Quick Reserve System Set up for Non-BM Ancillary Service Provider (Draft V0.1)

DOCUMENT CONTROL

Change History

VERSION	DATE	CHANGES
0.1	13/08/2024	Draft Version

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1 Introduction

Reserve reform is updating our reserve products to be compliant with the Clean Energy Package (to allow re-establishment of the benefits of firm markets) and to better meet system and statutory requirements. Quick Reserve (QR) is aimed primarily for reacting to pre-fault disturbances to restore the energy imbalance quickly and return the frequency close to 50.0 Hz.

This document will focus on the addition of Non-BM Ancillary Services Reform Reserve Services (Positive Quick Reserve, Negative Quick Reserve). In order for Service Providers to communicate with ESO, Service Providers are required to develop the appropriate web services as per the technical specifications.

This document explains the business rules Service Providers need to implement, including the initial set up of the system and the exceptions rules for the web services.

1.1 Scope

This document applies to non-BM providers only and covers the business rules and exceptions which are to be implemented by Quick Reserve service providers. This document covers both the Committed and Optional aspects of the service.

2 Initial System Set-up Business Rules

Once a Unit has been accepted, registered and pre-qualified for a specific service, the contract data related to the unit and service will be placed into the Open Balancing Platform (OBP) system by ESO and the web service urls will be placed in the ESO middleware. Each of web service urls will be tagged against a Unit ID (Unit ID is the unique Unit ID in framework agreement) and the dynamic routing will happen from ESO middleware.

The following data items are applicable for both the Committed and Optional (Quick Reserve) Service

Data Item	Description
Unit ID	ID of a contract, EG. 'NBM-123' (Service Provider can have multiple Units registered)
Unit Start Date	Start date of Unit as per accepted framework agreement (Pre-qualification/Registration)
Unit End Date	End date of unit as per accepted framework agreement (Pre-qualification/Registration)
Response Time/ TTFL	This is time to full delivery. The Time period (in minutes), for the Registered Unit or to reach their Contracted/Declared MW after instruction MW after sending a Dispatch Instruction. This should be 1 minute from instruction sent.
Recovery Period	Means for the period specified in the registration which commences upon expiry of the Ramp down time, and it should not be greater than 3 mins

Minimum Activation Time (MNZT)	The minimum non zero time period in minutes a service provider must remain above zero MWs. This should not be greater than 5mins. MNZT period is inclusive of notice period, ramp to instruction, time at full delivery and ramp from instruction.
Ramp Up Rate	MW / Minute
Ramp Down Rate	MW / Minute
Contracted MW per window	Contracted or Declared MW

3 Web Services Business Rules and Exceptions

3.1 General business rules and exceptions

In all the web services and for all the data tags, the data should be trimmed and should be without any spaces before or after the data. For example, ESO would expect 'PQR' or 'NQR' instead of 'PQR ' or' PQR' or 'NQR ' or ' NQR' in the service type.

The web service will not be accepted if Service Providers send any blank tags and system will update 'NULL' value in OBP. This is applicable for all the optional fields. If the field is optional, ESO would expect Service Provider to ignore that tag completely from the xml unless mentioned in this document fora particular web service.

ESO will wait for 1 minute to get synchronous response back from Service Providers before the system times out.

ESO has made a provision for its systems and Service Providers' systems to be out of sync only by 1minute. This is reflected in all the DateTimeStamp validations for all web services.

The operational day for Quick Reserve is defined to be between 23:00 D to 23:00 D+1 local time which will be broken down into a series of Service Windows.

Both Quick Reserve (QR) services will be procured via a day-ahead auction to secure firm capacity (for the next Operational Day), termed the 'Firm Service', and within-day via the 'Optional Service' helping to mitigate the largest demand and generation losses on the network.

Firm Service:

A service provider is contracted for a service window at day-ahead, this will be known as the Firm Service or Contracted Service.
Service providers will be able to bid in their assets to the day-ahead auction for one or more service windows in an operational day and if successful, will be awarded a Firm Service contract for each discrete service window. For Quick Reserve the Contracted Service window length is 30mins. The unit should bid the service with same capacity for whole service window duration 30min. This commits the unit to be available for the full duration of the contracted service window and service providers will be paid availability payments (pay-as-clear) over the duration of each contracted service window, and a utilisation payment (pay-as-bid) if dispatched.

Optional Service

If the service provider has been unsuccessful in their bids at day-ahead, they can offer Optional Service to ESO Non-BM providers will be able to submit utilisation-only bids within-day. If Service Providers are dispatched under the optional service, they will receive a utilisation payment (pay-as-bid) only.

Notification to Start Ramping up:

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.

Ramping envelope:

Provides maximum and minimum of ramp-up or ramp to instruction and ramp-down or ramp from instruction. For Quick Reserve, the minimum ramp-up period is set by the time to full delivery of 1 minute. Similarly, the minimum ramp-down period is 1 minute to keep the shape of product delivery symmetrical.

Response Time/ Time To Full Delivery:

It is the period for registered units to reach their contracted/declared MW capacity after the unit is instructed. This is inclusive of notification to start ramp up for the service and the ramp up period.

3.2 Web Service Versioning

We have introduced web service version to help with traceability for onboarding new Ancillary Services. Current webservice version for Quick Reserve Services is Version4, any changes will be communicated by updating the web specification and business logic document appropriately. Providers will be notified by email of any new documentation.

3.3 Availability Service

This web service is used for declaration of an availability window. It is also used to declare and redeclare the availability MW along with Utilisation Price. In a normal situation, ESO would expect to see declarations and re-declarations from Service Providers in advance of before gate closure of any given service window. The StartDateTime and EndDateTime should be in the future. In normal situations, ESO will reject any declaration which are sent after Gate Closure.

In all the situations, ESO expects to only have ServiceType, UnitID, StartDateTime, EndDateTime, BreakPoint for OfferBid_Number 1, UtilisationPrice and DateTimeStamp in the payload. No other details should be provided, refer to the sample payloads in the web service specification v4.

The Operational day for ASR Reserve starts from 2300 local time. Service Provider can be available for Optional Service or for Contracted Service by winning the contract in Auction process. Unit can be available either contractually or optionally at a given time.

The gateclosure logic for MW and Utilization Price is 60mins from the start of the Service Window (Settlement Period).

For Optional service window, Service Provider can send Partial MW availability from 1 to Pre-qualified MW as absolute and integer value only. In case of unit's unavailability ESO expects service provider to send the redeclaration with 0 MW.

Where no declaration/redeclaration has been submitted, the unit will be considered as unavailable.

For Window Crossover, Provider must submit the availability BreakPoint for the MNZT period post Contracted /Optional service window.

The declared availability MW for MNZT period should be same as that of previous service window (settlement period) when the MWs move from higher to lower MWs. ESO will consider the subsequent service window util price for the extended availability of MNZT period. When unit is unavailable in next service window, ESO expects providers to submit the capacity and util price for extended duration.

In case if provider failed to submit this availability, they will not get paid the availability fee.

Post Auction declarations/redeclarations:

If the unit has been awarded a contract post auction process the unit's availability will be considered as FIRM/ committed for the whole auctioned service window. In exceptional circumstances, provider can redeclare the MW capacity less than equals to contracted capacity before the gateclosure and the unit may be potentially dispatched with declared capacity.

- Unit can go unavailable by re-declaring the capacity with 0 MW until the end of Settlement Period.
- Service Provider has to submit Utilization Price via availability service for contracted Service window if not already done else unit will be considered as unavailable for instructions. Utilization Price can be declared until the gate closure of the Settlement Period.
- If the unit is not awarded with a contract, service provider can still be available with optional service and can send the availability until gateclosure.
- Optional Service Window declaration/redeclaration must be submitted from Service Providers before the gate closure times following the ASR Quick Reserve rules.
- The payload must have Capacity (Break point MW) value as per the below table.

ServiceType	Contracted Windows	Optional Windows
PQR NQR	0 or >=1 and <=Contracted MW (Should be whole integer number)	0 or >=1 and <=Prequalified MWs or Null (should be whole integer number)

- The payload could have UtilisationPrice for all windows as well to make the unit available for dispatch.

Emergency redeclarations:

- Any re-declaration post the above mentioned gate closure is considered as emergency redeclaration.
- Post gate closure BreakPoint (MW) value for all Contracted windows must be 0.
- Post gate closure BreakPoint (MW) value for all Optional windows must be 0.
- The EndDateTime of any window must not be in the past for both Contracted and Optional window types. i.e. No past window in an operational day should be redeclared as 0.
- It should be noted that Service Provider has responsibility to submit the re-declaration of any adjoining window with a contracted MW as '0' in case they have submitted emergency re-declarations. Otherwise, ESO will assume that Service Provider is available for the next adjoining window and could send a dispatch notification.

In the situation where there is an active dispatch for a unit for which Service Provider sent emergency re-declaration, ESO will send an auto-cease irrespective of whether the MNZT has reached.

Utilisation Pricing:

- A provider will need to provide both a Break Point (MW) value and a Utilisation price if unit to be

considered for dispatch instructions, however this doesn't need to be in the same payload.

- If either of the value BreakPoint or Utilisation price is null for a window until the gateclosue, it will be considered as incomplete availability/declaration and unit will not be available for dispatch operations.
- The MWs must be submitted by the times detailed in the above table.
- All prices must be submitted before 90 minutes of the start of the window (i.e. Contracted or Optional)
- Emeregency Redecs should **not** contain pricing information.
- If a price is submitted without a MW, it will take the last declared MW for that window, if does not exist it will be unavailable till a MW is submitted.

Service Providers can submit multiple availability windows declaration and / or re- declaration within the same xml for one operational day.

3.4 Availability Confirmation Service

This web service is primarily used to validate the declaration / re-declaration data submitted by Service Provider. There are two levels of data validation done by ESO – one at file level and the other at a window level.

For File level rejections, the availability confirmationwill be marked as 'REJECTED' with appropriate reason code in the FileReasontag. If the confirmation is marked as 'REJECTED' all windows should be considered as rejected for the availabilityfile submission. If the file has been REJECTED the confirmation response will not contain any availability windows, the file should be identified by the DateTimeStamp which will correspond to the date timestamp which is sent in availability web service.

For Window level rejections, the availability confirmation will be marked as 'ACCEPTED' but the Availability Window array(s) with error(s) will have appropriate WindowReason error code. The Service Provider is expected to resend the correction only for thosewindows which have been rejected by ESO.

3.5 Dispatch/Cease Service

Quick Reserve Service Providers should be capable of providing 1MW or more of reserve volume in line with the service design. Bids must be made in integer MWs.

- NBM units will be dispatched via new Open Balancing Platform (OBP) system.
- The request will comprise of UnitId, Service Type, VolumeRequested, ScheduledDateTime, Instruction and DateTimeStamp as mentioned in web specification document v4.
- VolumeRequested is mandatory only for dispatch instruction. However, ESO will also send this value in cease instruction. VolumeRequested will always be the Available MW value for the appropriate window. Unit has to follow the instruction for requested MW from its current PN position.
- ESO can instruct the unit for current time or future time by specifying the ScheduledDateTime in request payload. ScheduledDateTime is the time when unit should start ramping up for the requested service.
- Dispatch instruction will have 'START' and cease instruction will have 'STOP' in the Instruction tag.
- ESO will not send '0' MW dispatch instructions.
- The cease instruction can be sent by ESO once the instructions has completed their Minimum Non- Zero Time (MNZT), which includes ramping up and ramping down period of the respective contract. And the next dispatch instruction will be sent only after ramp down time and recovery time is past.

- If the unit is instructed to START, subsequent multiple start instructions would be sent for same unit to accommodate MW changes across the settlement periods.
- If the subsequent start instructions are not accepted by unit, an autocease instruction would be sent to provider.

Emergency Ceases

Emergency Ceases are ceases where ESO needs a service provider to stop delivering before honoring MNZT, due to ESO issues. This can be triggered in a service provider's minimum run time (Min non-zero time) a service provider should accept the emergency cease. In the case of service provider being technically unable to run ramp down until minimum runtime the provider should reject the instruction and start ramping down once minimum run time has been reached.

In the circumstances when Service Provider sends emergency redeclaration and the unit is dispatched, ESO will send cease instruction irrespective of whether the unit has past the minimum non-zero time. ESO expects Service Provider to accept this cease instruction.

Manual Cease is to be initiated when there is an emergency at the Service Provider end wherein the ability to emergency redeclare is not available. Service Provider can call ESO to initiate the cease which need not honor the minimum non-zero time. For Manual cease instruction, ESO will not send a cease instruction request for a unit and default will consider it as accepted.

3.6 Dispatch / Cease Confirmation Service

If ESO did not get a confirmation (after receiving a 200 ok response to the dispatch instruction that has been sent by ESO) past 120 seconds from the **dispatch** instruction, it will be assumed that service providers has rejected the instruction.

If ESO do not get a confirmation (after receiving a 200 ok response to the cease instruction that has been sent by ESO) past 120 seconds from the **cease** instruction, it will be deemed that the Service Provider has ceased the dispatch.

3.7 Heartbeat Service

Service Provider will use this service to send the heartbeat signal to ESO.

ESO expects to get heartbeat signal once every 5mins.

The only required fields for all Reserve units are; ServiceType, UnitID, DateTimeStamp, all other fields should not be submitted.

As this service is used by ESO to gauge the heartbeat of Service Provider's comms, we would consider the unit to be unavailable.

In the event when Unit is down/up, Service provider should be aligned to send the heartbeat signal to ESO.

1. ESO does not receive any Heartbeat signal in the last 10 minutes, Heartbeat NACK would be sent with an error code.

3.8 Heartbeat Negative Acknowledgement Service

Heartbeat Negative Acknowledgement (NACK) is a message to communicate that we have not received the

heartbeat signal for the last 10 minutes or there is some issue with the Heartbeat that has been sent.

3.9 Physical Notification Service:

This service will be implemented by ESO to receive the Physical Notification data from Service Providers.

- Service Provider can send the Physical Notification data, after the unit is pre-qualified in ESO.
- Service Provider can send the PN data at Unit level and once the PN is received for a Unit, the same PN would be applicable for all the active services of the Unit.
- The expected time format for all the date time fields is UTC.
- Service Providers should send the StartDateTime and EndDateTime for PN at minute level.
- Physical Notification data would be accepted for current as well as future 5 operational days. Service Provider can submit multiple PN declarations and/or re- declaration for a Unit for an operational day within the same request xml.

e.g.: Current Ops Day(D) 23:00-23:00 (local)	D+1	D+2	D+3	D+4	D+5	D+6
Dec/Redec for single operational day	✔	✔	✔	✔	✔	✘

- Service Provider can redeclare the Physical notification until 60 mins before the StartDateTime of the 30mins Settlement Period.
- Service Provider to ensure at least 1 minute time gap between the submission of a PN redeclaration and a subsequent update for the same Settlement Period.
- Physical Notification should cover the complete half hour settlement period in same request payload.
  e.g

UnitID	Start TIME	End Time	Start MW	END MW
Unit-1	10:00	10:30	5	20
Unit-1	14:00	14:20	10	20
Unit-1	14:20	14:30	20	10

- The following fields are required to be populated by Service Providers in the xml payload. UnitID, PUI, StartDateTime, EndDateTime, PN_Start_MW, PN_End_MW and DateTimeStamp in the xml. No other details should be provided, refer the latest web service specification v4 document.
- Zero level data defaulting is applied where the submitted data is not complete for any settlement period in an operational day. For example, if there is a gap in data for settlement period 2022-12-07 13:00 to 2022-12-07 13:30 then this gap would be filled with zero level data.

3.10 Physical Notification Confirmation Service:

This service will be implemented by Service Providers to receive Confirmation for the Physical Notification from ESO.

This web service is primarily used to validate the PN data submitted by the Service Providers and to send the confirmation back. There are two levels of data validation done by ESO – one at file level (File Rejections) and

the other at a window level (Window Rejections) as mentioned above.

For File level rejection, the Confirmation will be marked as ‘REJECTED’ with appropriate reason code in the FileReason tag If the Confirmation is marked as ‘REJECTED’, PN data for the all window periods in the file should be considered as rejected.

If the file has been REJECTED the confirmation response will not contain any window periods, the file should be identified by the PUI which will correspond to the PUI sent in the Physical Notification web service.

For a Window level rejection, the Confirmation will be marked as ‘ACCEPTED’ but the tag PNValidation will be marked INVALID based on window period and will have appropriate PNReason error code.

The Service Provider is expected to resend the correction only for those PN data window periods which have been rejected by ESO.

4 Security rules and exceptions:

TBC

5 Appendix