



Reserve Reform Show & Listen #3

23 June 2022

Agenda

- I. Review of Show & Listen 2
- II. Quick Reserve – Project timeline
- III. Quick Reserve – System need
- IV. Quick Reserve – Design parameters
 1. Time to full delivery
 2. Recovery period
 3. Dispatch mechanism
 4. Product duration
 5. Ramping envelope
 6. Performance & operational metering
- V. Quick Reserve – Procurement service design
- VI. Looking ahead to our next Show & Listen event

How to engage

- We will be using Mural to gather detailed feedback.
- 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- We will be recording the session in order to make sure we capture all feedback, this will not be published or shared.



Recap of Show & Listen 2

Recap of Show & Listen 2

- We shared an overview of two new Slow Reserve products – Positive Slow Reserve and Negative Slow Reserve.
- Key discussion points included our proposals for service windows, auction timings, metering and baselining. We addressed your feedback points on the Q&A document, which can be located using the link below.



Slides

Version: Updated 08.06.2022	
Q	Answer Provided
1 Standardisation of product length into chunks (e.g. 5/15/30 mins) should be considered to allow standardisation of products. Similar to Replacement Reserve?	We have aimed to standardise key service parameters while allowing flexibility to accommodate different provider and technology types, and also factoring in compatibility with the Balancing Mechanism. We will continue to review service design to maximise operability and consumer value through effective competition.
2 Pricing should be pay as clear for both availability and utilisation - reserve and response are not locational products, they should be homogeneous	Dispatching Reserve is interlinked with the Balancing Mechanism which is GB's largest balancing market and is founded upon Pay-As-Bid. For the new Reserve products, we propose to mirror this on day one but will consider a transition to Pay-As-Clear in future if this remains the most economic procurement method and system / market.
3 What guarantees NGEESO will always activate according to merit order if pay-as-bid?	We always seek to balance the system in the most economic and efficient manner, while ensuring safe and secure operation. This is not affected by the choice of how to set the clearing price.
4 Pay as bid could be used for utilisation in the early days, with a view to moving to a clearing price once the product is up and running	Whilst we maintain our approach for utilisation pricing being Pay-as-Bid in the short term, we will continue to explore the most economic procurement mechanisms looking further ahead.
5 Activation times state a minimum of 30 minutes. Will this be the case for all slow reserve actions or could calls be shorter?	The Minimum Activation Time is an optional parameter which is specified by providers. This must be no more than 30 minutes but could be as short as 1 minute if deemed acceptable by each participating unit.
6 Will limits be placed on the amount of reserve procured in the BM?	We don't propose that there will be any differentiation between BM and non-BM providers when procuring Reserve.
7 What is the reason for 1Hz? Feedback I got internally is that this is a barrier and very unusual for an energy product.	We are proposing 1Hz metering for performance purposes to monitor compliant practice during the ramping envelope. 3-minute granularity data, as per STOR, is insufficient for this. For operational metering, we are looking to enhance our visibility of assets on the network, especially those participating in balancing services markets. 1Hz granularity is common for many assets participating in the Balancing Mechanism and enhances our capability for more granular demand forecasting and frequency modelling. We understand that 1Hz metering for single-site >1MW assets is broadly achievable but recognise that our standards need to be implemented proportionately for aggregated units. We are convening an Inaugural Power
8 1 Hz is a major barrier to entry when considering staking of multiple small assets	Thanks for your feedback. As above, we are convening a Power Responsive working group to understand how aggregated assets should provide operational metering to NGEESO in a way that provides visibility but does not

Q&A document



Quick Reserve – Timeline

Proposed Project Timeline

- Using an Agile approach we can introduce services and functionality in sequential releases.
- However, there are a number of dependencies for the different releases:

Dependency	Launch stage	Required for	Estimated timescales
Ofgem approval		All services	4 months
ASDP release	Stage 1 Optional NBM + BM	NBM providers	6 months
Enduring Auction Capability project	Stage 2 Firm NBM	Firm market	12 months
Balancing Transformation release	Stage 3 Firm BM	BM providers	24 months

Proposed Project Timeline

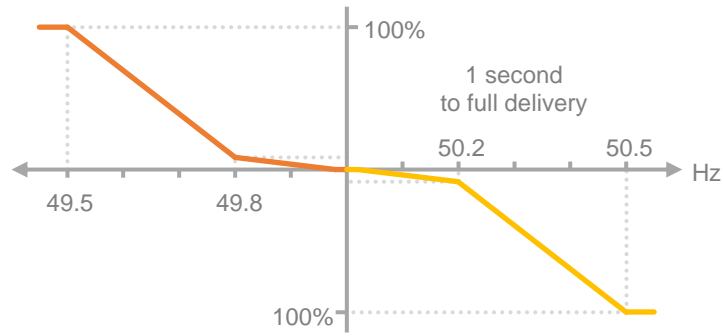


- Launching a Firm NBM market ahead of a Firm BM market is estimated to deliver potential consumer value of £1-2M per month.
- Note that STOR day ahead will continue until the full NBM and BM Firm Positive Slow Reserve service is available.



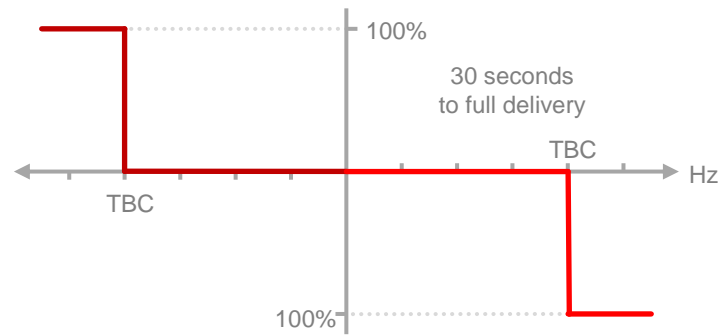
Overview of system need

Dynamic Containment



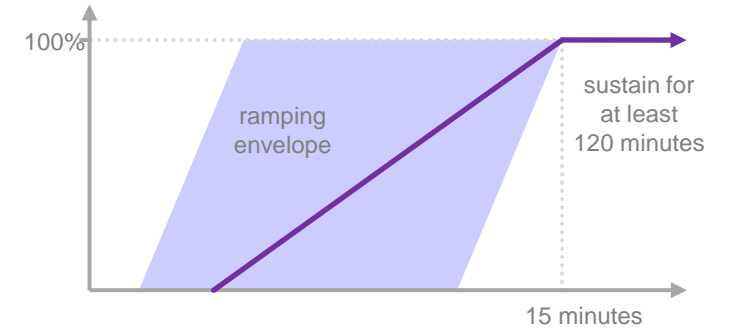
Prevent frequency deviations outside -0.8Hz / +0.5Hz following large losses

Static Recovery



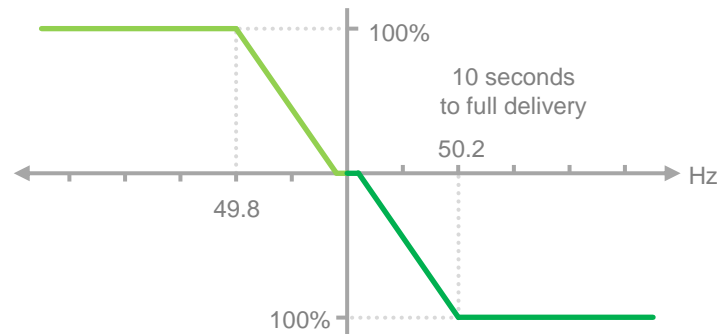
Recover frequency to 0.5Hz within 60 seconds following large losses

Slow Reserve



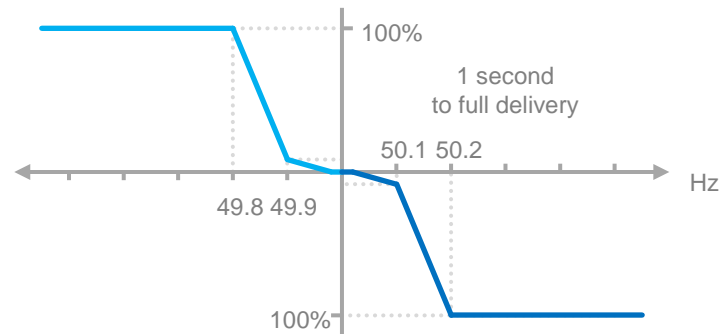
Recover frequency from to 0.2Hz within 15 minutes

Dynamic Regulation



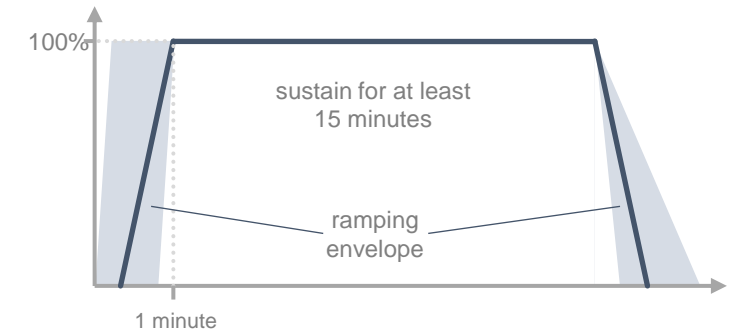
Assist in keeping frequency near to 50Hz during normal conditions

Dynamic Moderation

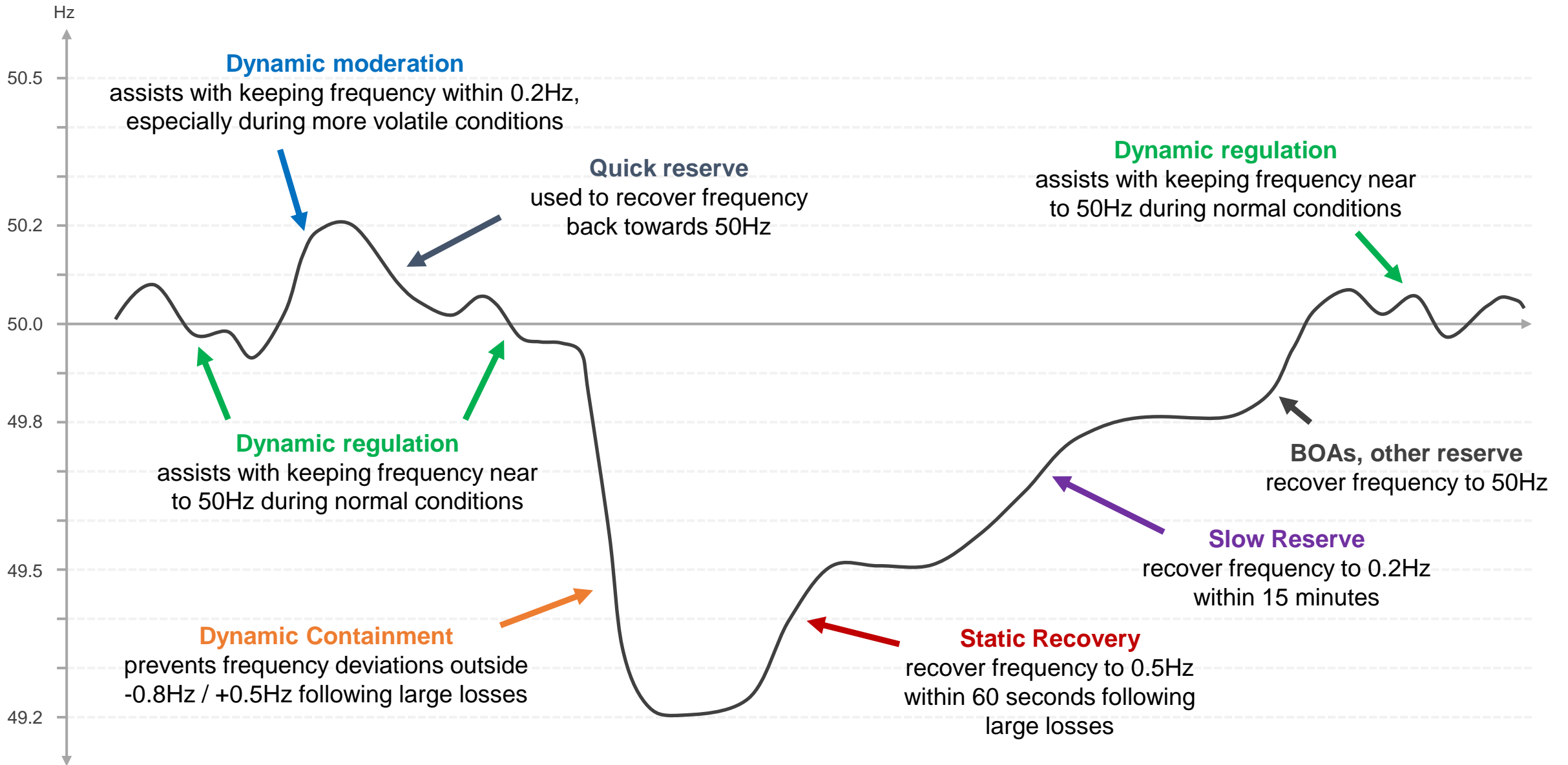


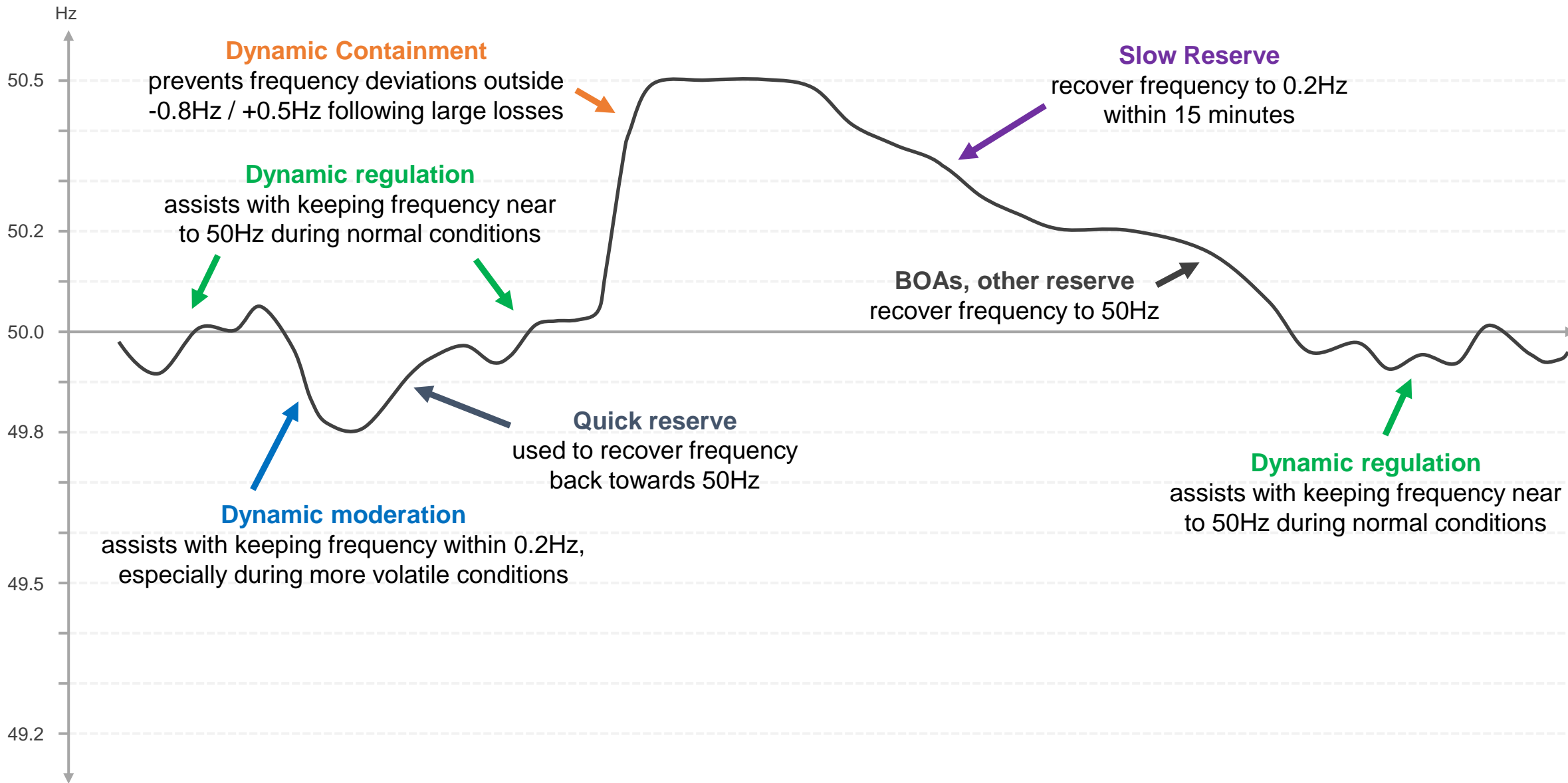
Assist in keeping frequency within 0.2Hz, especially during more volatile conditions

Quick Reserve

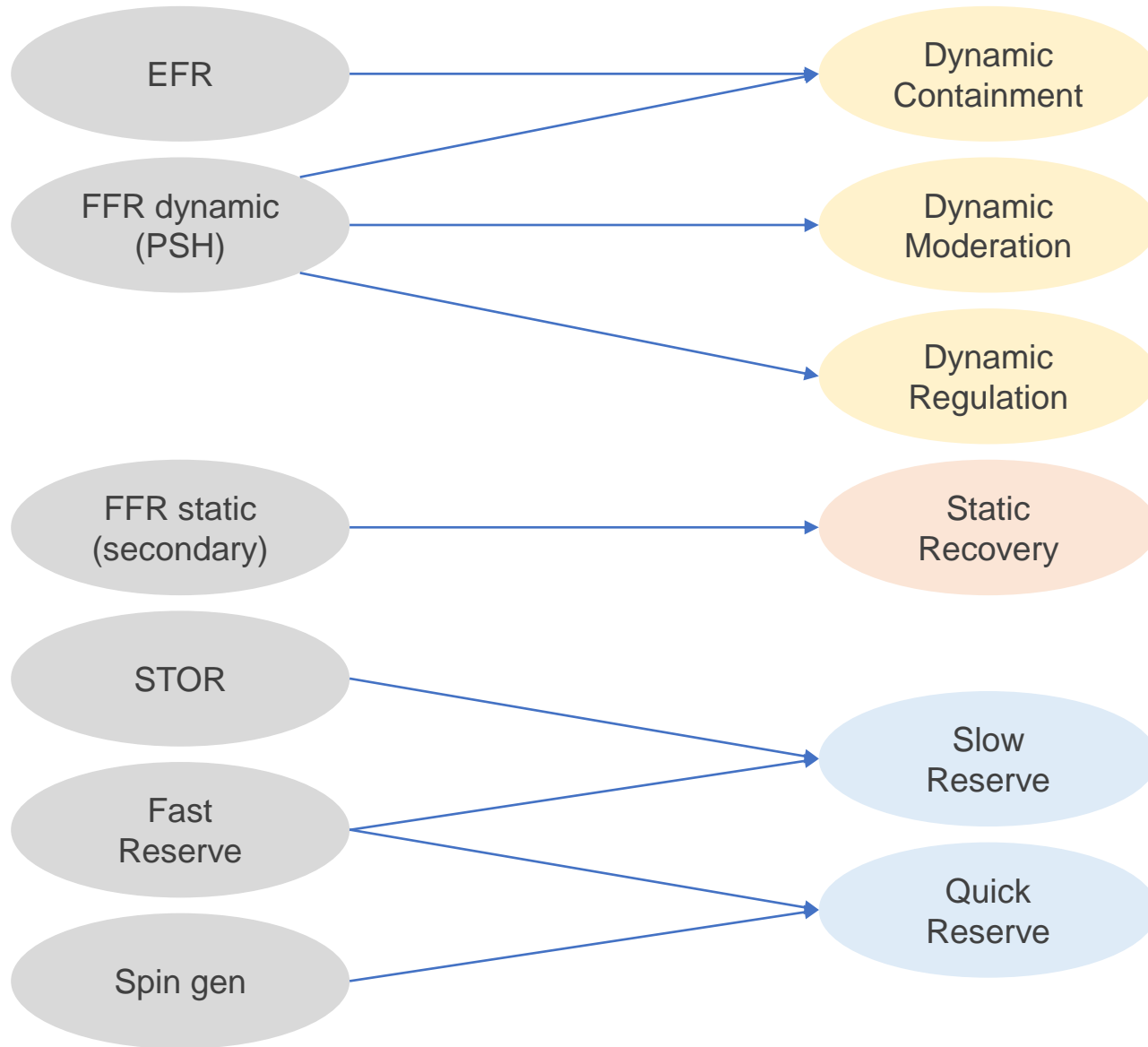


Recovery frequency back towards 50Hz, mainly during normal conditions





Anticipated service transition



This is just indicative view on service transition in the future.

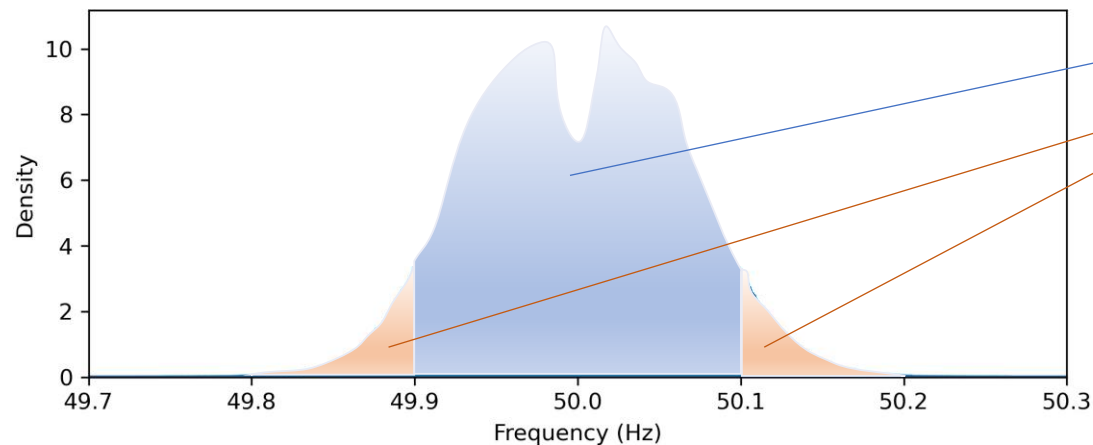
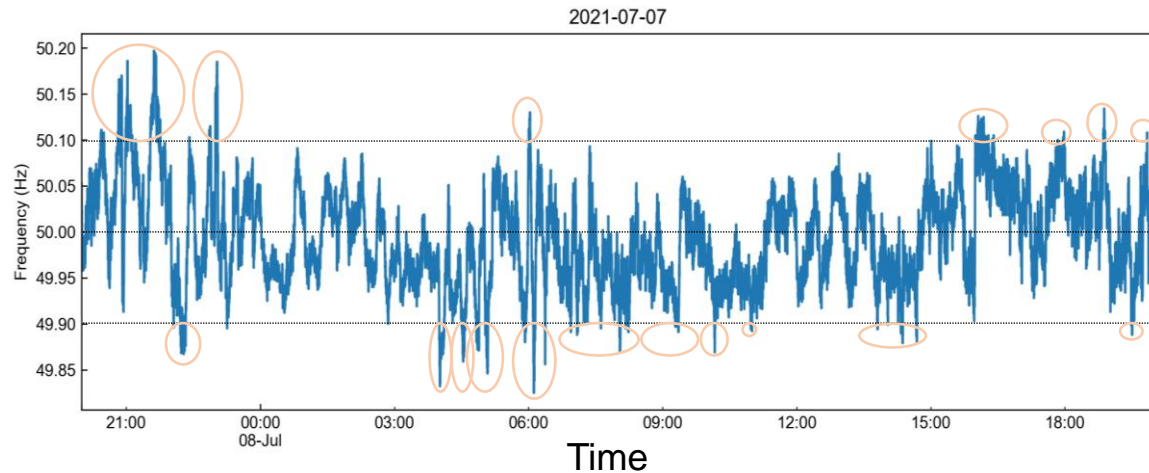
We are not proposing closing any services at this stage.



Quick Reserve

Time to full delivery

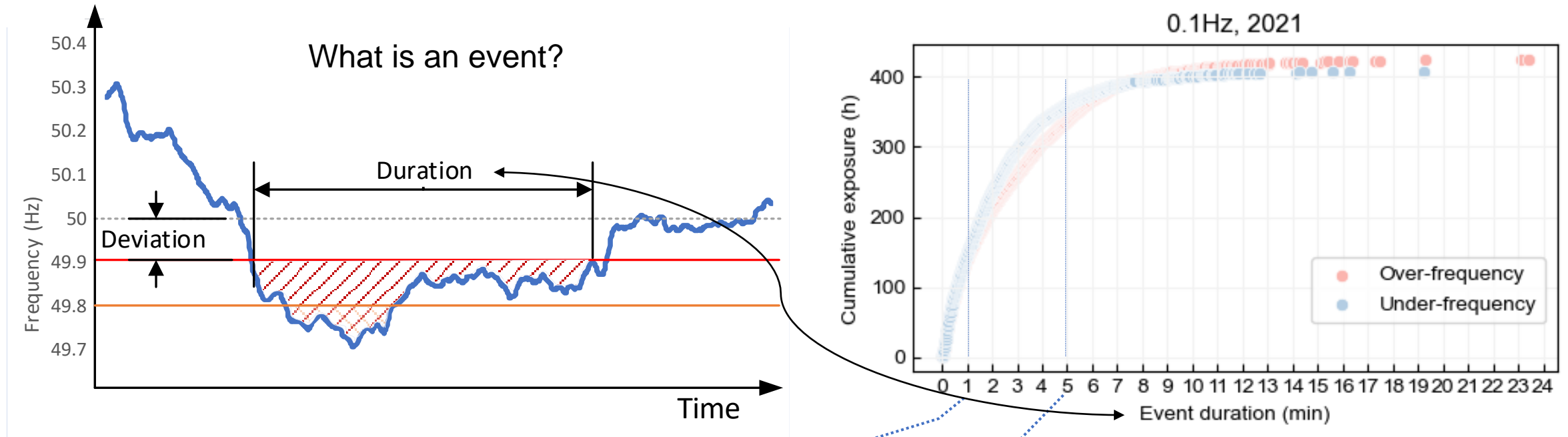
- Frequency behaviour



- ❑ Typical frequency trace. Moving closely around 50.0 Hz.
 - ❑ Random fluctuations
 - ❑ Disturbances
- ❑ Frequency response is procured assuming a pre-fault frequency different from 50 Hz.
- ❑ *How is the frequency distributed over the year?*
 - ❑ Around 90% of the time.
 - ❑ Around 10% of the time. ~ **832 hours** per year.
- ❑ *How are these ~ 832 hours per year distributed, based on the duration of the events?*

Time to full delivery

- How are the total number of hours per year dependent on the duration of the events?



□ Around 65% of the total time outside ± 0.1 Hz is due to events lasting 60 s or more.

□ Only around 15% of the total time outside ± 0.1 Hz is due to events lasting 5 minutes or more.

Time to full delivery

- Cumulative yearly exposure (%)

☐ ~290 hours per year

Event duration (s)	0.05 Hz		0.1 Hz		0.15 Hz		0.2 Hz	
	UF	OF	UF	OF	UF	OF	UF	OF
30	2.81	2.78	1.03	1.02	0.14	0.15	0.01	0.01
60	4.58	4.59	1.68	1.63	0.23	0.24	0.02	0.02
90	5.89	5.77	2.22	2.05	0.31	0.30	0.03	0.02
120	7.00	6.81	2.70	2.43	0.35	0.35	0.03	0.02
180	8.77	8.37	3.39	2.99	0.38	0.43	0.03	0.03
240	10.41	9.77	3.86	3.50	0.40	0.46	0.04	0.03
300	12.01	11.09	4.13	3.86	0.41	0.48	0.04	0.03
> 300	23.3	22.5	4.7	4.8	0.4	0.5	0.05	0.05

☐ ~700 hours per year

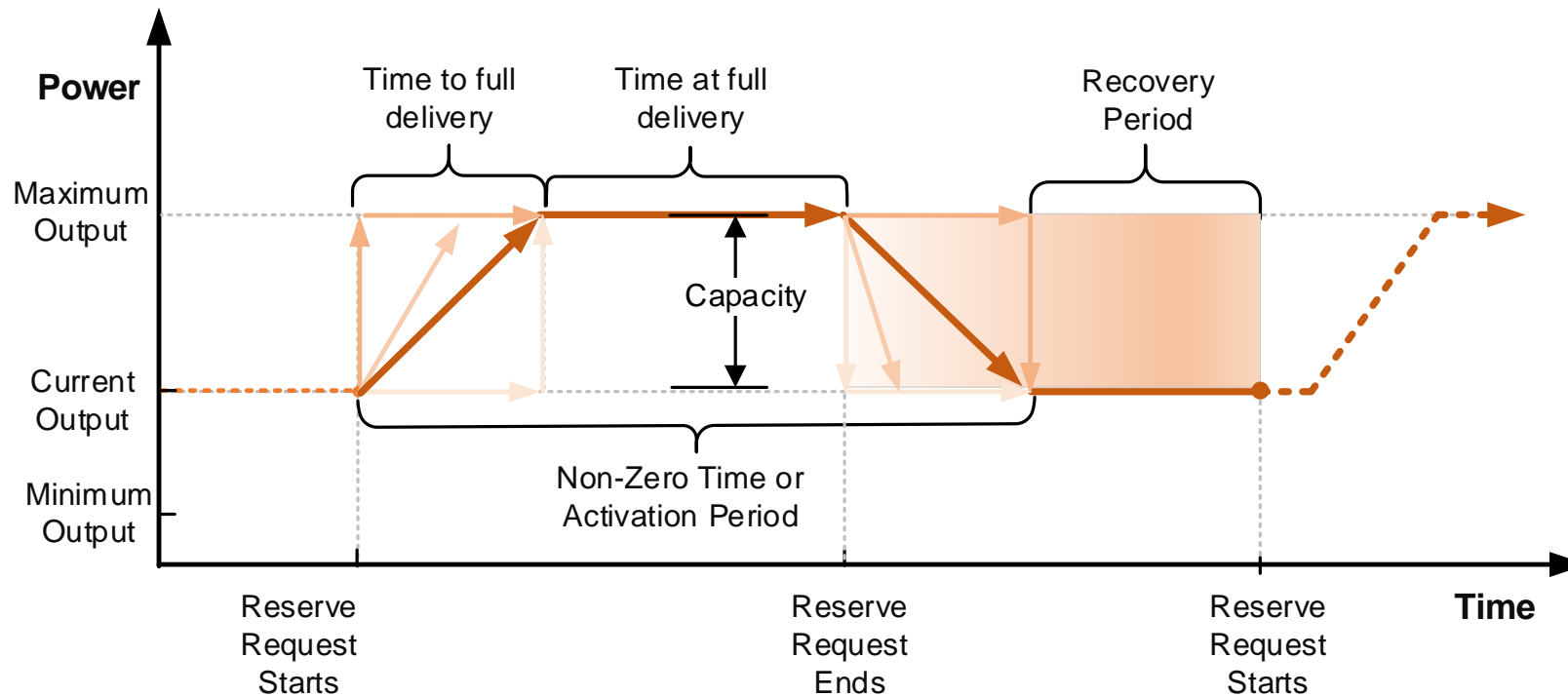
- ☐ A time to full delivery of **60 s or less** would assist in reducing the exposure to deviations of ± 0.1 Hz from around 8% of the time to around 3.3% of the time (a reduction of 4.7%).
- ☐ This implies a drop from 700 to 290 hours per year (net reduction of around 410 hours).

Future perspective

- Looking at the past as indication of the future:
 - In 2014 frequency was inside the ± 0.1 Hz range for 94% of the time (~534 hours outside).
Compared with 90% in 2021 (~832 hours outside).
- We are anticipating this exposure to increase in the future as the system is getting more volatile (more renewable connected, low inertia, large uncertainty).
- Strengthens the need for faster response and reserve products.

Recovery Period

- This refers to the time interval in which a unit is allowed to recover and return to availability following an instruction.
- For Quick Reserve, a recovery period of 1 minute or less is proposed.



Mural

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

1 Quick Reserve Product & Service Design

Workshop date: 22 06 22

Facilitator: [Avatar]

Agenda

1. Review of Show & Listen 2
2. Reserve needs case
3. Discussion points
 - Product Design
 - Procurement Design
 - Project timeline
4. Next Steps: introducing future Show & Listen events
5. Feedback

Rules

- This is your session to anticipate. Dig in!
- Use the chat function to ask questions.
- Use the mute button when not speaking.
- Avoid interrupting when others are speaking.

Your Participation Role

1. **Throughout the session**
Thinking that they will be asked to contribute, be present, start your own thoughts in the chat/whiteboard.
2. **During activities**
Ask and give questions, feedback, high-level strategy in a good way.
3. **Remember**
This session is part of the overall work. When done, share the key takeaways. Be ready to contribute before being asked.

Mural Tips

- Moving the board**
Click and drag the board to move it to the position of your choice.
- Zooming in & out**
Click the zoom in/out icons to zoom in or out. You can also use the mouse scroll wheel to zoom in or out.
- The redaction**
Click the redaction icon to redact content on the board.
- Comments**
Click the comment icon to add a comment to the board.
- Move Objects**
Click and drag the object to move it to the position of your choice.
- Comments**
Click the comment icon to add a comment to the board.
- Study Notes**
Click the study notes icon to add a note to the board.

2 Quick Reserve: Indicative Product and Service Design Feedback

Opportunity to provide feedback on Product and Service Design...

2. Product & Service Design Feedback

Time to full delivery [Grid of 10 yellow squares]	Recovery period [Grid of 10 yellow squares]	Dispatch mechanism [Grid of 10 yellow squares]
Product duration [Grid of 10 yellow squares]	Ramping envelope [Grid of 10 yellow squares]	Operational & Performance Metering [Grid of 10 yellow squares]
Service window [Grid of 10 yellow squares]	Pricing Mechanisms [Grid of 10 yellow squares]	

Question Corner

[Grid of 10 yellow squares]

3 Discussion points

Discussion on the following items...

3a. Time to full delivery & Recovery Period

How do we clearly explain the reason why time to full delivery is set as it is?

Yes No

Do our proposal for 1 minute time to full delivery presents any issues to your asset?

Yes No

Do our proposal for 1 minute recovery period presents any issues to your asset?

Yes No

Feedback

[Grid of 20 yellow squares]

Review Questions and seek certification

Questions

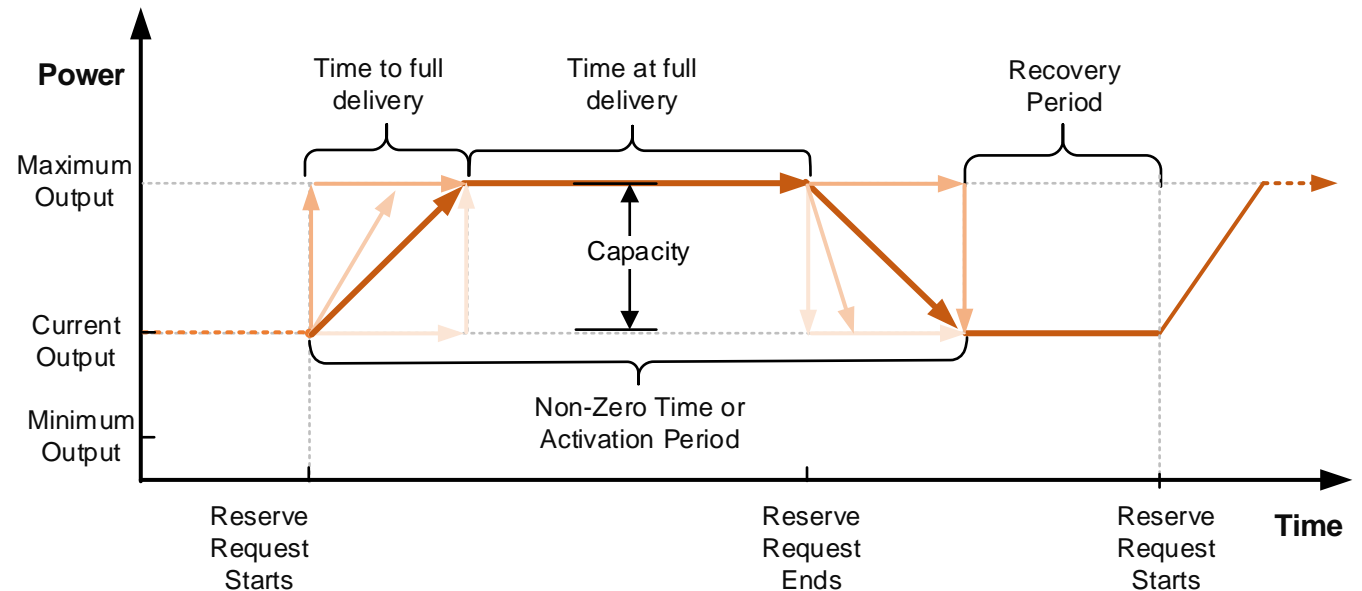
[Grid of 10 yellow squares]

Dispatch mechanism

- Dispatch instructions to BM providers will be by way of Bid-Offer Acceptances via EDT/EDL.
- A Non-BM provider will be dispatched via the Ancillary Services Dispatch Platform (ASDP) system.
- Both Quick Reserve (Positive & Negative) services will be dispatched and ceased manually by ENCC.
- In the future, we are proposing to add optional (additional) dispatch mechanism for frequency relay for automatic dispatch following frequency deviation.

Product duration

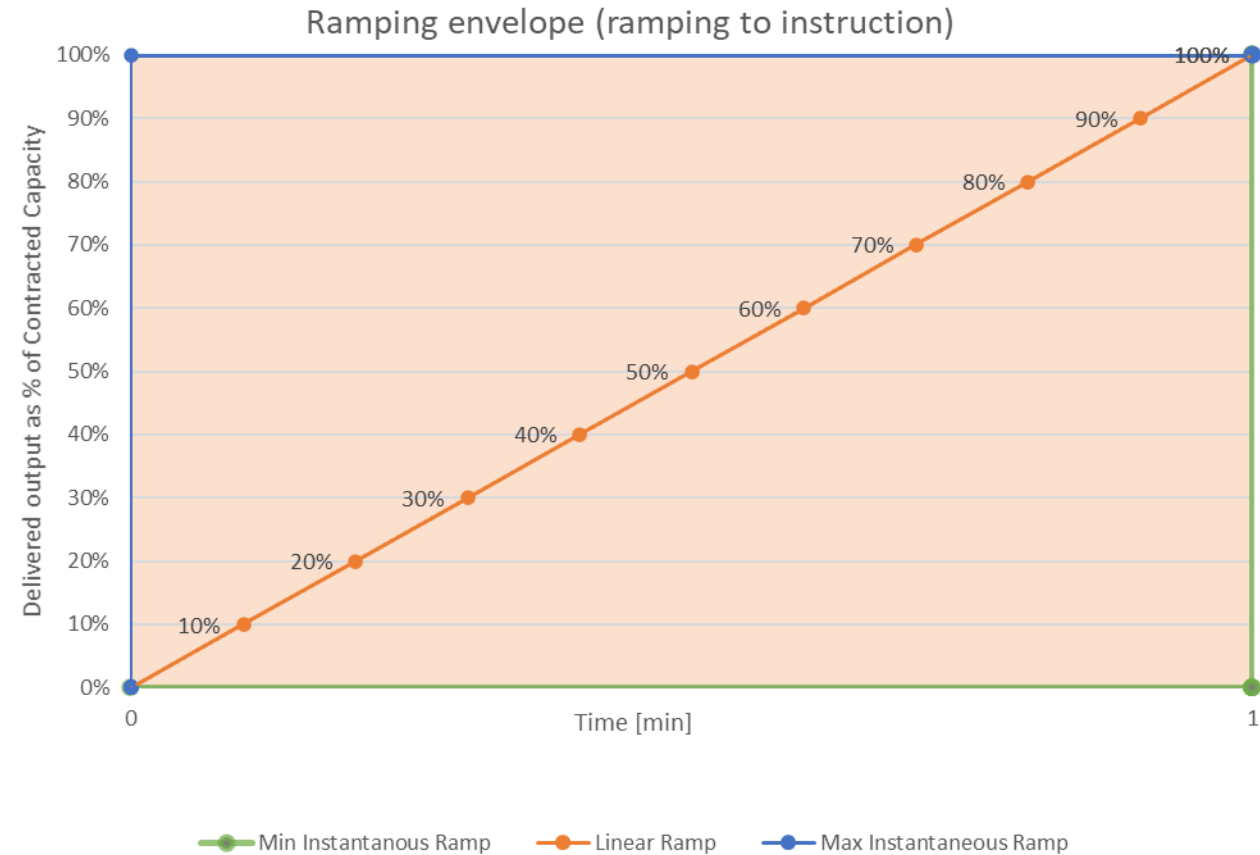
- **Minimum Activation Period** is the minimum duration for which an instruction can be issued, as specified by providers. For Quick Reserve, we proposed Minimum Activation Period to be **up to 5 minutes**.
- **Maximum Activation Period** is the maximum duration for which an instruction can be issued, as specified by providers. For Quick Reserve, we proposed Minimum Activation Period to be **at least 15 minutes**.
- Minimum and Maximum Activation Periods are inclusive of ramp to instruction, time at full delivery and ramp from instruction.
- All instructions can be extended in intervals of one minute from the Minimum Activation Period up to the Maximum Activation Period.



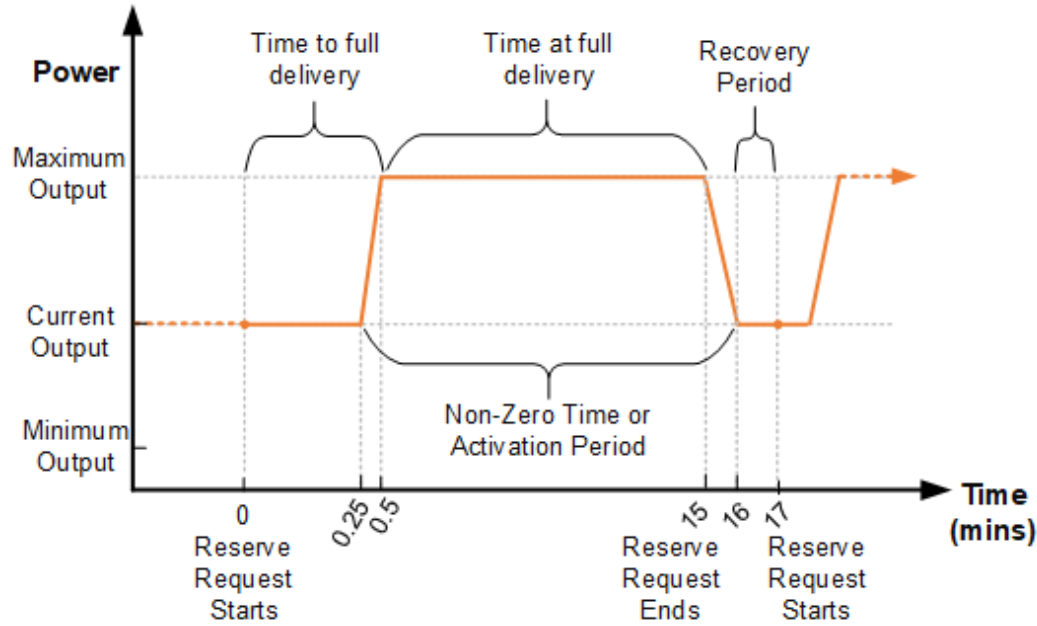
Ramping envelope

Proposal:

- **No maximum ramp rates limit when ramping up or to instruction or ramping down and from instruction.** The unit can ramp to and from instruction freely (continuously or instantaneously) with any ramp rates.
- The unit may not deliver at a rate less than 100% of contracted capacity per minute (**minimum ramp rate for ramp to and from instruction**).
- The unit may start delivery immediately after accepting a dispatch instruction.

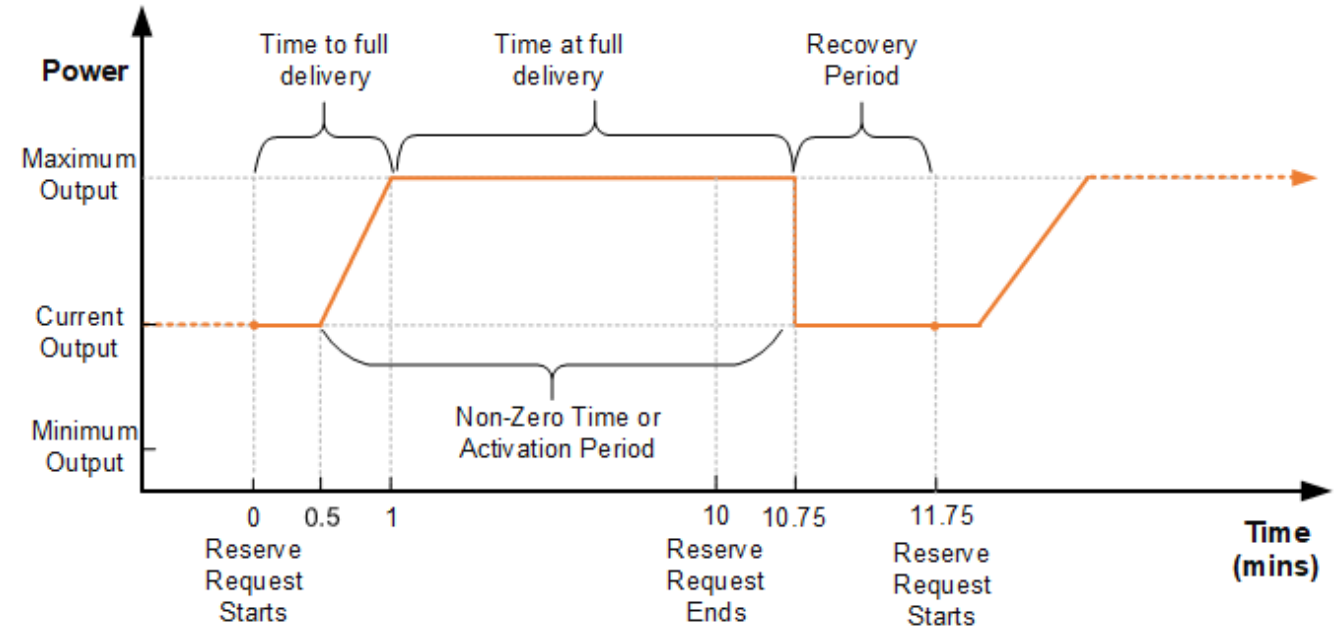


Delivery Examples



- Ramp-up: **0.5 min**
- Time at full delivery: **14.5 min**
- Ramp-down: **1 min**
- Activation period: **15.75 min**

- Ramp-up: **1 min**
- Time at full delivery: **9 min**
- Ramp-down: **0.75 min**
- Activation period: **10.25 min**



Performance & Operational Metering

- We are proposing that Quick Reserve has 1Hz (once per second) read frequency for both operational and performance metering for all participating units.
- **Operational metering** frequency to align with the Balancing Mechanism. It is needed to aid control room visibility of units when dispatched and ramping. We are also developing new systems which will enhance forecasting capability, also improved by more granular metering data.
- For **performance metering**, it is important to be able to check compliant ramping within the envelope, over and deliveries for monitoring purposes.
- These metering requirements are consistent with Slow Reserve metering requirements for standardisation purposes.

Quick Reserve: Indicative Product Technical Design

Product Criteria	Proposal
Minimum Capacity	1.0MW
Time to Full Delivery	Providers must reach full activation within 1 minute from instruction
Maximum Activation Period	A minimum of 15 minutes
Minimum Activation Period	A maximum of 5 minutes
Maximum Recovery Period	A maximum of 1 minutes
Aggregation rules	Providers can aggregate units within a GSP Group
Dispatch Mechanism	BM – BOAs / Non-BM - ASDP
Operational Metering	1Hz
Performance Metering	1Hz
Ramp rates	As per envelope restrictions
Baselining	60-minute nomination baseline

Where possible we kept the Quick Reserve technical design as close to the Slow Reserve technical design for standardisation across products in Reserve Reform

Mural

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

1 Quick Reserve Product & Service Design

Workshop date: 23 09 22

Facilitator: [Avatar]

Agenda

- Review of Show & Listen 2
- Outline needs case
- Discussion points
 - Technical Design
 - Procurement Design
 - Project Overview
- Next Steps - Introducing Future Show & Listen events
- Feedback

Rules

- This is your session to participate. Dig in!
- Use the chat function to ask questions
- Use the mute button when not speaking
- Avoid interrupting others unless a new question

Your Participation Role

- Throughout the session**
Keep up with the key takeaways, for patient, start our thoughts in the chat
- During activities**
Ask leading questions, feedback on things, good energy in a good results too
- Remember**
Be visible in all of the good ways. When you share this together before. Back to understand before being understood

Mural Tips

- Assistance**
Having the board? [Icon]
- Zooming in & out**
Click the board on your mouse and drag on your keyboard to zoom in/out. When zooming, please use the mouse to zoom. [Icon]
- The redlines**
Click your redline on the board and move your mouse on the screen on the board. Right corner of your screen.
- Annotations**
Select Objects: Click on object to select to move with mouse. Requires to select mouse from area of board.
- Move Objects**
Click on object to select to move with mouse. Requires to select mouse from area of board.
- Comments**
Study Notes [Icon]

2 Quick Reserve: Indicative Product and Service Design Feedback
Opportunity to provide feedback on Product and Service Design

2. Product & Service Design Feedback

Time to full delivery [Yellow grid]	Recovery period [Yellow grid]	Dispatch mechanism [Yellow grid]
Product duration [Yellow grid]	Ramping envelope [Yellow grid]	Operational & Performance Metering [Yellow grid]
Service window [Yellow grid]	Pricing Mechanisms [Yellow grid]	

Question Corner

[Yellow grid]

3 Discussion points
Discussion on the following items

3a. Time to full delivery & Recovery Period

How do we clearly explain the reason why time to full delivery is so long? [Yes/No]

Do our proposal for 1 minute time to full delivery presents any issues to your asset? [Yes/No]

Do our proposal for 1 minute recovery period presents any issues to your asset? [Yes/No]

Feedback

[Yellow grid]

Review Questions and seek clarification

Questions [Yellow grid]

Procurement Design

	Launch Stage 1 Optional (BM & Non-Bm)	Launch Stage 2 + Firm Non-BM	Launch Stage 3 + Firm BM
Unit Cap	500 MW	500 MW	500 MW
Frequency of Procurement	Ad-hoc	Daily	Daily
Auction Timing	N/A	D-1 14:30	D-1 14:30
Service Window	2h Window	2h Window	Settlement Period
Auction Platform	N/A	Enduring Auction Platform	Enduring Auction Platform
Stacking	Same MW cannot be sold twice	Same MW cannot be sold twice	Same MW cannot be sold twice
Linking of Bids	No	No	No
Payment Structure	Utilisation only	Firm service: Availability+ Utilisation Optional service: Utilisation	Firm service: Availability+ Utilisation Optional service: Utilisation
Payment Mechanism	Pay-as- bid	Availability: Pay-as-clear Utilisation: Pay-as-bid	Availability: Pay-as-clear Utilisation: Pay-as-bid

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

1 Quick Reserve Product & Service Design

Workshop date
23 06 22

Facilitator

Agenda

- Review of Show & Listen 2
- Stakeholder view
- Discussion points
 - Technical Design
 - Procurement Design
 - Project timeline
- Next Steps - Unpacking future Show & Listen events
- Feedback

Rules

- This is your session to participate. Dig in!
- Use the permission to ask questions
- Use the mute button when not speaking
- Avoid interrupting when others are speaking

Your Participation Role

- Throughout the session**
Speak up, if the topic interests you, you have ideas or feedback
- During activities**
Use sticky notes to provide feedback, good ideas or great insights
- Feedback**
Use sticky notes to provide feedback, good ideas or great insights

Mural Tips

- Navigation**
Click the icons to navigate the board
- Zooming in & out**
Click the icons to zoom in or out of the board
- The workspace**
Keep your workspace tidy and use the icons to manage the board
- Annotations**
Click an object to select it, then click the icon to edit it
- Move Objects**
Click an object to select it, then click the icon to move it
- Comments**
Click an object to select it, then click the icon to comment on it
- Sticky Notes**
Click an object to select it, then click the icon to add a sticky note

2 Quick Reserve: Indicative Product and Service Design Feedback

Opportunity to provide feedback on Product and Service Design

2. Product & Service Design Feedback

Time to full delivery <div style="display: flex; justify-content: space-around;">■■■■■■■■■■</div>	Recovery period <div style="display: flex; justify-content: space-around;">■■■■■■■■■■</div>	Dispatch mechanism <div style="display: flex; justify-content: space-around;">■■■■■■■■■■</div>
Product duration <div style="display: flex; justify-content: space-around;">■■■■■■■■■■</div>	Ramping envelope <div style="display: flex; justify-content: space-around;">■■■■■■■■■■</div>	Operational & Performance Metering <div style="display: flex; justify-content: space-around;">■■■■■■■■■■</div>
Service window <div style="display: flex; justify-content: space-around;">■■■■■■■■■■</div>	Pricing Mechanisms <div style="display: flex; justify-content: space-around;">■■■■■■■■■■</div>	

Question Corner

■■■■■■■■■■

3 Discussion points

Discussion on the following items

3a. Time to full delivery & Recovery Period

How will delivery during the season vary time to full delivery is set as 1 minute?

Yes No

Do our proposal for 1 minute time to full delivery presents any issues to your asset?

Yes No

Do our proposal for 1 minute recovery period presents any issues to your asset?

Yes No

Feedback

■■■■■■■■■■

■■■■■■■■■■

Review Questions and seek clarification

Questions

■■■■■■■■■■



Next steps

Quick Reserve – Next Steps

- Feedback from today's session – does this style and structure work for you?
Box.futureofbalancingservices@nationalgrideso.com
- We would like to propose another session in July where we hope to share more information and Q&A session around Quick Reserve product.
- Further written feedback would be appreciated on Quick Reserve design elements via email
(Box.futureofbalancingservices@nationalgrideso.com)
- Mural board will be open for 1 week to provide a space to give us a feedback



Appendices

Meet The Team



Adam Sims

Reserve Reform Product
Manager



Steve Dugmore

Reserve Reform Market
Services Lead



Mike Coldwell

Market Requirements Future
Design Manager



Francisco Sanchez
Gorostiza

Reserve Reform
Product Design



Rob Westmancoat

Reserve Reform
Product Design



Ewa Krzywkowska

Reserve Reform
Product Design



Yingyi Wang

Reserve Reform
Procurement Design