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You have been joined in listen only mode, please ensure your cameras are turned off.

The webinar will start shortly.

Please note that the webinar will be recorded.
Housekeeping

Today’s webinar is scheduled to last 1 hour including Q&A.

You can ask us a question live by raising your hand, or you can post via Sli.do (#responsereform).

Please raise your hand to ask us a question.

A recording of this webinar and FAQs will be available on the ESO’s Future of Balancing Services webpage next week.

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Agenda

1. Dynamic Containment (DC) procurement changes
2. Enhancing our auction capability
3. Dynamic Containment (DC) development
4. Dynamic Moderation (DM) & Dynamic Regulation (DR)
5. Next steps

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Dynamic Containment
procurement changes
Minesh Solanki

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Dynamic Containment

• Dynamic Containment (DC) is the first of our new end-state services
• DC is designed to operate post-fault, i.e. after a significant frequency deviation

Since the launch of DC in October 2020:

- Daily volume procured increased from ~150MW to over 600MW
- Number of providers increased from 4 to 14
- Day-ahead procurement introduced
- Ability to change MW submission included
- BM stacking introduced

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## DC procurement changes

<table>
<thead>
<tr>
<th>Current procurement</th>
<th>Proposed changes</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Process</td>
<td>Automated Process</td>
<td>Improved user experience</td>
</tr>
<tr>
<td>24 hour contract</td>
<td>EFA blocks</td>
<td>Improved asset availability</td>
</tr>
<tr>
<td>Pay-As-Bid (PAB) auctions</td>
<td>Pay-As-Clear (PAC) auctions</td>
<td>Single clearing price</td>
</tr>
<tr>
<td>Unable to link by products</td>
<td>Option to link by products</td>
<td>Ability to link DCL and DCH products into a single order</td>
</tr>
</tbody>
</table>

### Key messages

- **This week:** we have launched consultation on changes to the service terms **27 April**
- **From this summer:** we intend to procure DC by EFA blocks on a pay-as-clear auction platform
# DC procurement timeline

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<table>
<thead>
<tr>
<th>Dynamic Containment Procurement changes</th>
<th>April-21</th>
<th>May-21</th>
<th>Jun-21</th>
<th>Jul-21</th>
<th>Aug-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>Launch draft terms for consultation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Consultation review</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ofgem review</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>System development</td>
<td></td>
<td></td>
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<td></td>
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<tr>
<td>Go-Live</td>
<td></td>
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<td></td>
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</tr>
</tbody>
</table>
Enhancing our auction capability

Joanne Greenan

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Enhancing our auction capability

Learnings
• Weekly Auction Trial
• Dynamic Containment day-ahead
• STOR day-ahead

Engagement
• Internal scoping requirements
• External feedback and collaboration

Tender
• Launch tender to market

Contract
• Contract award and partner selection
Dynamic Containment development
Kashia Cullen-Anderson

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### Development of DC

#### Dynamic Containment

<table>
<thead>
<tr>
<th>Q4 20/21</th>
<th>Q1 21/22</th>
<th>Q2 21/22</th>
<th>Q3 21/22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mar</td>
<td>Apr</td>
<td>May</td>
<td>Jun</td>
</tr>
</tbody>
</table>

- **Design and review of HF**
- **Consultation**
- **Engagement**
- **Review of wave 2 topics (Aggregation, Baseline etc.)**
- **DC HF launched**

#### 3. DC development

- **Transitional arrangement** for aggregation at GSP group ends in September. Some stakeholders have asked us to review this timeline and we intend to further explore this challenge.
- **Operational baselines** – making it consistent across BM and Non-BM providers.
High-Frequency (HF)

**NEED**
- Operational need to mitigate the largest demand losses on the system
- For example, an Interconnector exporting at 1 GW

**PROCUREMENT**
- Network analysis
- Assessment of risk
- Calculation of volume required

**VALUE**
- This is informed by the alternative cost of action
- There will be a non-zero requirement 40% of the time this winter

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Dynamic Moderation (DM) & Dynamic Regulation (DR)
Charlotte Watts

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**Timeline**

<table>
<thead>
<tr>
<th>Q1 21/22</th>
<th>Q2 21/22</th>
<th>Q3 21/22</th>
<th>Q4 21/22</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr</td>
<td>May</td>
<td>Jun</td>
<td>Jul</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Aug</td>
</tr>
</tbody>
</table>

- **Dynamic Moderation & Dynamic Regulation**
  - Engagement
  - Consultation
  - Readiness & onboarding
  - Launch DM & DR

**Questions:**
- Does it impact you if we launch the services together or separately?

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Dynamic Regulation

- Designed to slowly correct small continuous deviations in frequency around 50Hz
- Won't need to respond as rapidly but must have a duration that supports continuous operation

<table>
<thead>
<tr>
<th>Operational Range (Hz deviation)</th>
<th>Max. ramp start (s)</th>
<th>Time to full delivery (s)</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportional to frequency</td>
<td>+0.015 to 0.2</td>
<td>2</td>
<td>10</td>
</tr>
</tbody>
</table>
Dynamic Moderation

- Rapidly delivers with the aim of keeping frequency within operational limits
- Helps to manage sudden large imbalances by responding quickly

<table>
<thead>
<tr>
<th>Proportional to frequency</th>
<th>Operational Range (Hz deviation)</th>
<th>Max. ramp start (s)</th>
<th>Time to full delivery (s)</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>+0.1 to +0.2</td>
<td>-0.1 to -0.2</td>
<td>0.5</td>
<td>1</td>
</tr>
</tbody>
</table>

- Continuous (30 mins for energy limited assets)
New frequency response products

High level overview*

Operational limits

Statutory limits

*Deadbands not shown, more detail on next slides
## Overview

<table>
<thead>
<tr>
<th></th>
<th>Dynamic Regulation</th>
<th>Dynamic Moderation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed of response</td>
<td>10 seconds</td>
<td>1 second</td>
</tr>
<tr>
<td>Pre/post fault</td>
<td>Pre fault</td>
<td>Pre fault</td>
</tr>
<tr>
<td>Providers</td>
<td>BM &amp; non-BM</td>
<td>BM &amp; non-BM</td>
</tr>
<tr>
<td>How will it be procured?</td>
<td>Auction platform</td>
<td>Auction platform</td>
</tr>
<tr>
<td>Procurement</td>
<td>Day ahead</td>
<td>Day ahead</td>
</tr>
<tr>
<td>Operational metering</td>
<td>1Hz</td>
<td>1Hz</td>
</tr>
</tbody>
</table>

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Challenges

• **Aggregation** – GSP group vs GSP point

• **Baselines**

• **Performance metering** – 20Hz for DM & DR

• **Stacking**

• **Bundling or splitting LF and HF** – for DM

Get in touch:

box.futureofbalancingservices@nationalgrideso.com
Next steps

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Next steps

• Consultation on DC procurement changes: 27 April – 27 May
• Engagement will continue over next few months
• For updates, please sign up to our Future of Balancing Services newsletter
• Get in touch: box.futureofbalancingservices@nationalgrideso.com

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