Public

Slow Reserve Webinar

A deep dive on the current proposed service design

11 February 2025

NESO
National Energy System Operator

Agenda

1. Introduction and timeline
2. Services explainer
3. Service Design overview
4. Operational metering
5. Splitting /Stacking with BM / NESO Services
6. Crossover and Ramping
7. Recovery period
8. Implementation of OBP for NBM
9. STOR to SR Transition plan

Timeline for consultation

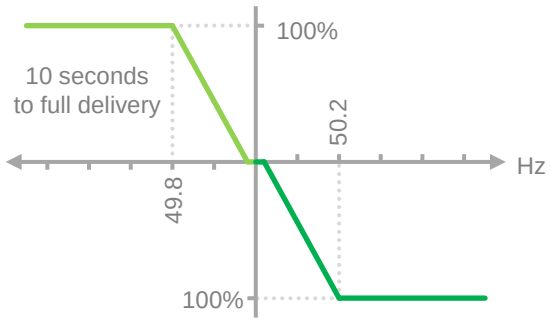
Our timeline for publishing the Article 18 consultation for Slow Reserve was the end of February.

There has been some delay to the Quick Reserve phase 2 consultation, we are assessing the impact this will have on Slow Reserve consultation and will communicate as soon as possible. We do not expect this to impact on go live date for Slow Reserve.

Suite of Services : Response and Reserve

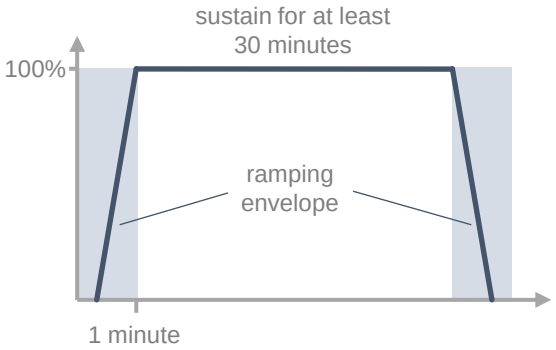
Pre-fault

Dynamic Regulation



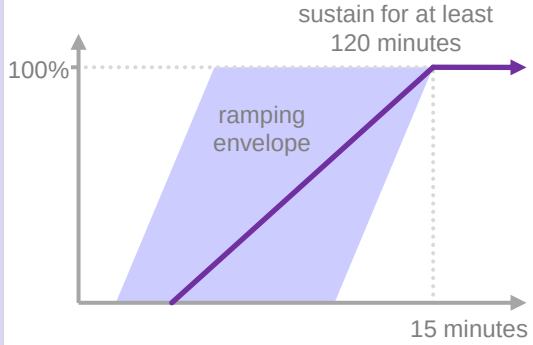
Assist in keeping frequency near to 50Hz during normal conditions

Quick Reserve



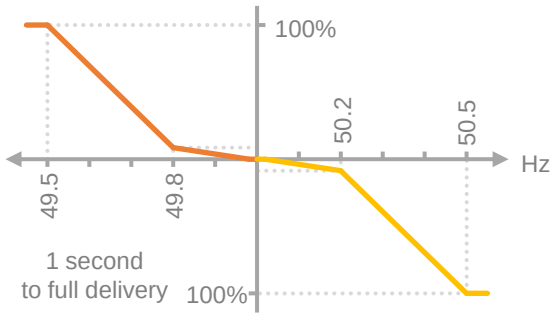
Recovery frequency back towards 50Hz, mainly during normal conditions

Slow Reserve



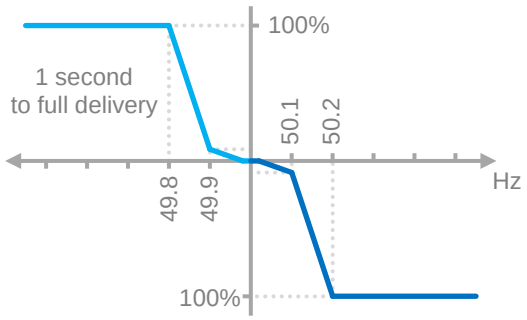
Recover frequency to 0.2Hz within 15 minutes

Dynamic Containment



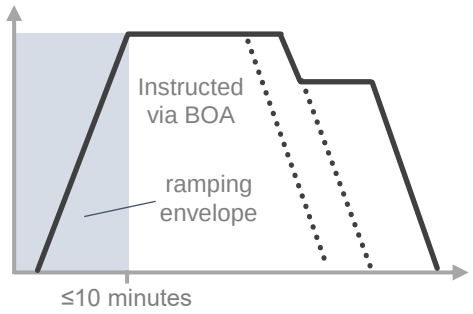
Prevent frequency deviations outside -0.8Hz / +0.5Hz following large losses

Dynamic Moderation



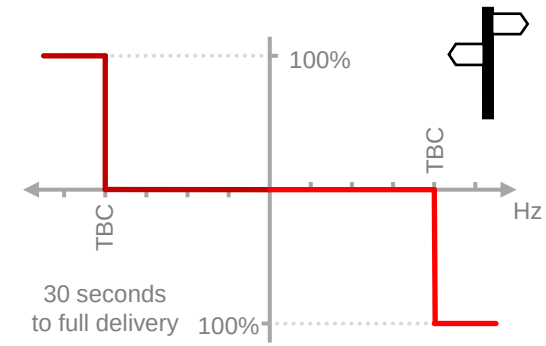
Assist in keeping frequency within 0.2Hz, especially during more volatile conditions

Balancing Reserve



Manage real-time imbalances, and replace activated reserves

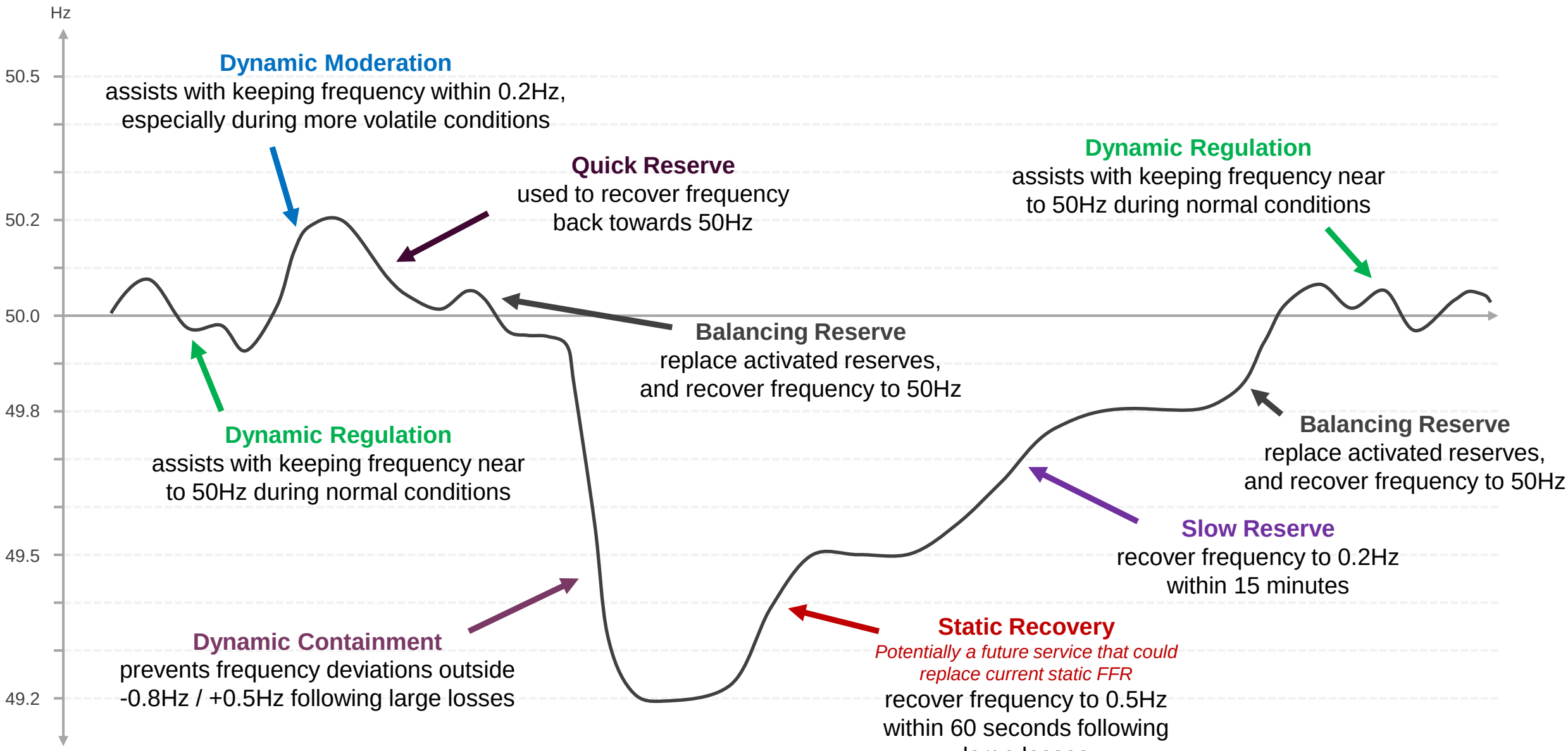
Static Recovery



Recover frequency to 0.5Hz within 60 seconds following a large loss

Post-fault

Suite of Services : How they interact



Service Design – Slow Reserve

Technical Design Element	Proposal
Direction	Positive and Negative
Time to full delivery	≤15 minutes from instruction (incl. time to start ramping/accept)
Minimum Activation Period	Up to 30 minutes
Maximum Recovery Period	Up to 30 minutes
Energy Requirements	Unit must be able to deliver the full contracted capacity per Contracted Window
Operational Metering	0.0667Hz / once per 15s (up to 5s latency)
Dispatch mechanism	BOAs via EDL/EDT or wider access equivalent or OBP NBM platform dispatch instruction and control/system telephony as alternative dispatch solution during contracted windows
Notice to Start Ramping	Up to 14 minutes
Time to accept instruction	Up to 2 minutes
Ramp rates	Max ramp rates ≤100% contracted capacity/minute. Max instantaneous ramp rates cannot exceed >50% contracted capacity in a 30s ramping period. Min ramp-up/down rate to be in line with Time to Full Delivery, incl. notice to start ramping
Performance Metering	0.0667Hz / once per 15s
Performance Monitoring	Time to Full Delivery, Availability, Ramp rates, Utilisation - Penalties for over (>120%) & under (95%) delivery
Baselining	Physical Notifications or equivalent 24 hours in advance for all providers final at 60 mins ahead of Settlement Period. Both zero and non-zero baselines allowed.
Aggregation	Allowed, per GSP group
Operational data	BM units as per current BM operations NBM units to submit relevant operational data
Passing through zero	Allowed
Ramp rates for baselines	Aligned with Dynamic Response markets – No limit

Procurement Design Element	Proposal
Service Window	Minimum 2 hrs at 30-minute granularity
Maximum Bid Size	N/A
Frequency of Procurement	Daily – Firm procurement Within day – optional procurement
Locationality	National
Auction Platform	EAC
Auction Timing	Auction gate closure: D-1 14:00
Stacking	Same MW cannot be sold twice
Bid Sizing	Above or equal 1MW
Linking of bids	Yes, by Service Window and Product (Positive SR and Negative SR only)
Bid Curtailment Rules	User defined
Payment Structure	Firm: Availability + Utilisation Optional: Utilisation only
Payment Mechanism	Availability: Pay-as-Clear Utilisation: Pay-as-Bid through BOAs or OBP dispatch mechanism

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Operational data requirements

Where a unit holds a contract for an operational day (23:00-23:00), then the provider must submit operational metering and operational baselines for that entire operational day. This requirement applies to both BM and non-BM participants.

NESO have implemented these requirements to better align with the BM, thereby aiming to reduce disparity between the two markets. We seek operational baselines and metering for the entire day, if contracted, to assists NESO in better forecasting generation and demand, even if these forecasts are indicative, helping to promote greater market transparency and operational visibility.

The above will allow more efficient balancing decisions as more of the market will be required to centrally submit their running profiles ahead of time, reducing a current pain point, along with allowing for greater performance monitoring capabilities.

BM units already provide day-ahead forecasts, representing the best available prediction of a unit's output at the time, and can be updated any time up to gate closure.

NESO plan to introduce the above data submissions as a 24/7 requirement, in line with the Response products, for BM and non-BM units in the future. Details are still to be finalised and will be communicated appropriately when available and, of course, ahead of time.

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Operational Metering

Requirement: Operational metering for Slow Reserve is set to once per 15s (0.0667 Hz), with a latency of no more than 5 seconds.

This not only aligns with the “slow” nature of the service but is also crucial for accurately monitoring the most onerous requirement- the maximum allowable ramp rate which must not exceed 50% of the total contracted volume over any 30s period*. To accurately monitor this requirement, NESO require 2x samples per 30s period, which equates to once every 15s.

A 5s latency is required for situational awareness. NESO must be able to correlate the output of a unit (in relation to an instruction) to any change in frequency. As the Slow Reserve service is open to many technology types – some very fast-acting and/or very large – then it is essential that the aggregated operational metering feed to NESO is accurate and best reflects a unit's immediate output.

We acknowledge the considerations of the ongoing DNV independent review and are striving to balance service needs with minimizing the requirements placed on providers. NESO has already updated the operational metering requirement for SR from 1Hz to 0.0667Hz from previous designs.

NESO understand that this requirement may be overly onerous for some and are happy if these providers choose to use a statistical method in order to achieve this aggregated output. Any providers who wish to discuss this further are more than welcome to reach out to NESO to organise a 1-2-1.

Revenue Stacking

Splitting

The adjacent splitting matrix shows NESO's future intentions for allowing splitting across Response and Reserve services.

Although not available for day 1, NESO will update industry on timelines appropriately for when this functionality will become available.

Allowed between the following:

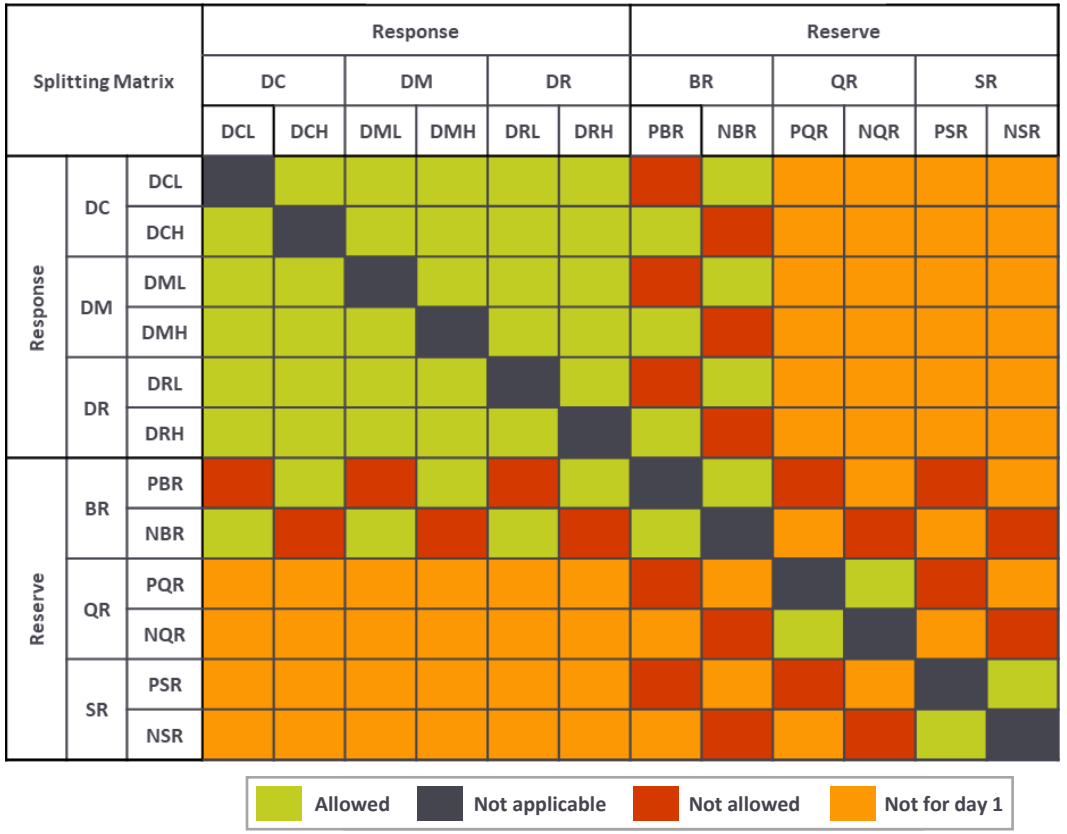
- Any combination of Response services
- Positive and Negative Quick Reserve only
- Positive and Negative Slow Reserve only

Co-delivery

Allowed between QR or SR services and the following:

- Capacity Market
- Stability
- Voltage

Current capabilities

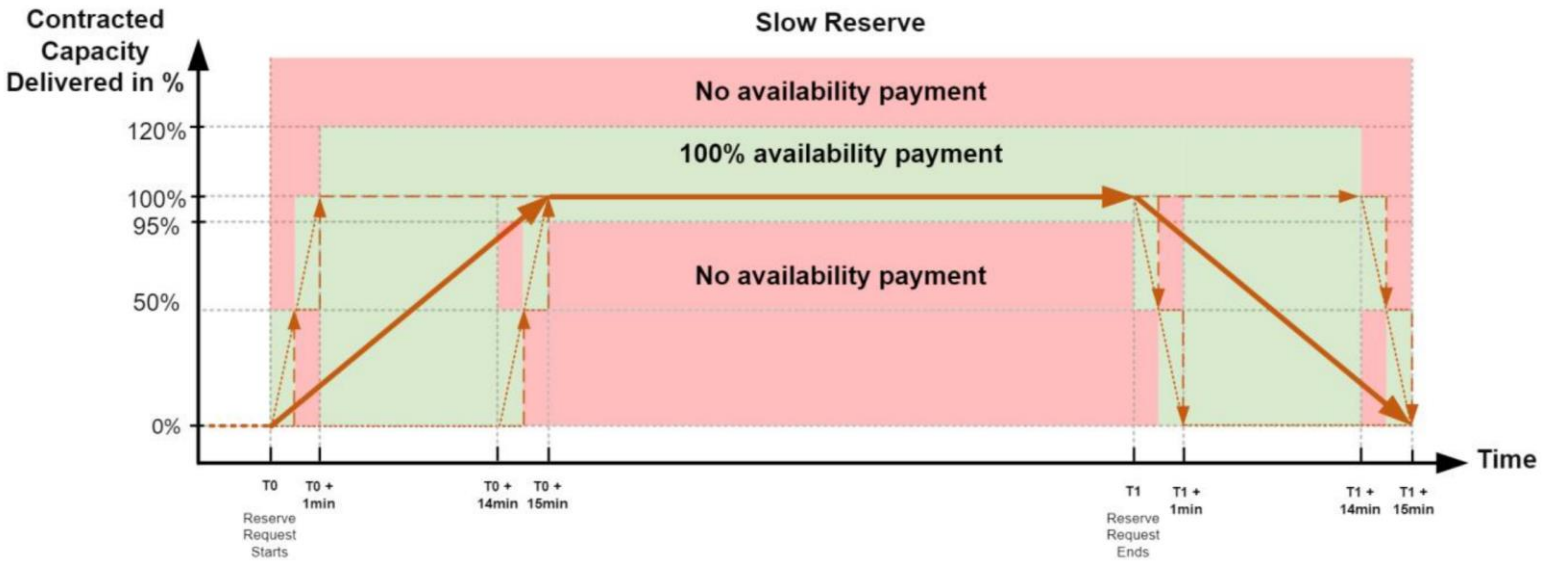


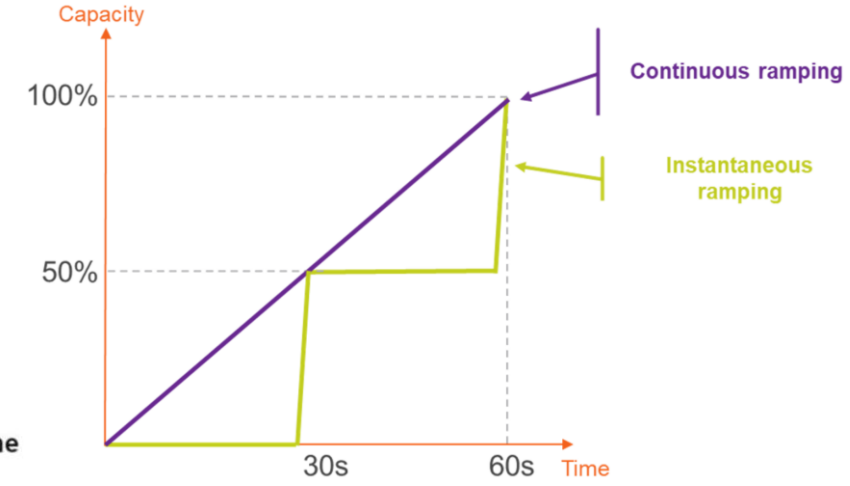
	Co-delivery	Splitting
Asset	Same	Same
Capacity	Same	Different
Time Period	Same	Same

Ramping rules

The to/from instruction ramp rates are set out as below:

- The minimum ramp rate is directly set from the Time to Full Delivery (15 minutes). This time includes any notice to start ramping and time to accept instructions.
- The maximum ramp rate limit was ≤100% contracted capacity per minute. For instantaneous ramping, the unit cannot deliver >50% contracted capacity in any given 30s period.
- **Following recent provider feedback, NESO propose that this limit is changed to a maximum of 300MW per 30s period.**





Crossovers

Definition: A crossover is defined as a delivery across a boundary point from one Service Window to the next.

Requirement: NESO require contracted units to be capable of delivering MWs (where instructed), in line with their Minimum Activation Period (MAP), into the next Service Window. As such, if an instruction is started near the end of a Service Window, then the unit is expected to continue to run for up to its MAP into the next Service Window, unless contracted for a different Balancing Service.

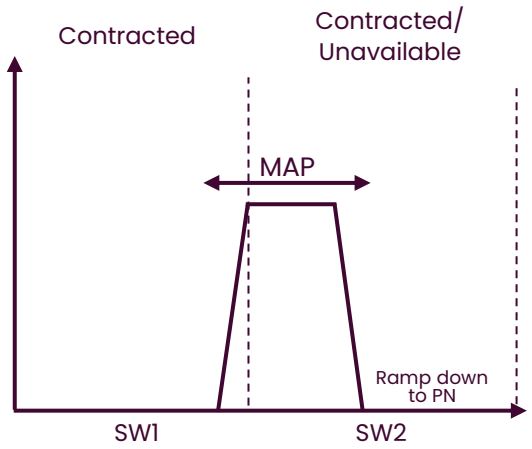
The unit must be able to deliver this crossover output into the second window at or above the MW value of the first window.

Some examples are shown on the following slide.

A comprehensive guidance document will soon be made available, providing detailed explanations on crossovers.

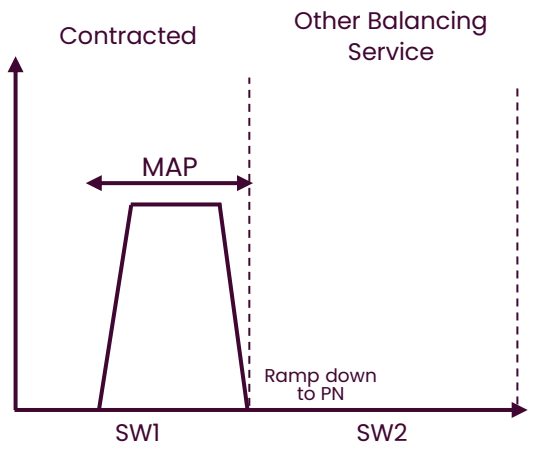
Crossovers

1



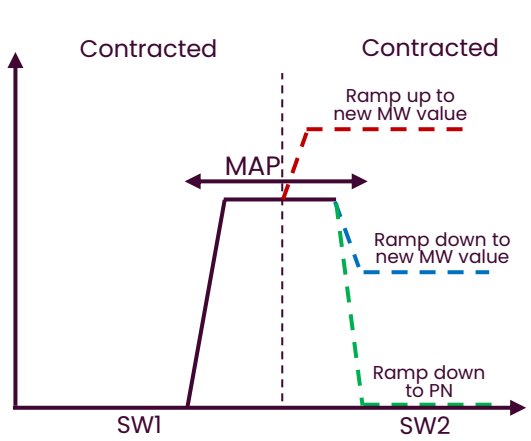
Unit must continue delivering until the end of the instruction, in line with the MAP

2



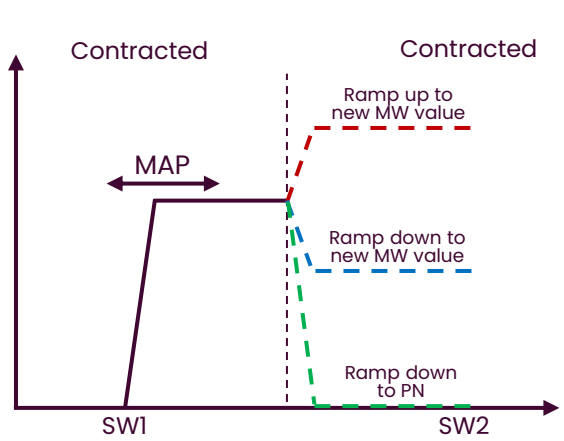
Unit cannot continue delivering in the following window. The last instruction in the contracted window must honour the MAP and end within the contracted period

3



Unit must continue delivering until the end of the instruction, in line with the MAP, and must be ≥contracted MWs. Ramping starts in the second window

4



Unit's MAP has already been satisfied. Crossover instruction into next window (with different MWs) ramps in the second window

Recovery Period

Requirement: The maximum Recovery Period for Positive and Negative Slow Reserve is set at up to 30 minutes. This means that an asset has up to 30 minutes to return to availability, following the end on an instruction before NESO can send another dispatch instruction.

The Slow Reserve Recovery Period of up to 30 minutes means that a unit is not sterilised for a large proportion of its contracted Service Window. This is especially important if a unit is activated early on within the Service Window. The SR Recovery Period is shorter than that of the STOR service primarily because of the much shorter Service Windows, and the move to covering 24 hours rather than just peaks.

Slow Reserve is designed to secure against a largest loss on the system, recovering frequency back to within operational limits as quickly as possible (<15 minutes). NESO therefore need to be confident that this capability is available whenever it is required following an unknown loss. A Recovery Period of 30 minutes already accounts for 25% of the contracted period and represents a compromise between risk, procurement cost and market capabilities.

NESO have heard feedback from some providers that this requirement may be prohibitive for them. We don't feel that the case to change this is strong enough at this point, but we would like to continue engagement to see how we can best encourage this flexibility to develop.

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Feedback on Service Design

For any feedback on questions on the Service Design you can contact the team:

box.futureofbalancingservices@nationalenergyso.com

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Implementation of OBP for NBM

API Specification has been published for Quick Reserve – SOAPv4, Slow Reserve will be very similar

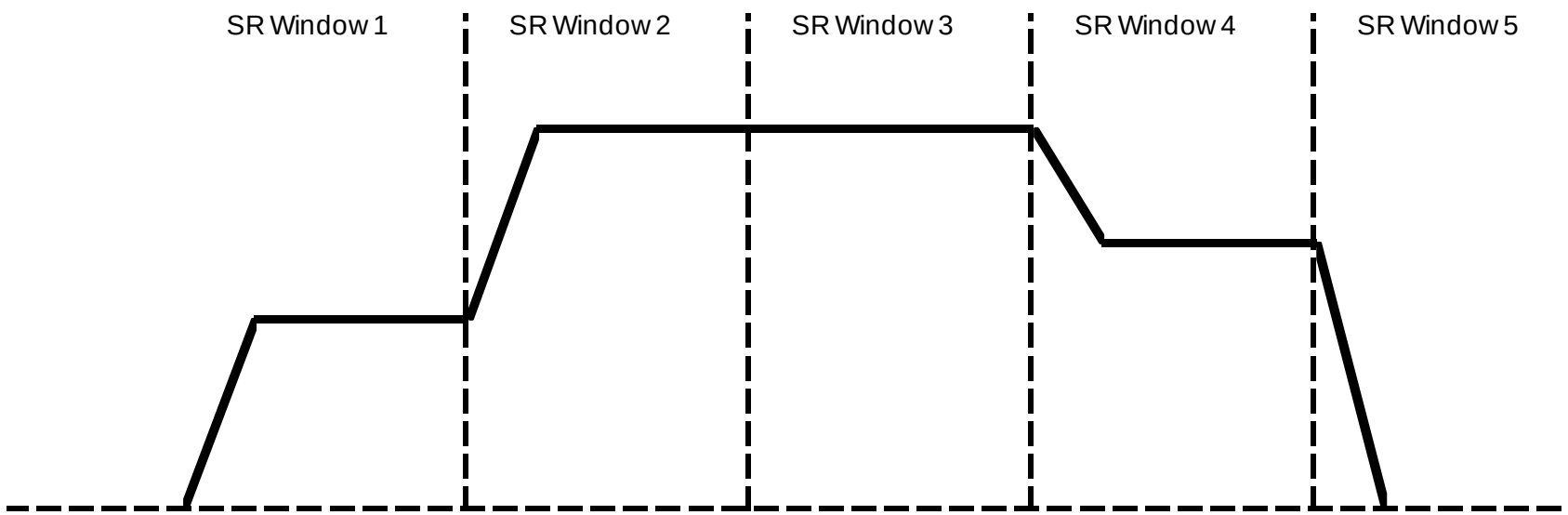
Quick Reserve Market Participant Testing for API will commence in May-June, Slow Reserve at a later point

API will capture

- Availability Submissions/Acceptances – MW and Price – Service based
- Dispatch & Cease Submissions / Acceptances – Service based
- Heartbeat – Unit based
- Physical Notifications - Unit based

Remainder of parameters will be collected via SMP

OBP Dispatch



- UnitId,
- Service Type,
- DUI (Dispatch Unique Identifier)
- VolumeRequested,
- ScheduledDateTime,
- Instruction,
- DateTimeStamp

STOR to SR Transition Plan

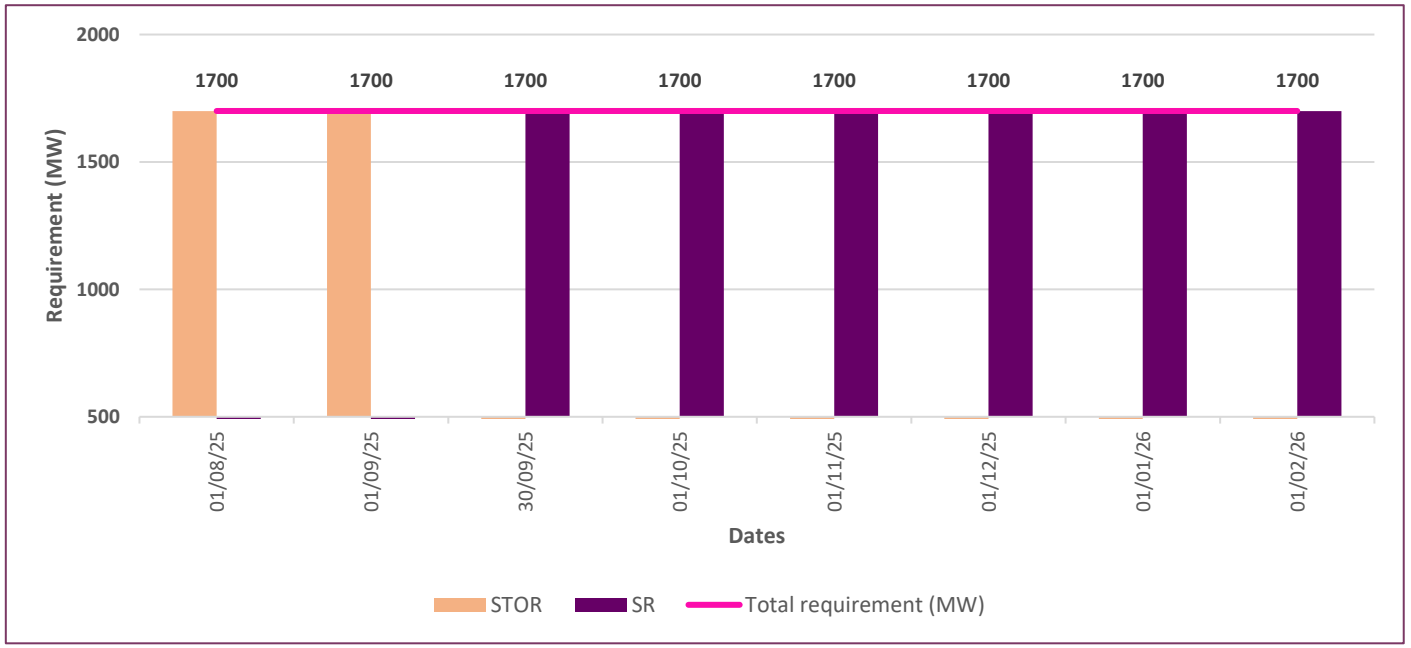
Request for Industry Input

- We are presenting the initial positive and negative requirement and procurement strategy options for the transition of STOR to SR. The transition plan is available here.
- We have considered two options for the transitional phases from STOR to SR:
  - STOR Hard Stop
  - STOR Phase Out approach to SR
- We further illustrate the timelines and the potential impacts for each transitioning options.
- NESO welcomes industry feedback on the most preferrable option considered or, alternative suggestions.

STOR to SR Transition Plan

Option 1: **Positive** STOR Hard Stop (NESO's preferable options)

- Positive STOR procurement would cease after the SR go live and will transition to positive SR with full requirement.
- It eliminates the complexity of managing two procurement events for very similar services with similar buy orders but different auction timings and different clearing platforms.



Period	Requirement (MW)		Total Positive Requirement (MW)
	STOR	SR	
01/08/25	1700	0	1700
01/09/25	1700	0	1700
30/09/25	**0**	**1700**	**1700**
01/10/25	0	1700	1700
01/11/25	0	1700	1700
01/12/25	0	1700	1700
01/01/26	0	1700	1700
01/02/26	0	1700	1700

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Please note: *requirement numbers are non-indicative and may be subject to change following future review of system operating conditions and closer to the pre-launch of SR.*

STOR to SR Transition Plan

Option 1: STOR Hard Stop - **Impacts**

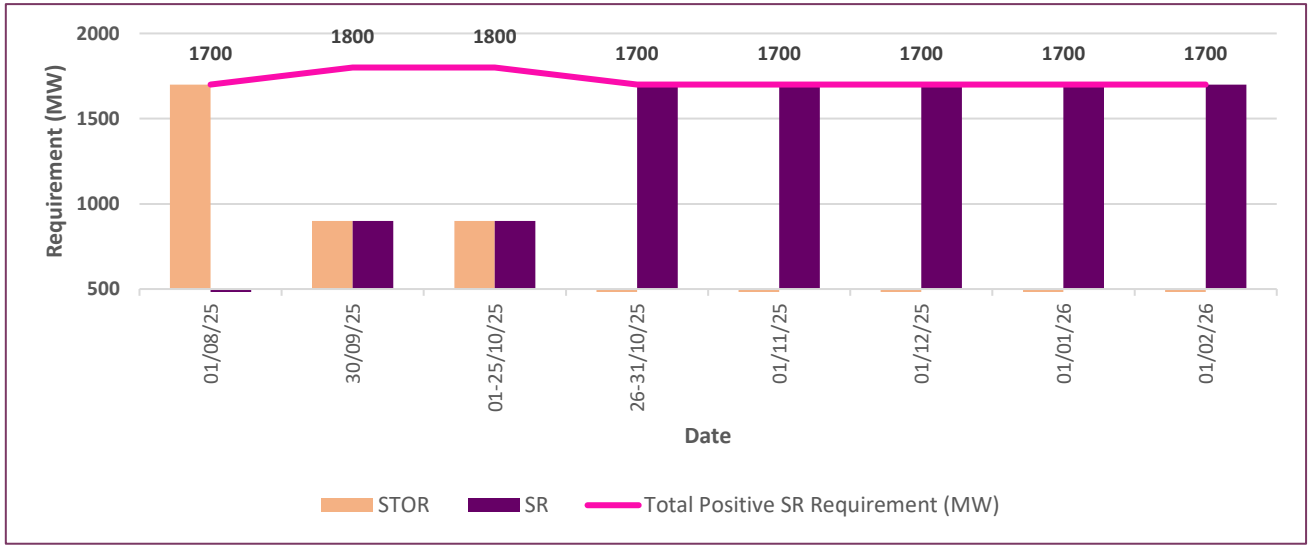
- Market participants can benefit from Enduring Auction Capability (EAC)* with flexibilities around splitting sell orders.
- Allows more time for most providers to pre-qualify to new services.
- Eliminates complexities of running two similar services at different timescales and two different buy orders.

**The information about EAC algorithm is available here and please click here for the main information about EAC.*

STOR to SR Transition Plan

Option 2: **Positive** STOR Phase Out

- Procure positive STOR until August 2025.
- Implement a transition strategy with step change starting from September 2025 with 900MW which would involve fixing the STOR buy order and gradually decreasing the quantity and price for STOR before the GMT 2025 clock change.
- The positive SR service will transition from September 2025 with initial 900MW and the full 1,700MW volume requirement delivery after the GMT 2025 clock change.



Period	Requirement (MW)		Total Positive Requirement (MW)
	STOR	SR	
01/08/25	1700	0	1700
30/09/25	**900**	**900**	**1800**
01-25/10/25	**900**	**900**	**1800**
26-31/10/25	**0**	**1700**	**1700**
01/11/25	0	1700	1700
01/12/25	0	1700	1700
01/01/26	0	1700	1700
01/02/26	0	1700	1700

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Please note: *requirement numbers are non-indicative and may be subject to change following future review of system operating conditions and closer to the pre-launch of SR.*

STOR to SR Transition Plan

Option 2: STOR Phase Out – **Impacts**

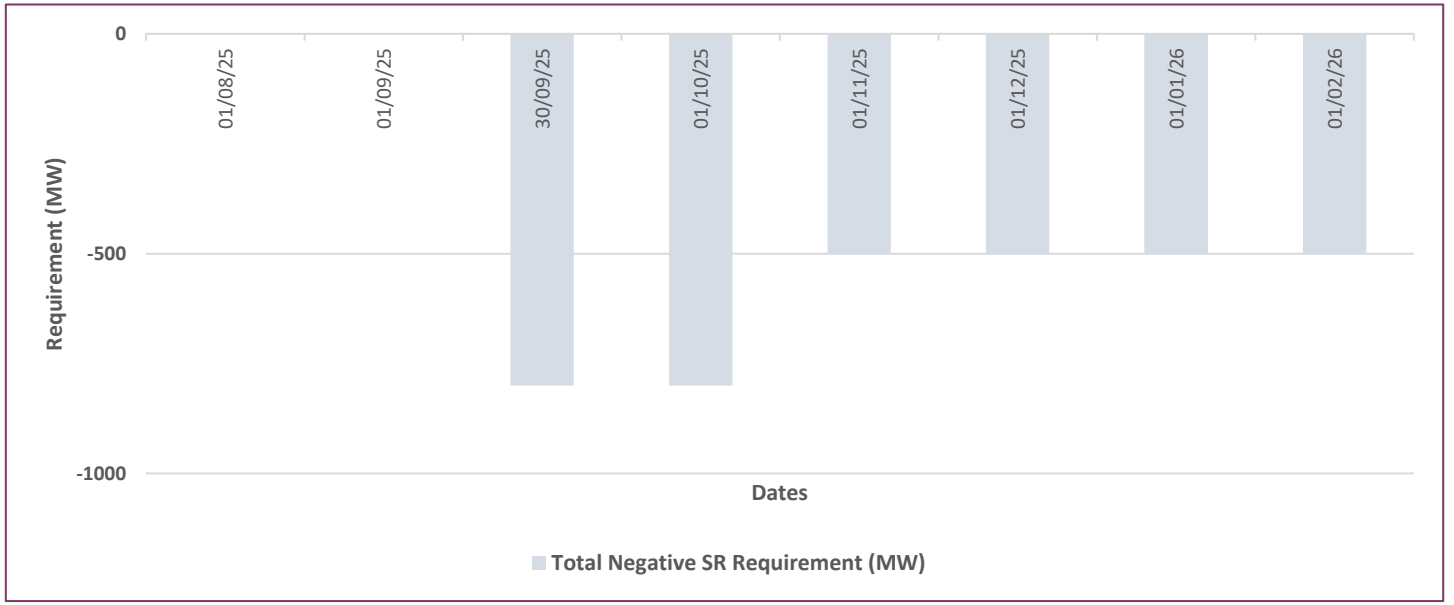
- Market participants can benefit from EAC* with flexibilities around splitting sell orders.
- Complexity around moving requirement across two different services within day ahead timeframe if STOR does not clear its set requirement.
- Managing two similar services at two different procurement events with different parameters (service windows, timings) on different platform auctions is complex.

**The information about EAC algorithm is available here and please click here for the main information about EAC.*

STOR to SR Transition Plan

Negative SR - Hard Stop and Phase Out

- Since there is no negative STOR, the negative -800MW SR requirement will be applied in accordance with the full positive SR go live from September 2025.
- Later, -500MW negative SR requirement will cover the GMT 2025 and the early GMT term of 2026.



Period	Total Negative SR Requirement (MW)
01/08/25	0
01/09/25	0
30/09/25	**-800**
01/10/25	-800
01/11/25	-500
01/12/25	-500
01/01/26	-500
01/02/26	-500

Please note: *requirement numbers are non-indicative and may be subject to change following future review of system operating conditions and closer to the pre-launch of SR.*

STOR to SR Transition Plan

Concluding thoughts:

- Two options are proposed for consideration: **Hard Stop** and **Phasing Out** approaches for the transition of STOR to SR.
- Each option has its own set of implications and timelines.
- NESO's most preferable option – STOR Hard Stop.
- NESO welcomes industry feedback in determining the most preferable option for this transition.
- Ensure the smooth transitioning from STOR to SR while ensuring industry feedback is captured, guaranteeing efficiency and reliability of reserve services.

STOR to SR Transition Plan

Request for inputs:

1. Are you currently actively participating in STOR Day Ahead auction?
2. Are you considering moving from STOR to Positive Slow Reserve?
3. What are your thoughts and preferences around the two proposed transition options ? Do you have an alternative suggestion?
4. Once you pre-qualified in Slow Reserve, would you like to retain right to bid in STOR until completely phased out?

Share your thoughts on the STOR to SR transition

Which of these would be your preferred option for the transition from STOR to Slow Reserve

1. Hard stop,

2. Phased out approach.

Please Share your thoughts via the form.

Public

Any questions?

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