



# Reserve Reform Show & Listen 1

28 April 2022

# Agenda

1. Introductions and Objectives
2. Slow Reserve: Indicative Product & Service Design Summary Document
3. Discussion points
  1. Ramp Rate proposals
  2. Performance monitoring
  3. Service Windows
  4. Auction Timings
  5. Provider Onboarding
4. Next Steps – agreeing future S&L events

# Meet The Team



Adam Sims

Reserve Reform Product  
Manager



Ed Farley

Reserve Reform Product  
Owner



Ewa Krzywkowska

Reserve Reform  
Product Design



Francisco Sanchez  
Gorostiza

Reserve Reform  
Product Design



Steve Dugmore

Reserve Reform Market  
Services Lead



Mike Coldwell

Market Requirements Future  
Design Manager

# How to engage

- We will be using Mural to gather detailed feedback: < [link](#) >
- If you have a clarification question or discussion point, please use the raise your hand function in MS Teams and wait to be called
- We will be recording the session in order to make sure we capture all feedback, this will not be published or shared

# Introduction

- Our proposed Slow Reserve service will be split into two products: Positive Slow Reserve (PSR) and Negative Slow Reserve (NSR).
- Today's session will build on the Indicative Product & Service Design Summary shared last week for Slow Reserve and previously for Negative Slow Reserve.
- Future sessions will refer to other new Reserve products which are currently being explored.
- Many topics covered today may be relevant to the development of other products and discussions shall be considered as part of the design process.

# Objectives

## Reserve Reform Project

- To reach net zero, we need **competitive markets** which **unlock new flexibility** and secure the future operation of the electricity system
- Existing reserve products are not **standardised**, making auction-based procurement difficult
- Existing products have been designed around available technologies rather than to **meet statutory obligations**
- New operability challenges require products that are **faster** and also **access to downward flexibility**

## Today's Show & Listen Event

- To share our proposals for the development of two new Slow Reserve services
- To seek industry feedback on service criteria and identify areas for improvement
- To agree next steps for industry engagement, including format and frequency

# Slow Reserve: Indicative Product & Service Design

Product Criteria	Proposal
<b>Minimum Capacity</b>	1.0MW of generation reduction (increase) / demand increase (reduction)
<b>Full Activation Time</b>	Providers must reach full activation within 15 minutes of instruction
<b>Maximum Activation Time</b>	A minimum of 120 minutes
<b>Minimum Activation Time</b>	A maximum of 30 minutes
<b>Maximum Recovery Period</b>	A maximum of 30 minutes
<b>Aggregation rules</b>	Providers can aggregate units within a GSP Group
<b>Market Window</b>	A series of service windows across the operational day
<b>Availability Pricing</b>	Pay-as-clear (Day-ahead)
<b>Utilisation Pricing</b>	Pay-as-bid (Within-day)
<b>Dispatch Solution</b>	BM – BOAs / Non-BM - ASDP
<b>Linking of Bids</b>	No linking of bids between products or procurement windows
<b>Stacking</b>	No stacking with other ancillary services
<b>Operational Metering</b>	1Hz
<b>Performance Metering</b>	1Hz
<b>Ramp rates</b>	As per envelope restrictions
<b>Baselining</b>	60-minute nomination baseline

# Mural

Please head to the [Reserve Show & Listen Mural board](#) to provide feedback on our proposals.

The image shows a screenshot of a National Grid ESO Mural board. It is divided into three main sections:

- Section 1: Slow Reserve Product & Service Design**
  - Includes a sidebar with workshop details, a list of participants (Customers and Agents), a list of agenda items, rules, participation rules, mural type, and a question corner.
- Section 2: Slow Reserve Indicative Product and Service Design Feedback**
  - Contains a grid for providing feedback on various aspects: Product Systems, Pricing Mechanisms, Bid Parameters, Dispatch, Operational & Performance Metering, Dispatch, Aggregation Rules, and Onboarding.
- Section 3: Discussion points**
  - Focuses on '3a. Ramp Rates' with a line graph showing 'Market clearing price for Slow Reserve' over 'Time (hours)'. The graph includes data for 'Slow Reserve', 'Slow Reserve Energy', 'Slow Reserve', and 'Slow Reserve Energy'.
  - Includes a 'Review Questions and seek clarification' section with 'Yes/No' buttons and a 'Questions' section with a grid for input.



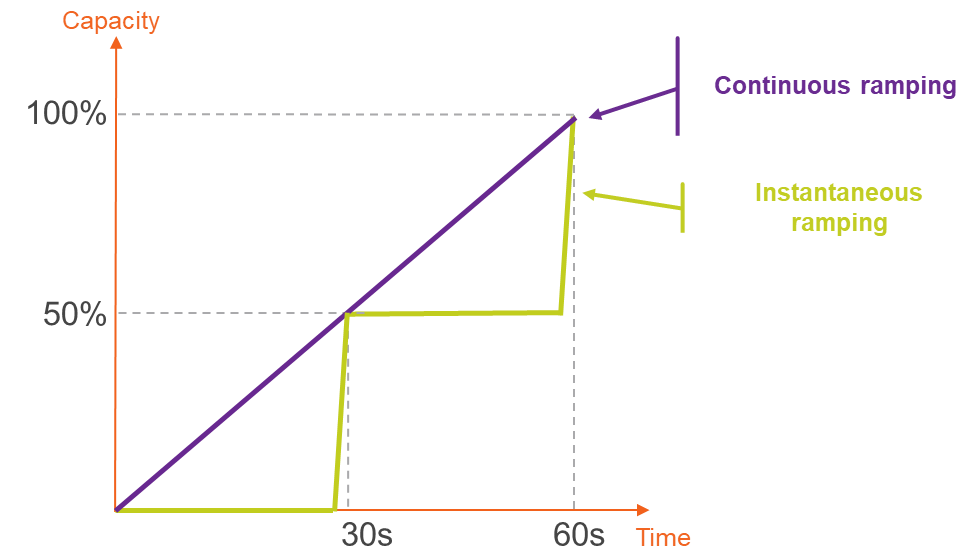
# Slow Reserve – Ramp Rates

## Principle:

We are proposing to introduce ramping restrictions when ramping towards instructions to ensure we avoid unwanted impact on frequency quality and we give ENCC enough reaction time after the loss.

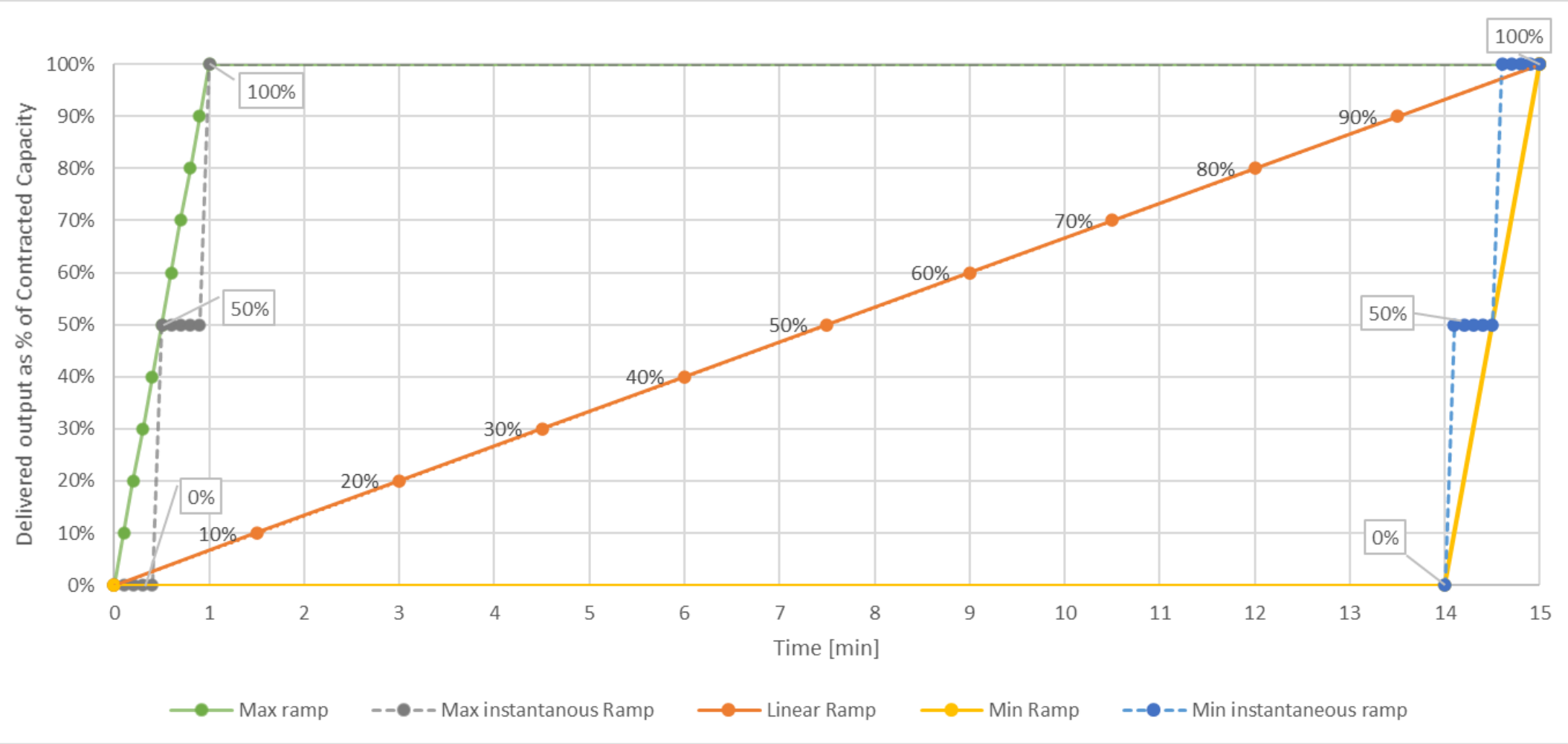
## Proposal:

- For all ramping, the unit must not deliver at a rate greater than 100% of contracted capacity per minute (maximum ramp rates).
- For instantaneous ramping, the unit must not deliver more than 50% of contracted capacity in any 30 seconds period of ramping.
- The unit may start delivery immediately after accepting a dispatch instruction.



# Slow Reserve – Ramp Rates

Proposed envelope of delivery:



# Slow Reserve – Modelling

How we produced our modelling:

**Task 1:** Simulate demand/generation loss at 50.1Hz starting frequency

Demand: 16GW

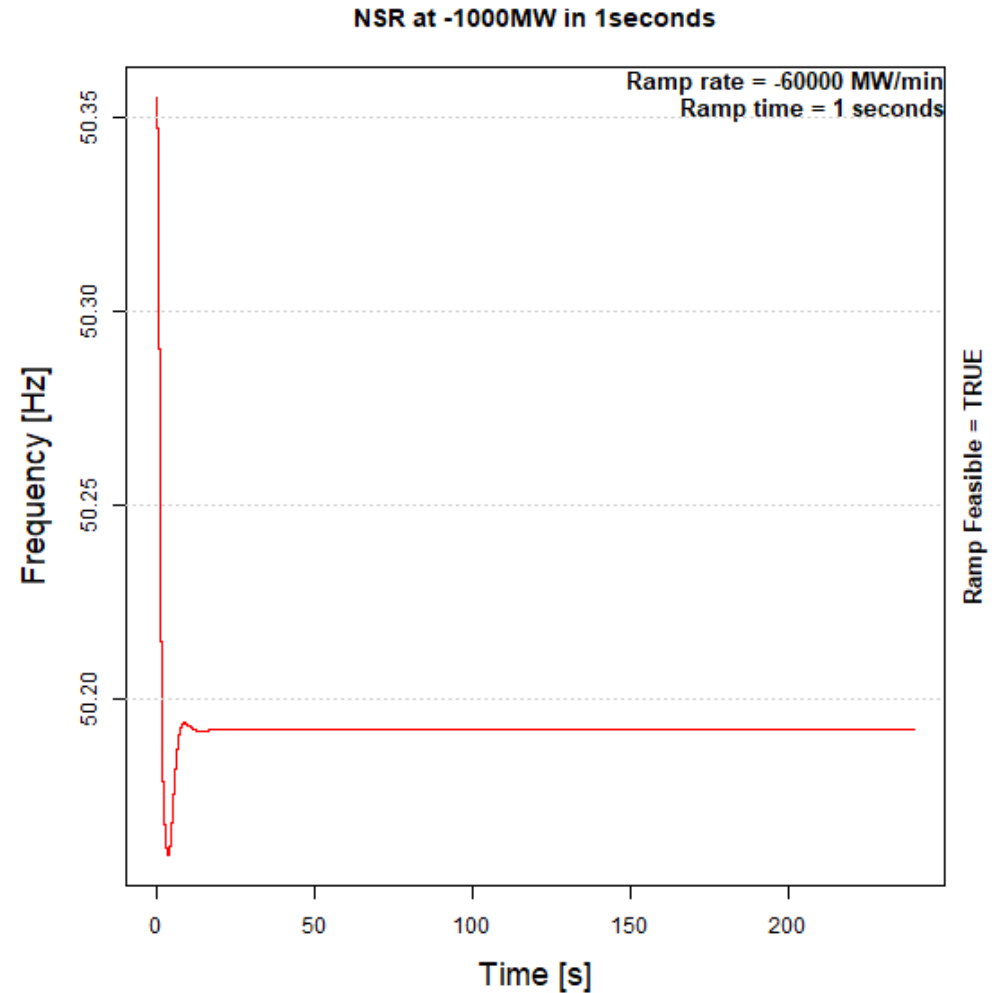
Inertia: 140 GVAs

Pre-fault frequency: 50.1Hz

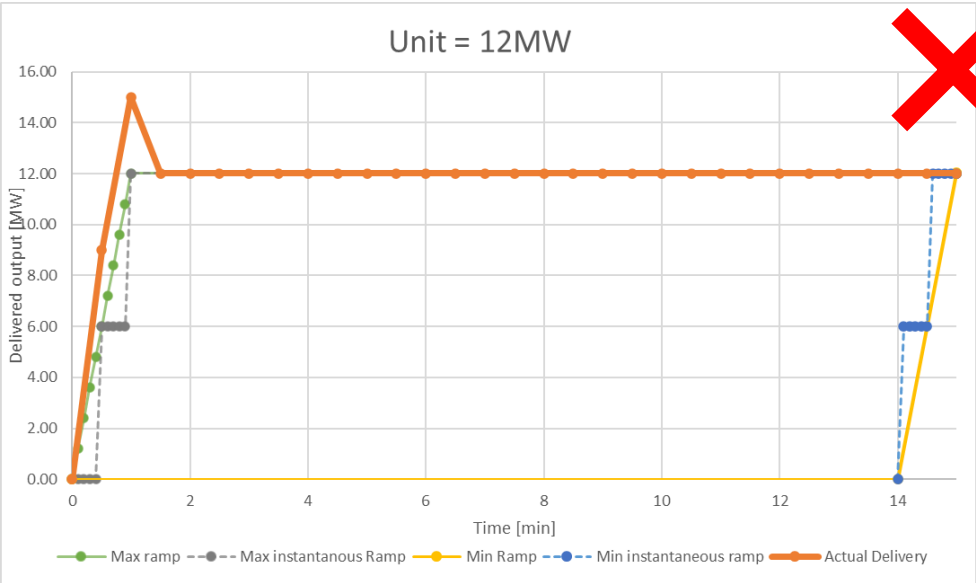
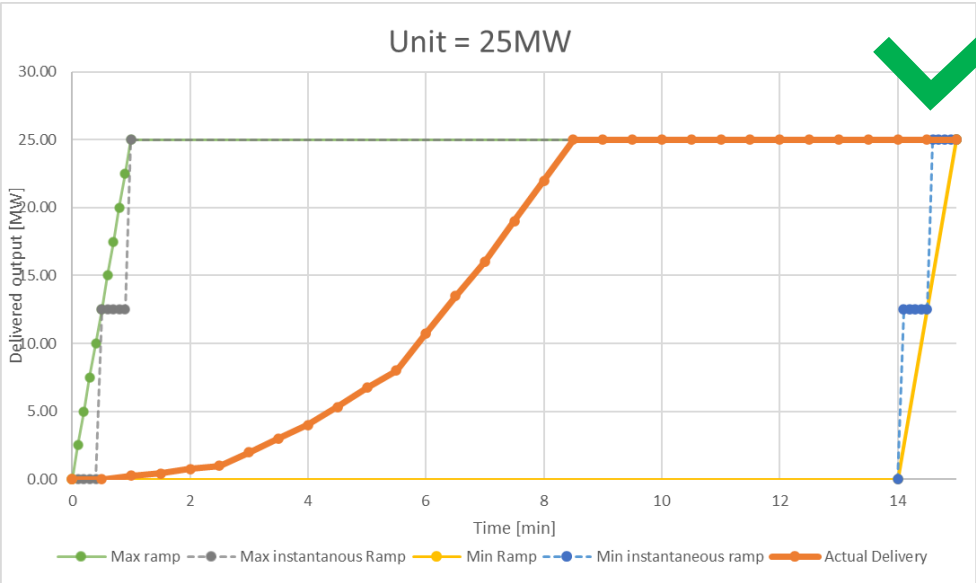
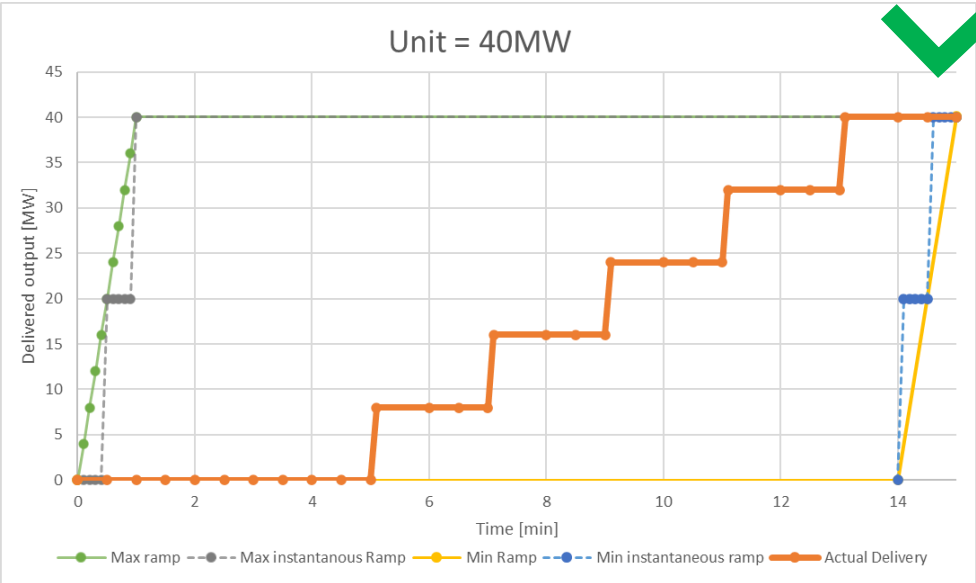
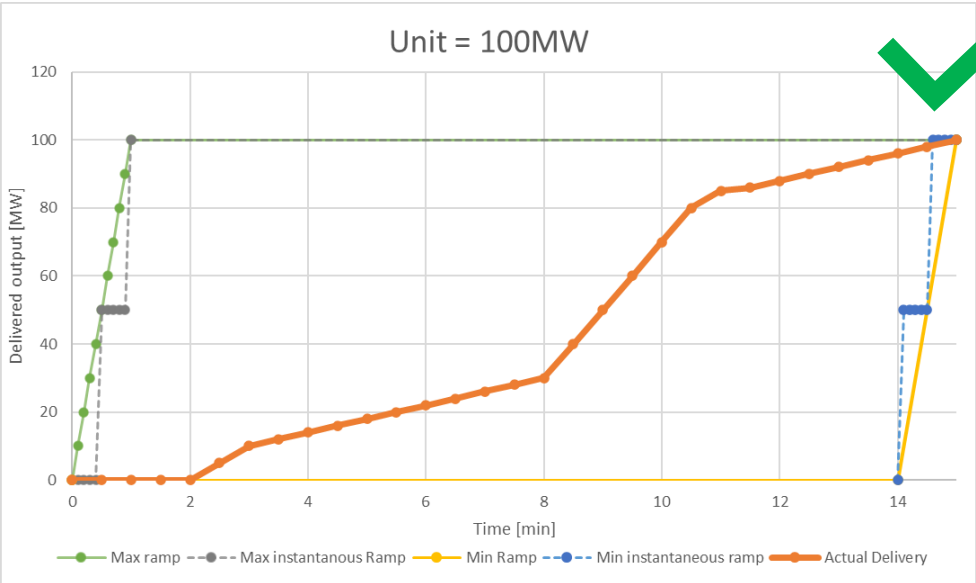
Loss: 1,000MW

**Task 2:** Simulate activation of Slow Reserve at various ramp time

Post-fault frequency: 50.36Hz



# Slow Reserve – Ramp Rates – Examples of delivery



# Mural

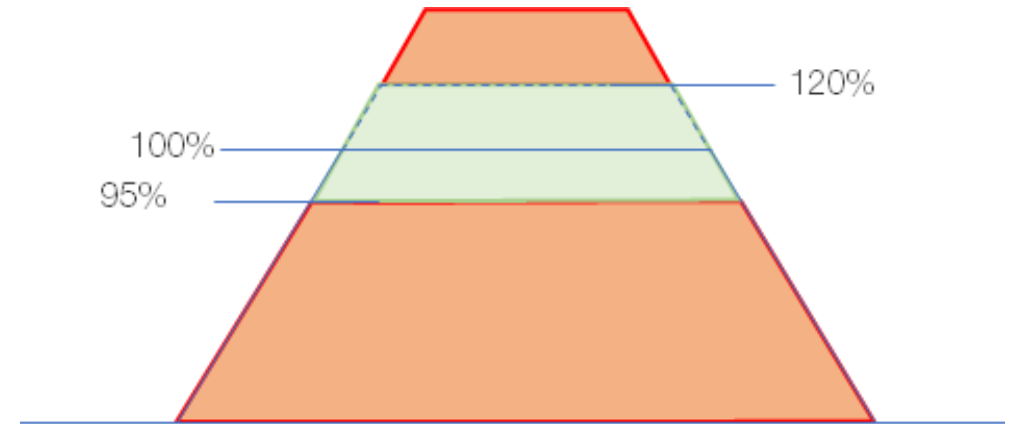
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The image shows a screenshot of a National Grid ESO Mural board. It is divided into three main sections:

- Section 1: Slow Reserve Product & Service Design**
  - Includes workshop date (08 04 22), customer names (National Grid ESO, National Grid), and a list of agenda items: Introduction and objectives, Introduction to Slow Reserve Product & Service Design, Discussion, Review the proposal, Performance overview, Introduction, Auction Format, and Market Understanding.
  - Contains a 'Rules' section with guidelines like 'This is your chance to ask questions' and 'Don't interrupt when others are speaking'.
  - Includes a 'Your Participation Rate' section with instructions on how to use the board.
  - Has a 'Mural Tip' section and a 'Feedback' section.
- Section 2: Slow Reserve Indicative Product and Service Design Feedback**
  - Sub-section: 2. Product & Service Design Feedback
  - Grid layout for feedback:
    - Product Duration: 5 yellow squares
    - Pricing Mechanisms: 5 yellow squares
    - Bid Parameters: 5 yellow squares
    - Dispatch: 5 yellow squares
    - Operational & Performance Metering: 5 yellow squares
    - Business: 5 yellow squares
    - Aggregation Rules: 5 yellow squares
    - Ordering: 5 yellow squares
  - Question Corner: A blue box with a 4x4 grid of yellow squares.
- Section 3: Discussion points**
  - Sub-section: 3a. Ramp Rates
  - Line graph showing 'Market clearing price for Slow Reserve (£/MWh)' vs 'Time (hours)'. The graph shows a linear increase from 0 to 1000 over 36 hours, with a sharp drop at the end.
  - Legend: Blue line (Slow Reserve), Red line (Market clearing price), Green line (Market clearing price), Yellow line (Market clearing price), Blue line (Market clearing price).
  - Two green boxes with questions: 'Do our proposals for ramping the price for Slow Reserve present any issues to your customers?' and 'Are the assumed ramp rates for Slow Reserve realistic?' Each has 'Yes' and 'No' buttons.
  - Two rows of yellow squares for additional feedback.
  - Review Questions and seek clarification section.
  - Questions section with 5 yellow squares.

# Slow Reserve – Performance Monitoring

- As per all ESO balancing services, we will monitor performance to ensure compliant delivery.
- **Under-delivery** below 95% contracted capacity will mean availability payments for the relevant service window will be withheld. Utilisation payments will be made for all energy delivered.
- **Over-delivery** will be permitted up to 20% in addition to contracted capacity, however utilisation and availability payments will be capped at 100%.



# Mural

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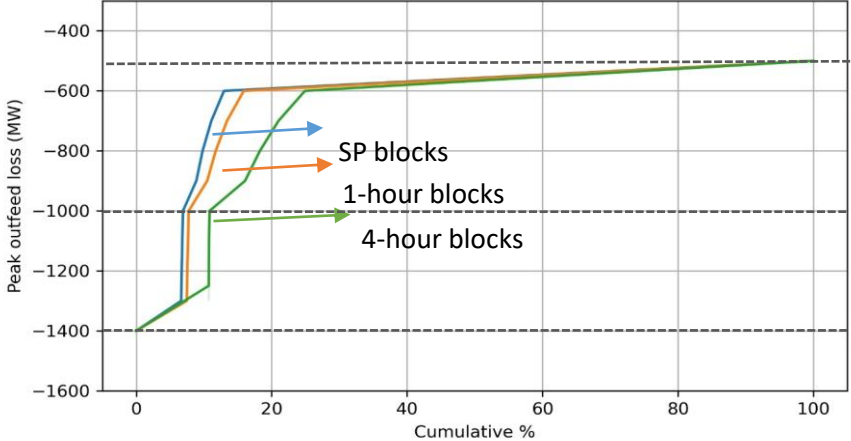
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  - Contains a 'Rules' section with guidelines like 'This is your chance to ask questions' and 'Don't interrupt when others are speaking'.
  - Includes a 'Your Participation Rate' section with instructions on how to use the yellow squares.
  - Has a 'Mural Tip' section and a 'Zoom & Chat' section.
- Section 2: Slow Reserve Indicative Product and Service Design Feedback**
  - Sub-section: **2. Product & Service Design Feedback**
  - Grid layout for feedback:
    - Product Duration: 5 yellow squares
    - Pricing Mechanisms: 5 yellow squares
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    - Dispatch: 5 yellow squares
    - Operational & Performance Metering: 5 yellow squares
    - Business: 5 yellow squares
    - Aggregation Rules: 5 yellow squares
    - Ordering: 5 yellow squares
  - Bottom section: **Question Corner** with a 4x4 grid of yellow squares.
- Section 3: Discussion points**
  - Sub-section: **3a. Ramp Rates**
  - Contains a line graph showing 'Market clearing price for Slow Reserve (£/MWh)' vs 'Time (hours)'. The graph shows a linear increase from 0 to 1000 over 36 hours, with a sharp drop at the end.
  - Below the graph are two green boxes with questions: 'Do our proposals for ramping the price for Slow Reserve product any issues to our customers?' and 'Are the assumed ramp rates for Slow Reserve product any issues to our customers?' Each has 'Yes' and 'No' buttons.
  - Below the buttons are two rows of yellow squares for voting.
  - Bottom section: **Review Questions and seek clarification** with a 'Questions' section containing a row of yellow squares.

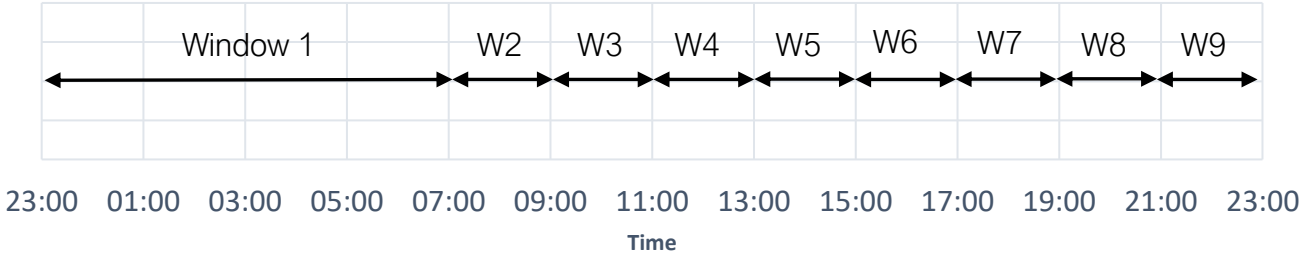
# Slow Reserve – Service Windows

- The **Service Windows** refer to the period of time in which providers must have their assets ready for delivery if instructed by the Control Room.
- If the Service Windows are too long, some units with variable outputs (e.g. DERs) might be excluded from the market.
- Longer windows generally lead to over-holding, as NGENSO would need to procure the maximum requirement over the full window length.
- If the windows are too short, then the number of transactions and associated costs could be difficult to manage.

NSR Requirement



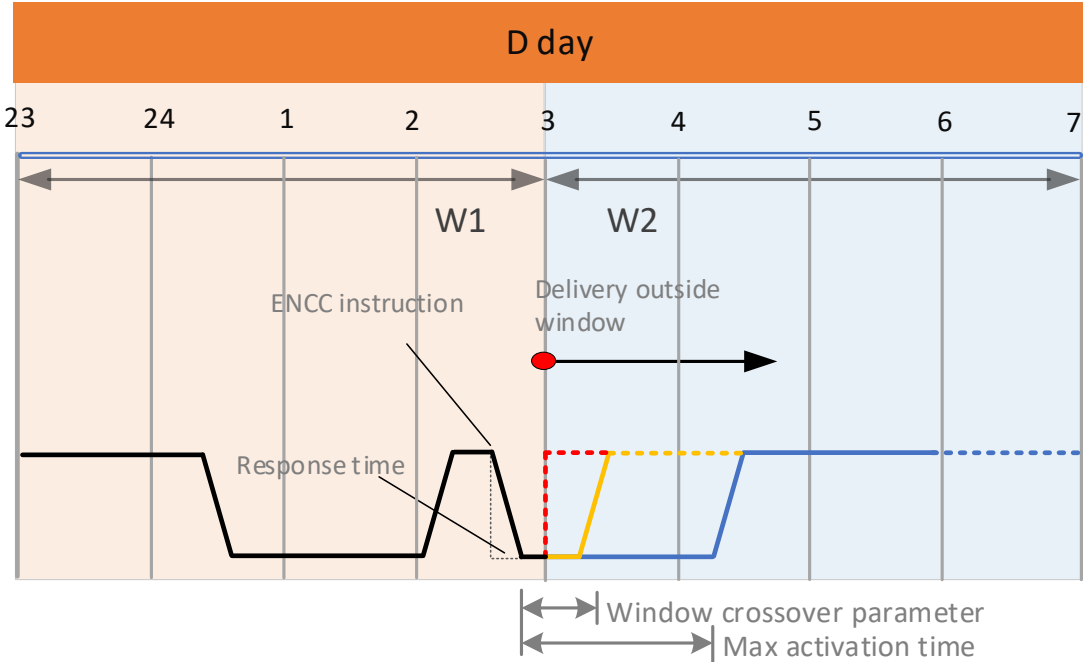
Current proposal





# Slow Reserve – Service Windows

- Because the Slow Reserve product has a maximum activation time of 120 minutes, the capacity procured within a service window could be instructed to deliver within the window but the delivery continues outside the window.
- The figure below shows an example with a 4-hour service window and different options for delivery post-window.



Option	Description
A	Hard stop at the end of the window. Delivery not expected outside of the dispatch window independent of the unit's maximum activation time.
B	The unit must deliver for a specific duration after the window crossover, defined by their <b>window crossover parameter</b> . This should be at least its minimum activation time.
C	The unit must be ready to deliver if instructed just before the end of the delivery window. Potentially for a maximum of 2 hours.

# Mural

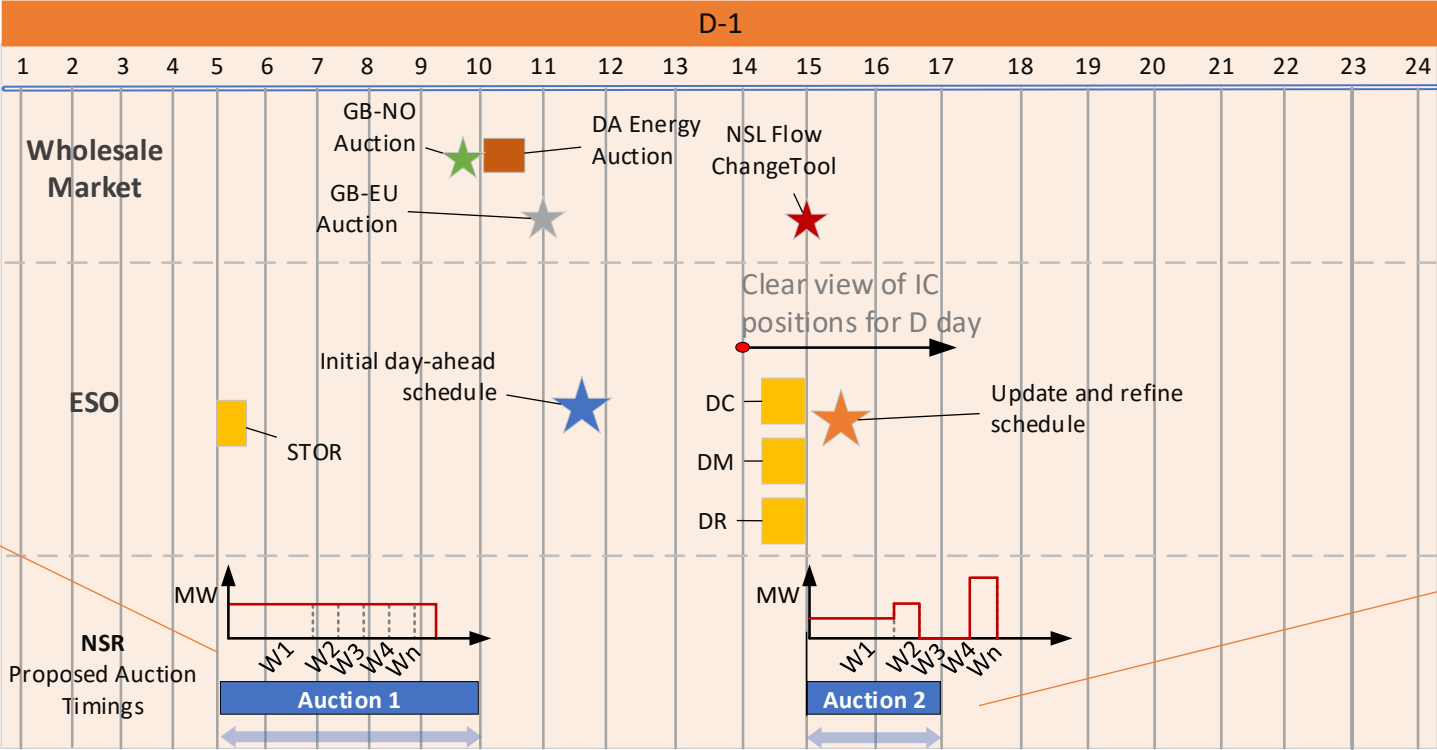
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  - Includes a sidebar with workshop details, a list of participants (Customers and Agents), a list of agenda items, rules, participation rules, and mural tips.
- Section 2: Slow Reserve Indicative Product and Service Design Feedback**
  - Contains a grid for providing feedback on various aspects: Product Systems, Pricing Mechanisms, Bid Parameters, Dispatch, Operational & Performance Metering, Dispatch, Aggregation Rules, and Onboarding.
  - Each cell in the grid has a row of five yellow sticky notes for input.
  - A "Question Corner" at the bottom features a 4x4 grid of yellow sticky notes.
- Section 3: Discussion points**
  - Focuses on "3a. Ramp Rates" with a line graph showing "Ramp Rate (MW per hour) vs. Time (hours)".
  - Includes a legend for different ramp rate types: "Ramp rate", "Ramp rate (with reserve)", "Ramp rate", "Ramp rate", and "Ramp rate (with reserve)".
  - Contains two sets of "Yes/No" buttons for feedback on the ramp rates.
  - Includes a "Review Questions and seek clarification" section and a "Questions" section at the bottom.

# Slow Reserve – Auction Timings

- Two daily auctions for availability are proposed:



Early knowledge of source of reserve gives confidence to the Control Room  
 Base requirement (560MW), independent of IC positions.

After response auctions. (Allows interaction response + reserve)  
 Closer to delivery. (Better estimates DER)

- The requirement for each of the service windows will be cleared at the day-ahead auctions.
- Initially though, it will be an optional service, i.e. providers will submit prices and capacity and NGENSO will instruct them as and when required within gate closure), and it will be for NBM only (as BM units will continue to use the BM).

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  - Includes a sidebar with workshop date (08 04 22), customer avatars, and a navigation menu with items like Introduction and objectives, Introduction to Slow Reserve Product & Service Design, Discussion points, Review the proposals, Performance monitoring, Introduction, Auction Format, and Market Understanding.
  - Contains a 'Rules' section with guidelines on participation and a 'Your Participation Rate' section with instructions on how to use the board.
  - Includes a 'Mural Tip' section and a 'Feedback' section.
- Section 2: Slow Reserve Indicative Product and Service Design Feedback**
  - Sub-section: 2. Product & Service Design Feedback
  - Grid of feedback areas: Product Duration, Pricing Mechanisms, Bid Parameters, Dispatch, Operational & Performance Metering, Dispatch, Aggregation Rules, and Onboarding.
  - Each area contains a row of yellow sticky notes for feedback.
  - Bottom section: Question Corner with a grid of yellow sticky notes.
- Section 3: Discussion points**
  - Sub-section: 3a. Ramp Rates
  - Contains a line graph showing 'Market clearing price for Slow Reserve' vs 'Time (hours)'. The graph shows a linear increase from 0 to 1000 over 24 hours, with a sharp drop at the end.
  - Below the graph are two green boxes with questions: 'Do our proposals for ramping the price for Slow Reserve...?' and 'Are the assumed ramping...?'. Each has 'Yes' and 'No' buttons.
  - Bottom section: Review Questions and seek clarification with a row of yellow sticky notes.

# Provider Onboarding

In line with existing new product launches, registration and pre-qualification will be completed via our Single Market Platform (SMP). High level steps:

- participant requests registration as a Registered Service Provider
- NGESO validates registration and issues user IDs
- participant (now Registered Service Provider) accedes to relevant contract documentation to facilitate Slow Reserve participation (electronic signature on platform)
- provider uploads details of one or more Eligible Assets for pre-qualification
- NGESO undertakes any necessary validation

provider allocates Eligible Assets to Slow Reserve Unit(s)

- • Non-BM providers will be required to establish and complete testing of the required web-based solution for communications with ESO via the Platform for Ancillary Services (PAS).
- NGESO confirms completion of prequalification process and providers are assigned a login to the dedicated auction platform.
- Provider is now able to participate in Slow Reserve daily auctions

# Slow Reserve – Timeline

Service	BM dependency	NBM dependency
Optional	Ofgem approval	Ofgem approval ASDP release
Firm	Balancing Transformation release Enduring Auction Capability project	ASDP release Enduring Auction Capability project

Dependency	Estimated timescales
Ofgem approval	4 months
ASDP release	6 months
Balancing Transformation release	12+ months (tbd)
Enduring Auction Capability project	Q4 22/23

# Mural

Please head to the [Reserve Show & Listen Mural board](#) to provide feedback on our proposals.

The screenshot shows a Mural board with three main sections:

- Section 1: Slow Reserve Product & Service Design**
  - Workshop date: 08 04 22
  - Customers: [Icons]
  - Agenda:
    - 1 Introduction and objectives
    - 2 Introduction to Slow Reserve Product & Service Design
    - 3 Discussion
    - 4 Review the product
    - 5 Performance metrics
    - 6 Bid Parameters
    - 7 Bid Rules
    - 8 Bid Rules - aggregation Rules & Order entry
    - 9 Feedback
  - Rules:
    - This is your chance to ask questions - Right?
    - Clarify and confirm to all questions.
    - Clarify the rules before the start of the workshop.
    - Avoid interrupting when others are speaking.
  - Your Participation Rate:
    - 1. **Product & Service Design** - Review the product and service design, and ask questions and provide feedback.
    - 2. **Performance metrics** - Review the performance metrics and ask questions and provide feedback.
    - 3. **Bid Parameters** - Review the bid parameters and ask questions and provide feedback.
    - 4. **Bid Rules** - Review the bid rules and ask questions and provide feedback.
  - Mural Tip:
    - 1. **Ask questions** - Ask questions during the workshop to clarify any points.
    - 2. **Review the board** - Review the board during the workshop to ensure you understand the content.
  - Summary & Close:
    - 1. **Summary** - Summarize the key points of the workshop.
    - 2. **Close** - Close the workshop and thank the participants.
  - The agenda:
    - 1. **Introduction** - Introduction to the workshop.
    - 2. **Introduction** - Introduction to the workshop.
    - 3. **Introduction** - Introduction to the workshop.
    - 4. **Introduction** - Introduction to the workshop.
  - Next Steps:
    - 1. **Introduction** - Introduction to the workshop.
    - 2. **Introduction** - Introduction to the workshop.
    - 3. **Introduction** - Introduction to the workshop.
    - 4. **Introduction** - Introduction to the workshop.
  - Next Steps:
    - 1. **Introduction** - Introduction to the workshop.
    - 2. **Introduction** - Introduction to the workshop.
    - 3. **Introduction** - Introduction to the workshop.
    - 4. **Introduction** - Introduction to the workshop.
- Section 2: Slow Reserve Indicative Product and Service Design Feedback**
  - 2. Product & Service Design Feedback
    - Product Systems: [5 yellow squares]
    - Pricing Mechanisms: [5 yellow squares]
    - Bid Parameters: [5 yellow squares]
    - Dispatch: [5 yellow squares]
    - Operational & Performance Metering: [5 yellow squares]
    - Business: [5 yellow squares]
    - Aggregation Rules: [5 yellow squares]
    - Ordering: [5 yellow squares]
  - Question Corner: [10 yellow squares]
- Section 3: Discussion points**
  - 3a. Ramp Rates
    - Graph showing Ramp Rates (MW per hour) vs Time (hours) for various scenarios: Bid rule, Bid rule + ramp rate, Bid rule + ramp rate + ramp rate, Bid rule + ramp rate + ramp rate + ramp rate, Bid rule + ramp rate + ramp rate + ramp rate + ramp rate.
    - Do our proposals for ramping the ramp rate for Slow Reserve product are feasible to our technology? [Yes/No buttons]
    - Are the assumed ramp rates for Slow Reserve product and non-constant enough? [Yes/No buttons]
    - Review Questions and seek clarification: [5 yellow squares]
    - Questions: [5 yellow squares]

# Slow Reserve – Next Steps

- Feedback from today's session – does this style and structure work for you?

[Box.futureofbalancingservices@nationalgrideso.com](mailto:Box.futureofbalancingservices@nationalgrideso.com)

- Agreeing cadence of future sessions
- Next session – metering and baselining
- Further written feedback appreciated via the Slow Reserve Feedback Proforma (<https://www.nationalgrideso.com/industry-information/balancing-services/future-balancing-services>)