Dynamic Containment (DC) webinar

Agenda

1. Overview
2. Service design
3. Next steps
4. Q&A session

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Overview

Faye Relton

Why do we need DC?

Current system operability needs

Currently, the electricity system is experiencing lower inertia and larger, more numerous losses than ever before.

Faster acting frequency response products are needed because system frequency is moving away from 50Hz more rapidly as a consequence of imbalances. This is evident in the rate of change of frequency (RoCoF) and illustrated by the interaction of size of imbalance and inertia as show below:

$$RoCoF(\frac{Hz}{s}) = \frac{50}{2} \frac{\times Imbalance\ (MW)}{Inertia\ (MVA.s)}$$

As a system operator we need to manage both the absolute change in frequency and the RoCoF.

The variables we can control in the RoCoF equation are the size of imbalance (or losses) and the level of inertia.

- Managing low inertia is a key element of our 2025 zero carbon ambition. Our Stability pathfinder work is looking to create markets for inertia.

- The number of significant losses and their absolute size will increase as we welcome new interconnection and offshore wind onto our system.

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How will DC be procured?

	Soft launch
Platform	NGESO systems
Procurement	Day-ahead (working day)
Settlement	Pay as bid
Products	LF only
Period	24-hour contract (23:00 – 23:00)
Volume	Up to 500MW with 50MW unit cap
Allow stacking?	Not with existing response/reserve products

Soft launch and full delivery

	Soft launch (autumn)	**Full delivery (2021 – date TBC)**
Platform	Manual process	TBC
Procurement	Day ahead	Day ahead
Products	LF	HF + LF procured separately
Period	24-hour contract	EFA block (potentially settlement period)
Volume	Up to 500MW of LF	up to1000MW of both HF and LF
Allow stacking?	Not with existing response/reserve products	Yes – with the new suite of frequency response products, timescales TBC

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Delivery plan

August	September	October	
21st - Draft contracts published	Systems and process development (NGESO)	1st – Go-live of DC	**2021**

EBGL consultation
(1 calendar month 21/08 – 21/09)

Engagement (webinars, Q&A)	Final contract published	
Onboarding process for providers	Onboarding process for providers	

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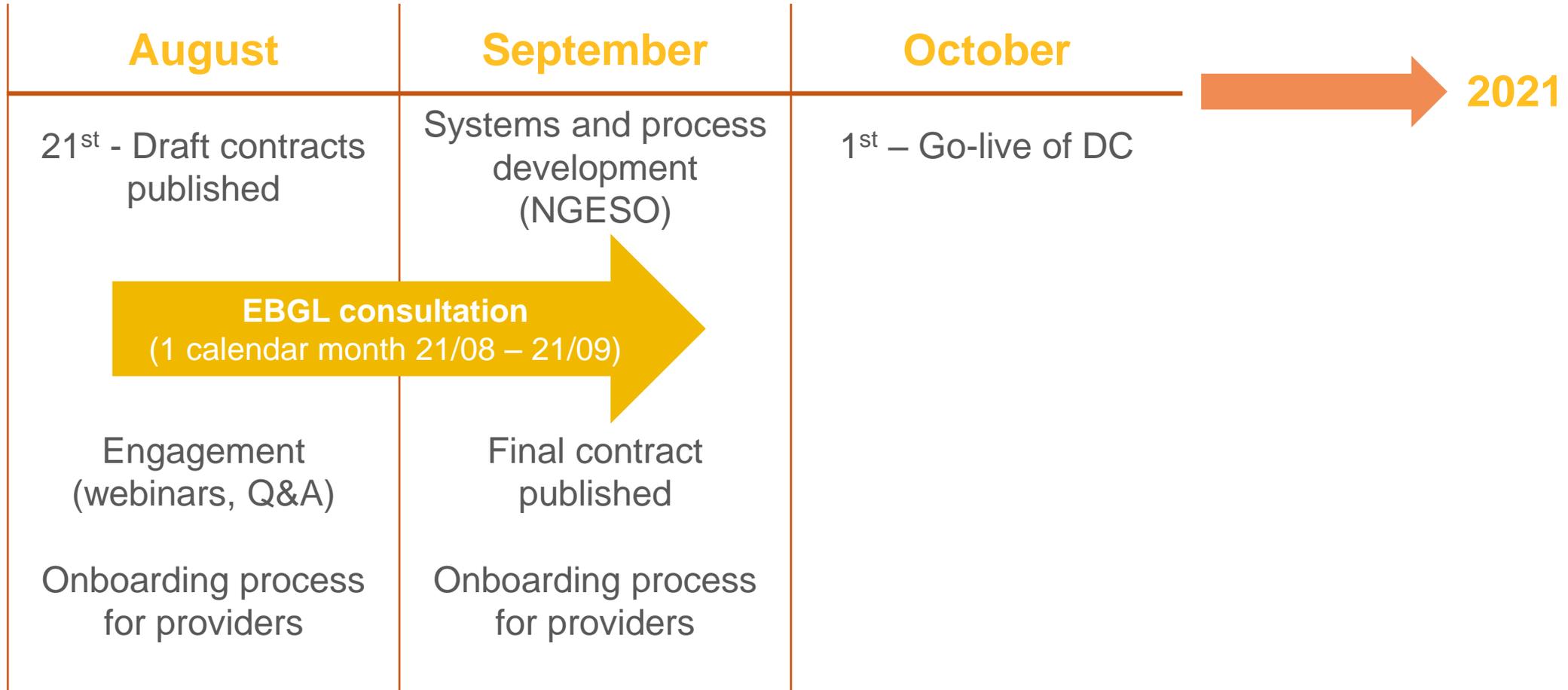
Service design

Tom Freeman

Service delivery

Specification is unchanged from January 2020 communication

Parameter	Detail
Deadband (delivery %)	+/- 0.015Hz (0%)
Initial linear range (delivery %)	From 0.015Hz to 0.2Hz (to max of 5% at 0.2Hz)
Knee point	+/- 0.2Hz
Second linear range (delivery %)	From 0.2Hz to 0.5Hz (to max of 100% at 0.5Hz)
Full delivery point	+/- 0.5Hz
Speed of response	Full delivery of required quantity (MW) in 1s (but not faster than 0.5s)

Service delivery
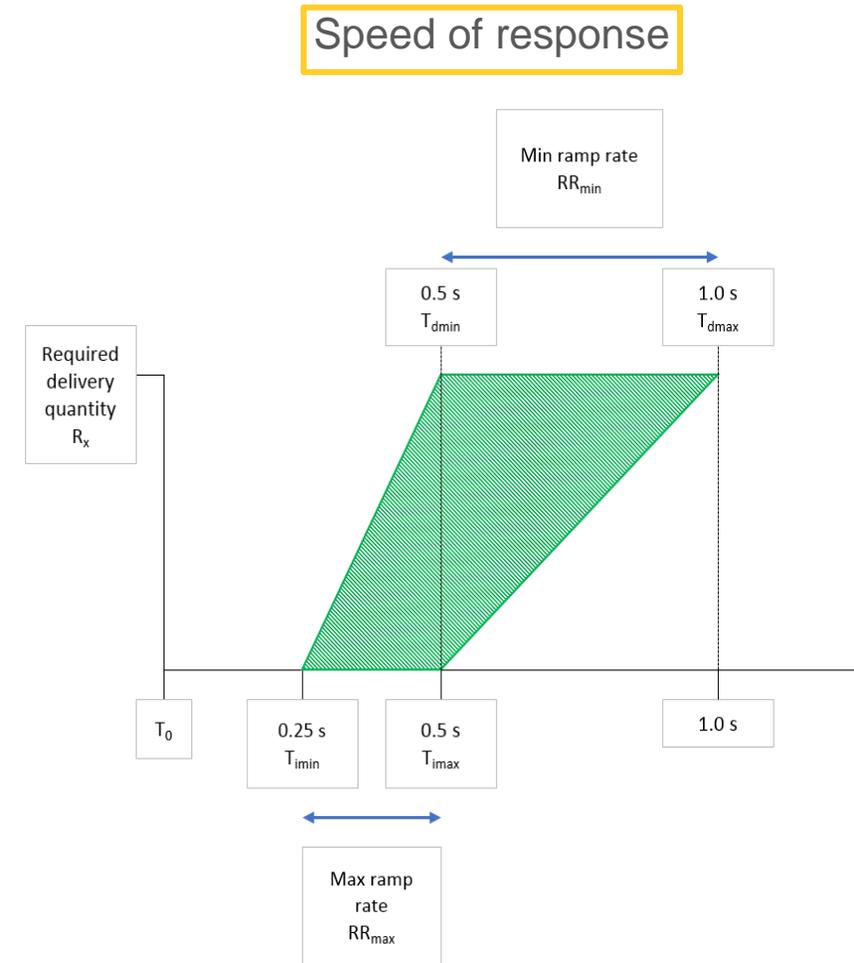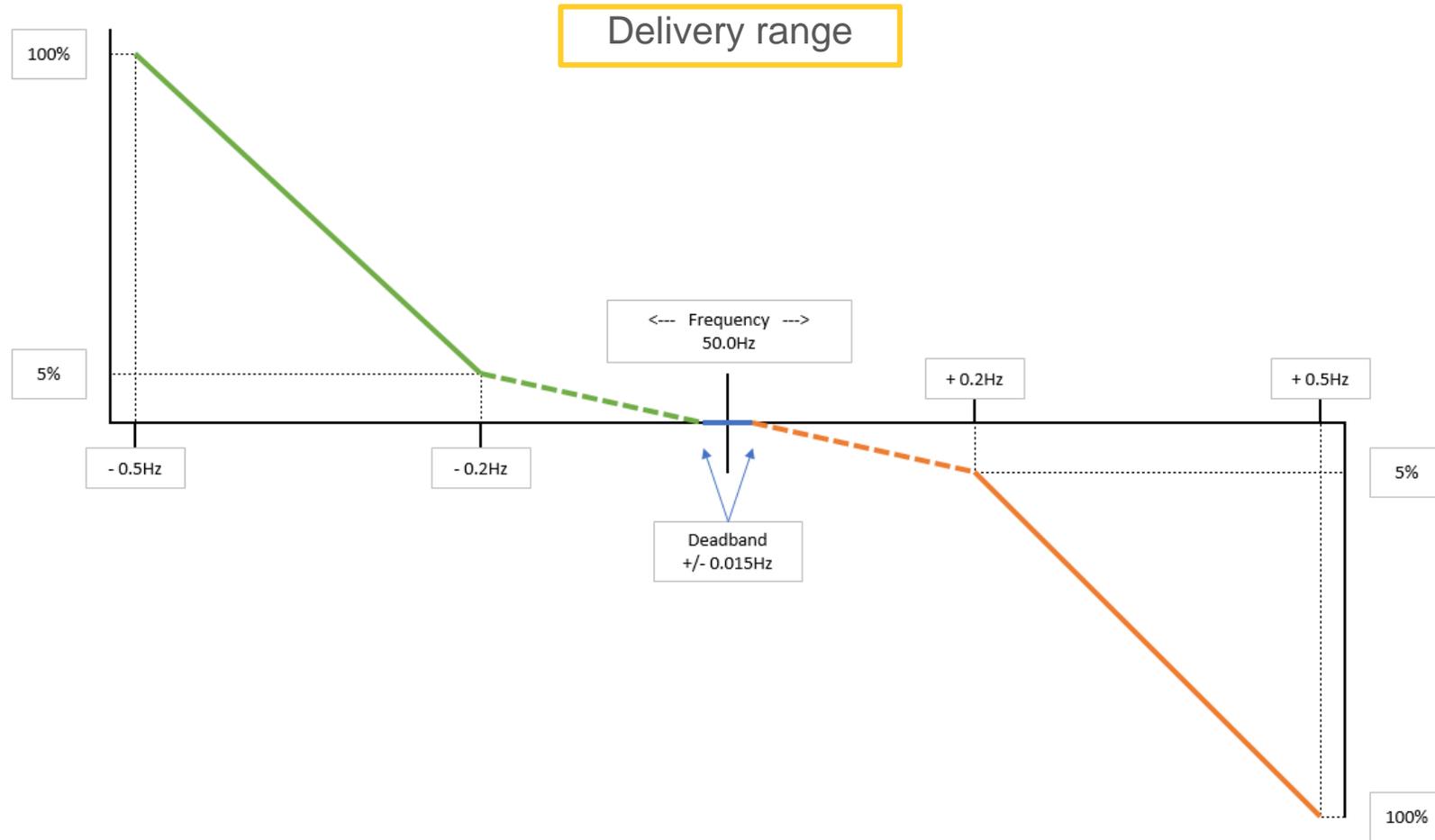
Service rules – five key areas

- The data requirements are the same for all providers. Differences arise between BM and non-BM providers in <u>how</u> that data is communicated to NGESO

- Some internal and external systems may not be ready for the soft launch – but all providers are still required to record and store data in-line with the service rules on:
    - Operational metering
    - Baselines
    - Performance metering

- Plus updates on:
    - Aggregation
    - State of energy

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Operational Metering

Requirement:
- **Active power each second**
- **Availability**

Enduring provider routes:

BMU
- Use existing BM systems

non-BM
- Submit via *Data Concentrator*

If non-BM is not connected to Data Concentrator:
- NGESO will allow use of the alternative solution for the grace period

! – NGESO will procure up to 300MW of 'non-visible' DC i.e. without real-time operational metering

non-BM
- Record data each second
- Store in provider's own systems, send to NGESO at end of contract period

Six months after go-live all non-BM providers must meet one of the two enduring solutions above to participate in Dynamic Containment
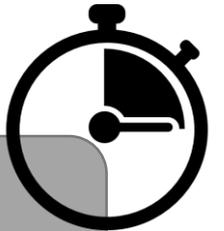
Baselines

Enduring provider routes:

BMU
- Use existing BM systems

non-BM
- Submit via t.b.c solution (likely a *Data Concentrator* development)

If non-BM is not connected to Data Concentrator:
- NGESO will allow use of the alternative solution for the grace period

! – NGESO will procure up to 300MW of DC without baselines submitted in-line with PN rules

non-BM
- Create and record a baseline in-line with PN rules
- Store in provider's own systems, send to NGESO at end of contract period

Six months after go-live all non-BM providers must meet one of the two enduring solutions above to participate in Dynamic Containment

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Performance metering

Enduring provider routes:

BMU
- Record at 20Hz
- Store for 3 months
- Provide data to NGESO on request at 3 day notice

non-BM
- Record at 20Hz
- Store for 3 months
- Provide data to NGESO on request at 3 day notice

If a provider can not meet the 20Hz requirements:
- NGESO will allow use of the alternative solution for the grace period

All providers
- Record, store & provide data at 10Hz

Six months after go-live all providers must be able to meet the 20Hz requirement to participate in Dynamic Containment

! – We may use interpolation on 10Hz data to assess performance. Any resulting underperformance is the responsibility of the provider.

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Service rules: summary so far

Service area	Options at soft launch	Conditions
Operational metering	BMU: submit data via existing BM route Non-BM: submit data via Data Concentrator	Non-BM providers have six months from go-live to connect to Data Concentrator
Baselines	BMU: submit data via existing BM route (FPNs) Non-BM: submit data via new NGESO systems	From go-live of the new IS solution non-BM providers have six months to connect
Performance metering	Data to be provided at 10Hz or 20Hz	Six months after go-live all providers must deliver 20Hz data

! – ESO may limit the quantity of DC procured from providers that are not providing data to an enduring solution (normally BM systems or Data Concentrator)

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Aggregation

- Aggregation is permitted at GSP group level. This has changed since our engagement earlier this year.

- NGESO has a better understanding of the benefit-case and market need for aggregation

- We know the control room have a requirement for more precise locational information (e.g. GSP) but we want to explore how best we meet this requirement, in collaboration with industry

- Initially our view was aggregation at GSP only; we have moved to aggregation at GSP group and we are keen to continue the conversation.

State of Energy

- The key principle is that the provider should retain the responsibility to manage their SoE.

- But the ESO should set out:
  - methods by which SoE management is permitted
  - minimum standards – i.e the minimum energy requirement and the frequency quality standard

- Energy limited providers must follow NGESO's state of energy rules:
  - Use baselines to manage SoE
  - Conform to the ramp-rate restriction on all baselines
  - No SoE management in the deadband or operational range
  - No penalty to any provider that follows all rules and encounters SoE difficulties

Service rules: summary

Service area	Options at soft launch	Conditions
Operational metering	BMU: submit data via existing BM route Non-BM: submit data via Data Concentrator	Non-BM providers have six months from go-live to connect to Data Concentrator
Baselines	BMU: submit data via existing BM route (FPNs) Non-BM: submit data via new NGESO systems	From go-live of the new IS solution non-BM providers have six months to connect
Performance metering	Data to be provided at 10Hz or 20Hz	Six months after go-live all providers must deliver 20Hz data
Aggregation	Aggregation permitted within each GSP group	Further engagement required
State of energy	All providers to use baselines to manage SoE in line with supporting NGESO guidance	Some parameters (e.g. ramp-rate, energy duration) are open to review once we have operational data & experience

Next steps

Engagement

- Publish DC consultation documentation – aiming for Friday 21 August

- We will be at the Ops webinar tomorrow (Weds 19 August)

- We will host a schedule of webinars to take detailed questions on DC in the coming weeks, to support the consultation

Questions

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Thank you

Contact us:

Via your account manager, or email:

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