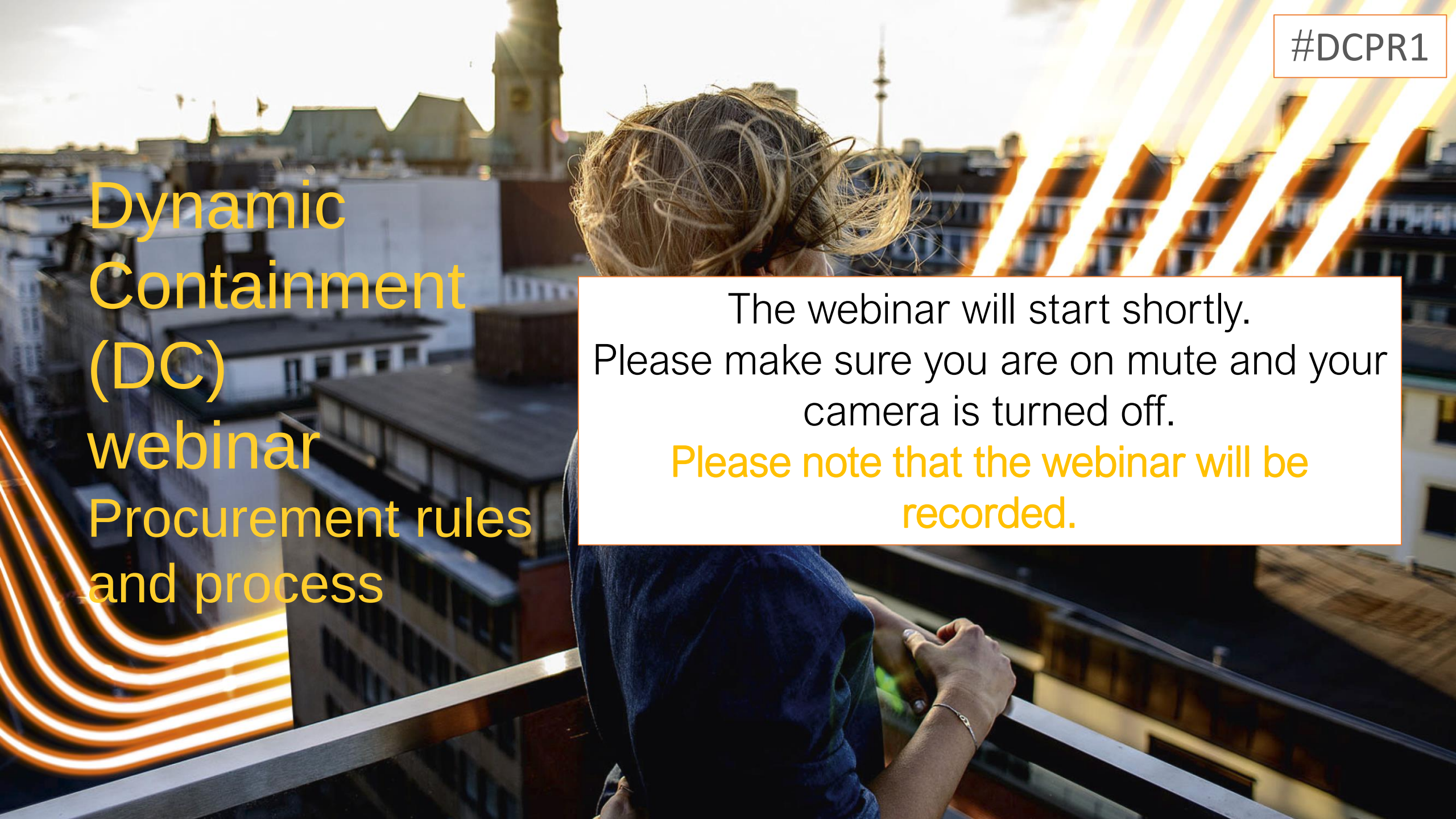

#DCPR1

Dynamic Containment (DC) webinar

Procurement rules and process

The webinar will start shortly.
Please make sure you are on mute and your camera is turned off.
Please note that the webinar will be recorded.

Dynamic Containment (DC) webinar Procurement rules and process

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Amy Weltevreden
Navid Eila

#DCPR1

Agenda

1. Overview
2. Requirement for Dynamic Containment
3. Procurement process and timings
4. Assessment methodology
5. Examples
6. Q&A session


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Requirement for Dynamic Containment

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:

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

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.

Why do we need DC?

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The SQSS sets out the standards to which NGESO must operate the system to and defines “unacceptable frequency conditions” as a measure of reliability with respect to frequency control. To meet this standard NGESO uses a mixture of actions which enable frequency control as follows:

Frequency Response Services	→ reduces the size of the frequency deviation
Increase Inertia	• **synchronising units with non-zero inertia** → reduces the Rate of Change of Frequency (RoCoF) following an event → allows response services more time to react → prevents the consequential loss of RoCoF generation
Reduce Loss of Mains loss size (ALOMCP)	• **avoiding unintended tripping of distributed resources** → reduces the size of the frequency deviation
BMU loss size	• **reducing the size of individual generation / demand losses:** → reduces the size of the frequency deviation → reduces the Rate of Change of Frequency which: → allows response services more time to react → prevents the consequential loss of RoCoF generation

Dynamic Containment will allow NGESO to take fewer actions in constraining largest losses and increasing inertia

Volume Requirement for Dynamic Containment

- Enduring requirement for at least 1GW of high and low DC service
- Soft launch requirement of 500MW of LOW only
- As a result, contract lengths for soft launch are 24/7
- Limitation of no more than a total of 300MW from providers who cannot meet all requirements from day 1 (real-time metering, baselines, GSP aggregation)


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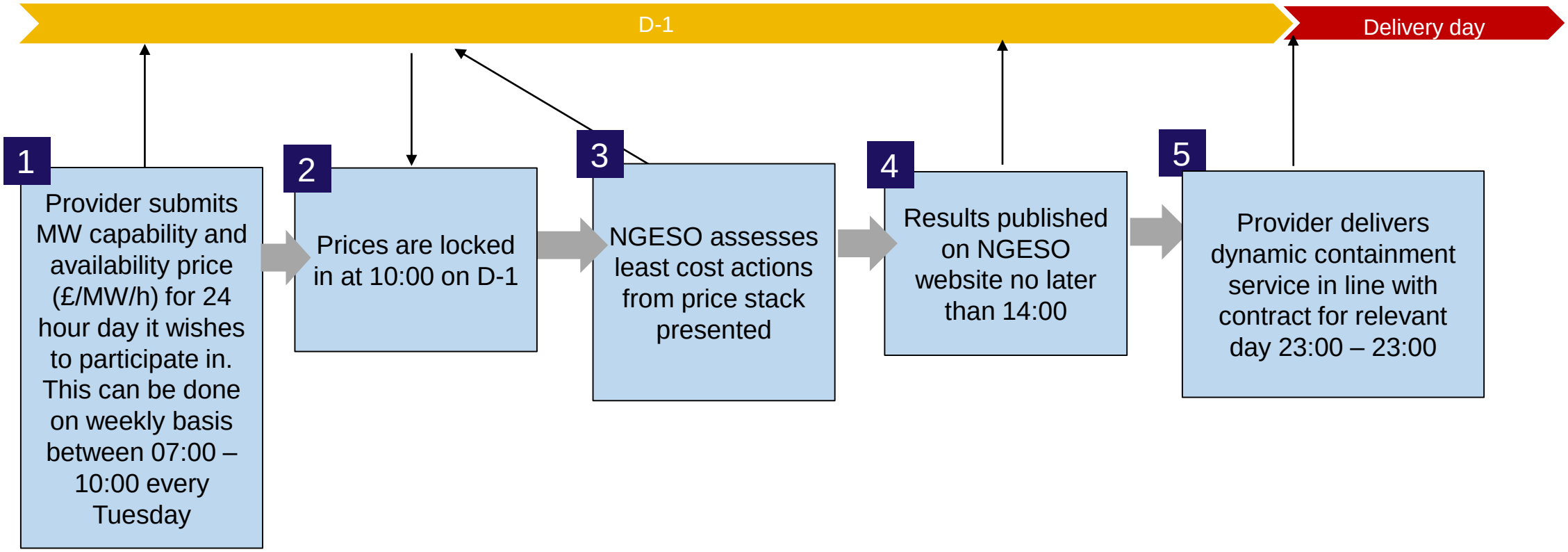
Procurement process, timings and Assessment Methodology

Design Principles

- Simple, transparent and in line with operational needs
- As such, contract lengths of 24 hours and single price and volume submissions
- In line with our ambitions to move procurement closer to real time, embracing opportunity to introduce day ahead procurement

- We continue to learn from the weekly response auction trial and as we develop a single market platform we will implement automated procurement mechanisms for our enduring response product suite.
- This will enable more sophisticated bidding strategies and more granular procurement e.g. linked bids, curtailable bids.
- Further information on the learning from the auction trial will be shared in our report later this month.

Timings: Procurement for delivery Tuesday – Saturday, procured on Monday - Friday



Link to: Dynamic Containment Tender Rules

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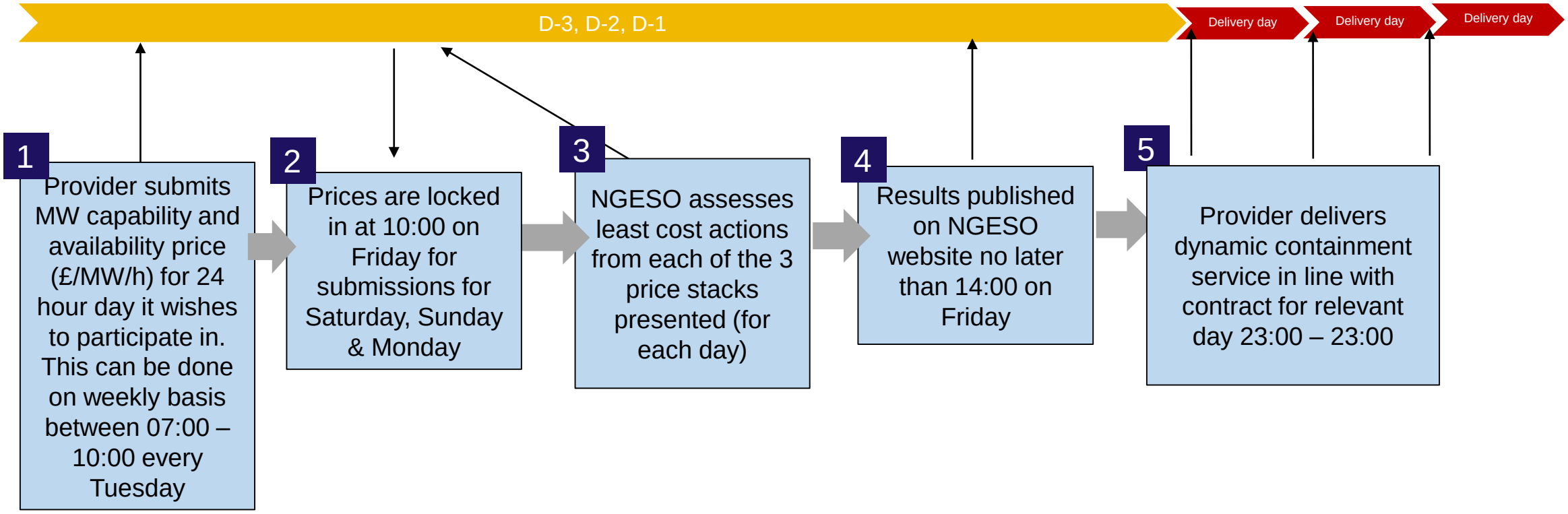
Timings: Procurement for delivery Saturday – Monday & bank holidays, procured on Fridays



[Link to: Dynamic Containment Tender Rules]

Assessment Principles

Prequalification criteria

- Any provider who meets the technical requirements will be assessed in line with the following principles

Purpose of assessment

- Our objective is to maintain the balance of the electricity system in an efficient, economic and coordinated manner and therefore secure our requirement at least cost. So, to assess the tenders we calculate the maximum price by which the marginal units will be rejected. We will only accept those tenders that offer value when compared to alternative cost.

- The price limit for procuring the Dynamic Containment is informed by the price of the nearest equivalent alternative services to ensure an economic and efficient approach.

Fee / Pay as Bid

- Participants will submit their availability fee (£/MW/h). The awarded contracts will be paid as bid.

Assessment Principles

Last resort rank factor

- There may be times when bids have identical characteristics whereby we may need to introduce last resort rank factor. Each tender will be randomly assigned a unique number prior to the assessment. Should last resort rank factor be required in the assessment process then for full transparency, we shall share with market participants how their bids were ranked. This factor will only be used as last resort.

Volume limits and Overholding

- To begin with we will procure up to 500 MW of Low Frequency Dynamic Containment.
- A maximum of 300 MW can be satisfied by units without Real Time metering or real time baseline submissions.
- Any unit that would incur overholding (either against overall requirement or due to them being a unit that would result in their being more than 300MW of units breaching the above criteria) is rejected.
- If there are units remaining in the stack that are economic and would meet the requirement with zero overholding they will be accepted.

Assessment Methodology

As such, the assessment methodology will be as follows:

- Rank all submissions by price
- Reject orders which are not economic against alternative action(s)
- Accept all economic orders until the sum of units without real time metering or baselines reaches 300MW limit, then reject all units which do not meet this criteria
- Carry on accepting submissions which satisfy all criteria until the requirement is met
- Whereby the marginal unit(s) have the same characteristics, use the last resort rank factor to determine which unit(s) to accept and reject.
- Reject any units that would incur overholding (either against overall requirement or due to them being a unit that would result in their being more than 300MW of units without real time metering or able to submit baselines). If there are units remaining in the stack that are economic and would meet the requirement with zero overholding continue to accept them until the requirement is met.

Assessment Methodology

Non-compliant submissions

Any non-compliant submissions will be rejected.

Rejection Codes

All rejected submissions will receive a code which will help market participants determine why they were rejected. Rejection codes that will be used in the assessment process are as follows:

Rejection code	Reason
1	Submission not beneficial against alternative cost
2	Requirement met by more economic offers
3	Requirement met by more economic offers. Applies only to units with no Real Time Metering and Baselines where requirement of 300 MW was met by more economic offers
4	Non-compliant submissions

Market information

To give transparency of this service we will publish results via the NGESO website. This will include:

- the number of providers, tender parameters including prices and whether they were accepted or rejected.

Examples

Scenario 1: Stack price with all economical bids accepted

Bids 10 - 17 were rejected as they were not economical against alternative cost. Requirement not fully met.

Max price:	£10
Max volume:	500
Offered volume:	400 no RTM
	450 RTM
Accepted volume:	
	250 no RTM
	200 RTM
	450

RTM?	MW	Status	£	rej code
1 no RTM	50	Accept	1	
2 RTM	50	Accept	2	
3 no RTM	50	Accept	3	
4 RTM	50	Accept	4	
5 no RTM	50	Accept	5	
6 RTM	50	Accept	6	
7 no RTM	50	Accept	7	
8 RTM	50	Accept	8	
9 no RTM	50	Accept	9	
10 RTM	50	Reject	10.5	1
11 no RTM	50	Reject	11	1
12 RTM	50	Reject	12	1
13 no RTM	50	Reject	13	1
14 no RTM	50	Reject	14	1
15 RTM	50	Reject	15	1
16 RTM	50	Reject	16	1
17 RTM	50	Reject	17	1

Note prices **not indicative** but simple to illustrate examples

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Scenario 2: Stack price with a non-compliant bid and all econ bids accepted

Bids 11-16 rejected as they were not economical against alternative cost. Bid 17 was rejected as it either offered more than tested volume, unit volume or allowed 50 MW unit cap. Requirement fully met.

Max price:	£10
Max volume:	500
Offered volume:	400 no RTM
	452 RTM
Accepted volume:	
	250 no RTM
	250 RTM
	500

RTM?	MW	Status	£	rej code
1 no RTM	50	Accept	1	
2 RTM	50	Accept	2	
3 no RTM	50	Accept	3	
4 RTM	50	Accept	4	
5 no RTM	50	Accept	5	
6 RTM	50	Accept	6	
7 no RTM	50	Accept	7	
8 RTM	50	Accept	8	
9 no RTM	50	Accept	9	
10 RTM	50	Accept	9.5	
11 no RTM	50	Reject	11	1
12 RTM	50	Reject	12	1
13 no RTM	50	Reject	13	1
14 no RTM	50	Reject	14	1
15 RTM	50	Reject	15	1
16 RTM	50	Reject	16	1
17 RTM	52	Reject	17	4

Note prices **not indicative** but simple to illustrate examples

#DCPR1

Scenario 3: Stack price with requirement met by more economical bids

Bids 11- 17 had to be rejected as more economical bids satisfied the requirement. All bids were beneficial against alternative actions.

Max price:	£10
Max volume:	500
Offered volume:	400 no RTM
	450 RTM
Accepted volume:	
	250 no RTM
	250 RTM
	500

RTM?	MW	Status	£	rej code
1 no RTM	50	Accept	1	
2 RTM	50	Accept	2	
3 no RTM	50	Accept	3	
4 RTM	50	Accept	4	
5 no RTM	50	Accept	5	
6 RTM	50	Accept	6	
7 no RTM	50	Accept	7	
8 RTM	50	Accept	8	
9 no RTM	50	Accept	9	
10 RTM	50	Accept	9.5	
11 no RTM	50	Reject	10	2
12 RTM	50	Reject	10	2
13 no RTM	50	Reject	10	2
14 no RTM	50	Reject	10	2
15 RTM	50	Reject	10	2
16 RTM	50	Reject	10	2
17 RTM	50	Reject	10	2

Note prices **not indicative** but simple to illustrate examples

Scenario 4: Stack price with 300 MW of non-Real time metering met

Bid 10 had to be rejected even though it was in the stack however 300 MW from no RTM was met and no more than that could be accepted. The next bid 11 is more expensive however is accepted as it is RTM unit.

Max price:	£10
Max volume:	500
Offered volume:	450 no RTM
	400 RTM
Accepted volume:	
	300 no RTM
	200 RTM
	500

RTM?	MW	Status	£	rej code
1 no RTM	50	Accept	1	
2 no RTM	50	Accept	2	
3 no RTM	50	Accept	3	
4 RTM	50	Accept	4	
5 no RTM	50	Accept	5	
6 RTM	50	Accept	6	
7 no RTM	50	Accept	7	
8 RTM	50	Accept	8	
9 no RTM	50	Accept	9	
10 no RTM	50	Reject	9.5	3
11 RTM	50	Accept	10	
12 RTM	50	Reject	10	2
13 no RTM	50	Reject	10	2
14 no RTM	50	Reject	10	2
15 RTM	50	Reject	10	2
16 RTM	50	Reject	10	2
17 RTM	50	Reject	10	2

Note prices **not indicative** but simple to illustrate examples

Scenario 5: Stack price with cluster bids

Bid 9 and 10 are identical (no RTM, same price, same volume offered) and there is only space for last 50 MW to fill. We will apply random ranking prior to the assessment and will only be used when needed.

Max price:	£10
Max volume:	500
Offered volume:	500 no RTM
	350 RTM
Accepted volume:	
	350 no RTM
	150 RTM
	500

RTM?	MW	Status	£	rej code
1 no RTM	50	Accept	1	
2 no RTM	50	Accept	2	
3 no RTM	50	Accept	3	
4 RTM	50	Accept	4	
5 no RTM	50	Accept	5	
6 RTM	50	Accept	6	
7 no RTM	50	Accept	7	
8 RTM	50	Accept	8	
9 no RTM	50	Reject	9	3
10 no RTM	50	Accept	9	
11 RTM	50	Accept	9.5	
12 RTM	50	Reject	10	2
13 no RTM	50	Reject	10	2
14 no RTM	50	Reject	10	2
15 RTM	50	Reject	10	2
16 RTM	50	Reject	10	2
17 RTM	50	Reject	10	2

Note prices **not indicative** but simple to illustrate examples

Scenario 6: Stack price with overholding volume

Bid 11 was rejected as accepting it would mean we would have a total of 310 MW of no-RTM.
Bid 13 was rejected as accepting it would mean we would have a total of 510 MW of all volume (RTM and no-RTM).
Bid 14 was accepted even though the price was higher than for bid 13 however there is no overholding.

Max price:	£10
Max volume:	500
Offered volume:	360 no RTM
	360 RTM
Accepted volume:	
	290 no RTM
	210 RTM
	500

RTM?	MW	Status	£	rej code	
1 no RTM	50	Accept	1		
2 no RTM	40	Accept	2		
3 no RTM	40	Accept	3		
4 RTM	40	Accept	4		
5 no RTM	40	Accept	5		
6 RTM	40	Accept	6		
7 no RTM	50	Accept	7		
8 RTM	40	Accept	8		
9 no RTM	30	Accept	9		
10 no RTM	40	Accept	9.1		
11 no RTM	20	Reject	9.2	3	
12 RTM	50	Accept	9.3		
13 RTM	50	Reject	9.4	2	
14 RTM	40	Accept	9.5		
15 RTM	50		12	1	
16 no RTM	50		13	1	
17 RTM	50		14	1	

Note prices **not indicative** but simple to illustrate examples

Questions

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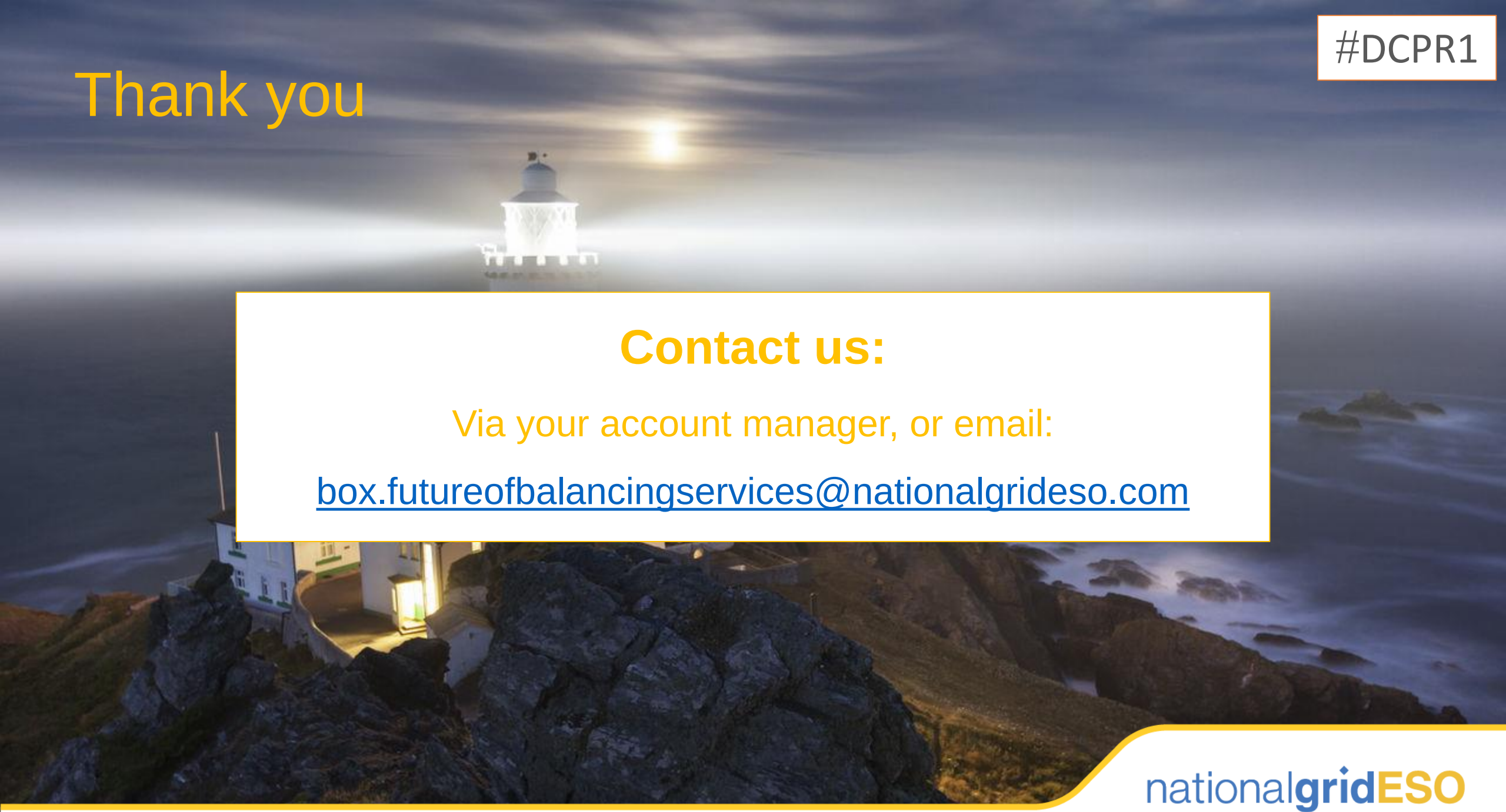
Thank you



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