational Metering. See below for further detail on Operational Metering and PN requirements.

Availability Declarations

BM providers should submit their Availability Declarations as per the Grid Code (BOAs).

Non-BM Availability Declarations are required for each Contracted Service Period (and/or where declaring optionally available), and should consist of:

1. Unit ID
2. Service
3. Breakpoint (MW),
4. Utilisation Price
5. Start Datetime
6. End Datetime

Operational Metering

All providers (BM and non-BM) are required to submit operational metering at a frequency of once per second (1Hz) with a latency of no greater than five (5) seconds whilst providing the service.

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 Units

BM providers should submit operational metering in accordance with the Grid Code and via existing processes.

Non-BM Units

Non-BM providers should submit Operational Metering as detailed in the 'Operational Metering for non-transmission connected BM & Non-BM Participants' documentation. Where one or more contracts have been awarded, Operational Metering is required for all QR Windows in the Service Day.

For the Optional Service, Operational Metering is required where a unit is declared optionally available and for the immediate QR Window that follows (see Crossover section).

For the avoidance of doubt, Operational Metering is also required for the first QR Window in the subsequent Service Day if a contract (or optionally available) is held in the final QR Window of a Service Day for Crossover purposes.

We recognise that some non-BM technology types, such as demand side flexibility, aggregators of smaller assets, etc, may wish to discuss how this data should be presented to NESO. The metering NESO requires is specified at the unit level and it is possible with staggered polling with a large enough group of assets to achieve the required accuracy and latency with assets that have less granular metering. Please

reach out to commercial.operation@neso.energy if you wish to discuss this requirement.

Physical Notifications (Operational Baselines)

Physical Notifications (PN) are defined in the Grid Code as a forecast or an indication of the generation or demand levels a unit expects to operate at during specific periods. Physical Notifications are required by NESO for real-time operational awareness, margin assessments and during the settlements process.

All providers will be expected to provide a PN, giving a forward-looking view of unit output and is locked in for the forthcoming two QR Windows (Settlement Periods) at Gate Closure.

BM Units

Should continue to submit Physical Notifications in accordance with Grid Code and via the existing processes.

Non-BM Units

Physical Notifications are to be submitted to the Open Balancing Platform (OBP) as detailed in 'OBP Web Services Specification', and should consist of:

1. Unit ID
2. PN Start (MW)
3. PN End (MW)
4. PN Start datetime
5. PN End datetime

Where a Firm QR Contract is held:

- Where one or more firm QR Contracts held in a Service Day (23:00 – 23:00), a PN is required for each SP of that Service Day. The 48 PNs (or 46/50 as applicable for clock change days) for the subsequent Service Day should be submitted within 2 hours of the contract award (Daily Auction), nominally 16:30 each day. If the unit has a contract for the last QR Window of the Service Day, then the PN for the 1st QR Window of the following Service Day is also required for Crossover purposes.
- The provider will have the opportunity to submit/update its PN (or FPN) up to 60-minutes ahead of gate closure for the relevant Contracted Service Period, plus the subsequent QR Window. If there is no (F)PN submitted by this time then the unit **will be dispatchable** but will not receive an availability fee.

For the Optional service:

- Where a unit does not hold a firm contract for any period in a Service Day (23:00 – 23:00), but makes itself optionally available, a PN is required only for the optionally declared QR Window(s), plus the subsequent QR Window for Crossover purposes.

We recognise that some non-BM technology types, such as demand side flexibility, aggregators of smaller assets, etc, may wish to discuss how this data should be presented to NESO. Please reach out to commercial.operation@neso.energy if you wish to discuss this requirement.

Submission of Operational Metering and Baselines from non-BM providers

In the initial proposals for Quick Reserve, NESO proposed the introduction of a requirement on all pre-qualified non-BM providers to submit operational metering and physical notifications (operational baselines) at all times, rather than just during Contract Service Periods. This proposal included associated performance penalties applicable to both BM and non-BM parties, involving suspension from the applicable auctions for a fixed period.

We have taken the decision not to include these requirements in the initial phases of QR, however, it is still our intention to implement this requirement in future - any such proposal would follow the formal EBR Article 18 industry consultation process.

Performance Metering

All providers (both BM and non-BM) are required to submit data to NESO for real time monitoring of service availability and post-event performance monitoring. This data is required by NESO to validate the performance where units are dispatched to deliver an instruction for the QR Contract and Optional Quick Reserve services.

The detailed specification for the submission of this Performance Metering requirement is available from our website.

Where a QR Contract is held:

Service Providers are required to submit (via the agreed IT interface) a Performance Metering file for all contracted QR Windows in the Service Day and for any QR Window where a Crossover occurs (including the 1st QR Window of the following Service Day if applicable).

For the Optional service:

Service Providers are required to submit (via the agreed IT interface) Performance Metering file for all QR Windows where the Optional Service is utilised and for any QR Window where a Crossover occurs (including the 1st QR Window of the following Service Day if applicable).

All files must be submitted by no later than one calendar day (24 hours) after the end of the Service Day on which QR was provided for the purposes of monitoring and metering of the Service Provider's provision of Quick Reserve.

Where no valid Performance Metering file has been received within one day (24 hours) after the end of the Service Day on which QR was provided, NESO will withhold Availability Payments (where applicable) and for non-BM, no Energy Utilisation Payments in respect of the Service Day will be paid (no data to assess availability and derive energy delivery).

Where, due to a fault, the service providers Performance Metering file is unavailable for submission by the agreed IT interface, the Service Provider can agree with NESO to submit alternative Performance Metering data by not later than five calendar days after the Service Day on which QR was provided.

Publication of Data

In addition to the publication of all QR auction results and in order to provide as much data transparency as possible across all QR market participants, we publish (or intend to publish at a future time) on the NESO data portal the following non-anonymised data relating to all QR units providing the service, where this data is not already published pursuant to the BSC;

- Operational Baselines
- Operational Metering Data
- Performance Metering Data
- QR Unit availability for Quick Reserve (comprising Contracted or Optional MW)
- QR Utilisation Price
- Details of instructions issued

Performance Monitoring

Service Availability

NESO will monitor the availability of units in order to confirm that they are holding sufficient headroom/footroom and can therefore deliver their contracted MW if instructed.

We will evaluate the conditions below for each Contracted Service Period, individually. Failure to deliver at 100% of contracted availability will result in the Availability Payment being withheld for all relevant QR Windows.

For the avoidance of doubt, and if not contained in the tables below, a unit must make available the contracted MWs for the required service(s) within the specified QR Window(s), and NESO should not have to send an instruction greater than or less than a unit's contracted capacity due to a limitation of the unit. That is to say:

1. **Where a provider declares LESS than their contracted MW**
   The declared volume remains available to NESO, however the provider has not met its contracted obligation and therefore receives no availability payment. It will however receive payments for any instructed utilisation.
2. **Where a provider declares MORE than their contracted MW**
   The declared volume remains available to NESO, however the provider has not met its contracted obligation and therefore receives no availability payment. It will however receive payments for any instructed utilisation.

For Positive Reserve – BM

Provider Type	Conditions	% of availability payment received for that service window	K factor
Generator, Through-zero	MEL – PN ≥ (Contracted Volume)	100	1
Generator, From zero	SEL ≤ (Contracted Volume)	100	1
Through-zero (additional)	SIL – PN ≥ (Contracted Volume) or SEL – PN ≤ (Contracted Volume)	100	1
Supplier	SIL – PN ≥ (Contracted Volume)	100	1
Intermittent Generator	PA – PN ≥ (Contracted Volume)	100	1
Generator, Through Zero	MEL – PN < (Contracted Volume)	0	0
Generator, From Zero	SEL > (Contracted Volume)	0	0

Provider Type	Conditions	% of availability payment received for that service window	K factor
Through-zero (additional)	SIL – PN < (Contracted Volume) or SEL – PN > (Contracted Volume)	0	0
Supplier	SIL – PN < (Contracted Volume)	0	0
Intermittent Generator	PA – PN < (Contracted Volume)	0	0

For Negative Reserve – BM

Provider Type	Conditions	% of availability payment received for that service window	K factor
Generator, Intermittent Generator	PN – SEL ≥ (Contracted Volume)	100	1
Supplier, Through-zero	PN – MIL ≥ (Contracted Volume)	100	1
Through-zero (additional)	PN – SEL ≥ (Contracted Volume) or PN – SIL ≤ (Contracted Volume)	100	1
Generator, Intermittent Generator	PN – SEL< (Contracted Volume)	0	0
Supplier, Through-zero	PN – MIL < (Contracted Volume)	0	0
Through-zero (additional)	PN – SEL < (Contracted Volume) or PN – SIL > (Contracted Volume)	0	0

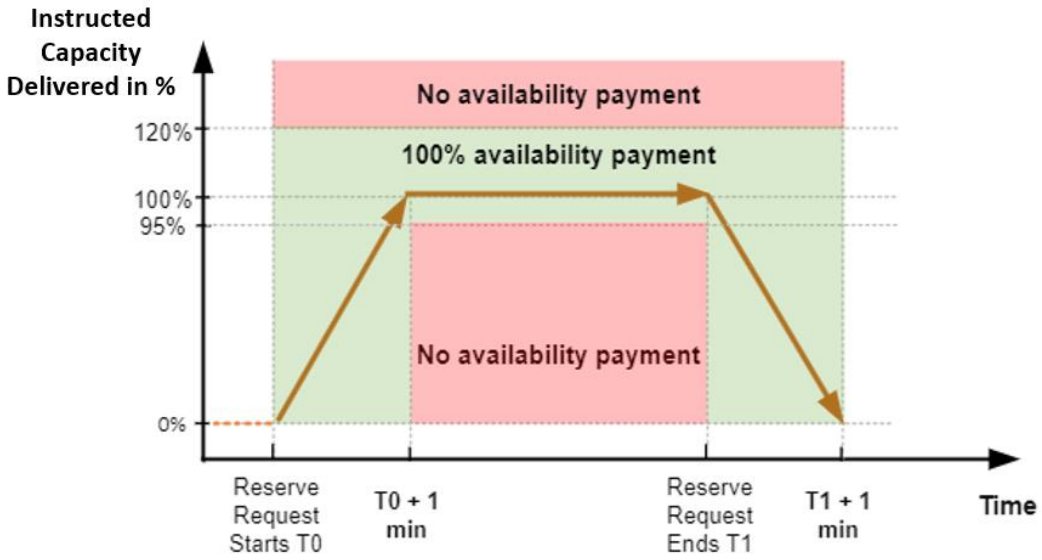
For Positive & Negative Reserve – non-BM

Provider Type	Conditions	% of availability payment received for that service window	K factor
Generator, Supplier, Intermittent Generator	Available MWs = Contracted MWs	100	1
Generator, Supplier, Intermittent Generator	Available MWs ≠ Contracted MWs	0	0

Service Delivery

NESO 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

Where a unit has a QR Contract, a maximum of 120% of the contracted MW can be delivered by the relevant unit throughout the instructed period. Delivery beyond 120% will result in availability payments being withheld for the relevant QR Contract.

Utilisation payments for QR Contracts and Optional Services (non-BM only) will be made for energy delivered. For the avoidance of doubt, availability payments will be made when a unit delivers between 95% and 120% of its contracted MW volume. Where a unit

delivers outside of these limits, the Availability Payment will be withheld for the relevant QR Contract.

In addition to performance penalties, NESO 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 to ensure that we do not award QR 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 prequalification status of the relevant QR Unit or Registered Service Provider. 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 prequalification status and access to the daily auction process.

Additionally, providers who do not fulfil their QR Contract 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.

State of Energy Management

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.

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 consequently increase their Bid-Offer prices during Contracted Service 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 have introduced terms that deal with excessively high or excessively low Bid-Offer prices and provide NESO, at its discretion, with a range of enforceable sanctions.

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. These provisions include a 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.

Crossovers

When instructed, the unit must be able to continue delivering a dispatch instruction into the next QR Window.

Please see the additional guidance material on Crossover operation, published on the Quick Reserve webpage.

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.

Heartbeat

The 'Heartbeat' also referred to as the 'Connection Indicator' is used to ensure that NESO control-room has visibility that a unit remains dispatchable.

For BM this should be as per Grid Code. For non-BM units, details to provide the 'Heartbeat' can be found in the published 'Quick Reserve Web Specification'.

5. Procurement Design

Please see our published 'Quick Reserve Market Design Specifications' for further details on the procurement design

QR Contract (Firm Service)

Where there is a firm requirement in a QR Window, this will be defined by NESO and published on the NESO 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 a Service 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 NESO 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 can submit utilisation-only bids (with parameters that meet the Quick Reserve service) for the Optional Service within-day via the OBP platform. 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 NESO via the Balancing Mechanism and will be dispatched via Bid Offer Acceptances (BOAs).

Registration and Prequalification

Registration and pre-qualification for Quick Reserve services will be completed via NESO's Single Market Platform (SMP).

Providers will be expected to register their units by supplying the following parameters:

Category	Field
Unit Data	Provider Name
	Unit ID

	Generation & Demand Capacity
	Fuel Type
	DNO
	GSP
	Nearest node
Prequal Data	Service Capacity
	Service Type
	Prequal Start date
	Prequal End date
	Response Time (seconds)
	Time to Full Delivery (seconds)
	Minimum Activation Period
	Cease Time (seconds)
	Recovery Period
	Maximum Utilisation Period

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 helps to diversify the contracts awarded, avoiding any single points of failure.

Procurement Requirements

NESO will publish separate Market Information Reports which will set out the volume of each Quick Reserve product we will look to procure (via QR Contracts) each day.

QR Window

NESO will procure Quick Reserve in 30-minute QR Windows aligned to Settlement periods. 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.

Where NESO award a QR Contract for a QR Window, this is referred to as a Contracted Service Period and providers must have their power available for instruction throughout. Historically for reserve services this was referred to as the 'Service Window'.

Longer windows generally lead to over-holding, as NESO 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.

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

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

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

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's capacity to either Frequency Response or Quick Reserve to best optimise the market clearing. See Enduring Auction Capability (EAC) Market Design Report for additional information.

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 to allow NESO to activate its Business Contingency Plan (BCP) if the auction process fails.

Quick Reserve is procured through a co-optimised auction with Dynamic Response products at 14:00 each day. We believe there would otherwise be substantial overlap of fuel types participating in both the Response and QR services and this therefore offers the most cost-effective and efficient solution.

Bid Submission

A Registered Service Provider can only participate in the daily auctions once they have completed pre-qualification. NESO 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 NESO its unit(s) for the Positive and Negative Quick Reserve 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 a Service Day.

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

The auction platform provides a rolling Window function which means the auction gate will open in advance such that orders can be submitted 14 days before each auction.

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 NESO 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 NESO Data Portal by 14:45, nominally.

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 QR 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 NESO are running two separate markets. Providers can submit a 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 Service Windows (QR Windows)

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, NESO has introduced Linked Service Windows (QR Windows). Such Linked Service Windows issued by NESO 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, ensuring there are consistent units contracted across key crossover periods, allowing for their effective management of the risk posed. Such Linked Service Windows will be communicated appropriately with market participants ahead of the auction opening.

Bid Curtailment Rules

The Quick Reserve requirement could change 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 NESO's Quick Reserve requirement, which changes across the day and between half hours. NESO would allow QR providers to user-define the curtailment of their bid (i.e., the minimum capacity they are willing to provide).

Revenue Stacking

Stacking is the ability to use the same unit to provide different products simultaneously (i.e., in the same window), effectively allowing for multiple revenues from different markets with a single unit.

For clarity we use the following definitions for stacking;

Co-delivery

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

Quick Reserve providers can co-deliver their capacity 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 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.

In some cases, it may also be appropriate for providers to co-deliver the QR capacity with the BM.

No other method of co-delivery will be permitted.

Splitting

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

For a given QR Window, splitting is allowed between Positive and Negative Quick Reserve only.

Splitting is not allowed between the same polarity of Reserve products, i.e., PQR & PBR (Positive Balancing Reserve). Availability payments will be withheld for any units holding >1 Reserve service contract in the same direction for a given QR Window.

It is not the intention to prevent providers from Revenue Stacking Reserve with non-active power services, such as SpinPump or SpinGen, as this would significantly reduce the availability of other assets. However, if a unit is required to be in SpinGen etc, to be able to deliver the service, they will not be separately paid for that service.

It is worth noting that the standard stacking of BM participation rules apply and need to be followed. That is, if a unit is Revenue Stacking multiple services, then the data submitted to NESO must be that of the most granular service.

Future of Splitting with Quick Reserve

Whilst not possible for the initial phases of Quick Reserve, NESO intend to broaden splitting capabilities with other services including Response, Balancing Reserve and Slow Reserve in the future, as per the following matrix. Any such proposal would follow the formal EBR Article 18 industry consultation process.

Locationality

Throughout the development of the Quick Reserve 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 units and not in respect to aggregated units.

Locational assessment would allow NESO 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.

Whilst work has commenced on Locational Procurement capability, we do not yet have further details or timescales to share with industry. Any future proposal would follow the formal EBR Article 18 industry consultation process.

Active Network Management Schemes

Eligible Assets will not normally be registered by NESO 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, NESO 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 significantly high forecasted availability (e.g., as shown by Curtailment Assessment Reports from DNOs). NESO 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.

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.

For non-BM providers these (re)declarations will be submitted into the appropriate OBP route and must be submitted no later than sixty (60) minutes prior to each QR Window.

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, the unit will be assumed to be unavailable. Unavailability for commercial or non-technical reasons is not permitted under a QR Contract.

The declared available MW value should equal contracted MW where a unit is participating as part of the Firm Service.

1. **Where a provider declares LESS than their contracted MW**
   The declared volume remains available to NESO, however the provider has not met its contracted obligation and will therefore receive no availability payments. It will however receive payment for any instructed utilisation.

2. **Where a provider declares MORE than their contracted MW**
   The declared volume remains available to NESO, however the provider has not met its contracted obligation and will therefore receive no availability payments. It will however receive payment for any instructed utilisation.

Settlement and Pricing

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

1. Availability Payments

Where a Service Provider (BM and non-BM) secures a QR Contract, NESO 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.

2. 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 NESO 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 NESO.

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

ABSVD

ABSVD will be applied in accordance with the published ABSVD Methodology and providers will be required to provide all applicable asset details at the pre-qualification stage to ensure ABSVD can be applied.

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)). When the Primary Service Provider assigns a Quick Reserve Contract to the Secondary Service Provider this effectively means that a transfer is a full assignment, transferring all rights and obligations under the Service Terms for the Contracted Window. All applicable payments will be made direct to the Secondary Service Provider.

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.