

## Digital Meeting Etiquette

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- Welcome to the P462 Workgroup meeting 6 – we'll start shortly
- No video please to conserve bandwidth
- Please stay on mute unless you need to talk – use IM if you can't break through
- Talk – pause – talk
- Lots of us are working remotely – be mindful of background noise and connection speeds

# ELELEXION

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**P462 The removal of subsidies from Bid  
Prices in the Balancing Mechanism**

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Meeting 6

20 August 2024

# Meeting Agenda

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Objectives for this meeting:

- To gather final feedback and agree on the scope and requirements for the P462 Cost Benefit Analysis (CBA); and
- To commence development of the P462 Solution.

Agenda Item	Lead
1. Welcome and meeting objectives	Patrick Matthewson (Chair)
2. Review of Actions	Jacob Snowden (Lead Analyst)
3. Feedback and agreement of the CBA scope and requirements	Jacob Snowden and Workgroup
4. P462 Solution overview and considerations	Mike Ceney (Elexon)
5. Workgroup feedback to P462 Solution	Workgroup/NGESO/Elexon
6. Next Steps	Jacob Snowden
7. Meeting close	Patrick Matthewson

## Action Review

No.	Workgroup raised	Action	Owner	Due by	Status
7.	WG1	Elexon to engage with DESNZ on how P462 interacts with government policy.	Elexon	Ongoing	Open
11.	WG4	NGESO to provide analysis on the geographical limits of the model and what the results are when looking into Scotland market conditions.	NGESO	TBC	Open
12.	WG4	To provide an initial CBA Scope document with the Workgroup.	Elexon/NGESO	WG5	<b>Closed</b>
13.	WG4	DESNZ to consider the interaction between P462 and government flexibility targets.	DESNZ	TBC	Open
14.	WG5	Elexon to redraft the CBA Requirements document to incorporate Workgroup feedback from WG5.	Elexon	WG6	Open

Closed Actions are in the Appendix



# CBA SCOPE AND REQUIREMENTS

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## Changes made from WG5

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### Benefits

Removal of

- B3 “The service provider must assess whether P462 provides fairer competition of Bid Prices”; and
- B4 “The service provide must assess whether P462 provides increased market efficiency.”

### Costs

- Added TOs, interconnector and flexibility providers to C2.

### Impacts

Addition of

- I3 b. – flexible demand
- I3 d. – assess the impact on locational decisions for assets
- I6 – Impacts on CfD scheme, strike price and CfD levies
- I7 – Impacts to future ESO ancillary service market development and operability in the future net-zero system

### Service Provider

Addition of

- S4 – service provider must confirm there is no conflict of interest undertaking the P462 CBA

### Deliverables

These were updated to reflect the changes to Benefits, Costs and Impacts sections.

### Assessment

- Modified timescales to 2045

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## Workgroup feedback

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### Costs

- May be worth the CBA placing a cost on the resulting increase in carbon emissions that will subsequently need further mitigation with additional funding

### Impacts

- I1 - what historic data set will be used? We suggest that the Service Provider (SP) lists the exogenous inputs in the scoping paper. Also for I1 the SP will need an established short-term/within day/Balancing Mechanism model
- I3 - the locational point needs to be drawn out more, probably in I2. It should cover that the model must take into account the ability of assets to displace other assets from a locational point of view and from a control room behaviour perspective
- I4 - the capacity market effect also needs to consider the impact on assets holding a CM contract which may no longer be built if P462 is implemented and spreads narrow. Specifically batteries holding low value CM contracts which assumed existing spreads.

### Deliverables

- D1 – need to determine the timescales. CBA goes out until 2045, over what increments of time do we assess? E.g., annual until 2035, 5-yearly until 2045
- D10/D11 - prefer that the draft and final scoping paper is shared with the working group for comment

### Assessment

- A1 - all potential changes resulting from REMA should be measured in sensitivities as no decision has been taken on the changes post the election





# P462 SOLUTION



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## Agenda

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1. Solution Overview
2. CfD Deep dive
3. RO Deep dive
4. Hybrid/aggregated BM Units

# SOLUTION OVERVIEW

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## P462 Solution Overview

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The proposed solution for BSC Modification P462 is to remove subsidies (like those from CfDs and RO schemes) from the Bid Prices used in the Balancing Mechanism.

By doing this, the Balancing Mechanism will more accurately reflect the true cost of generation, leading to potential cost savings for consumers.

### Key aspects of the solution:

- **Modifying the BM Unit Cashflow calculation:** The equation used to determine the BM Cashflow will be adjusted to include lost subsidies, so they don't have to be included in the Bid Price. The lost support mechanism (subsidy) will be paid through a modification to the BSC Section T 'Settlement and Trading Charges' paragraph 3.11.
- **Cost Recovery:** The amended BM Unit cashflow is included in System Operator Cashflow, hence recovered through BSUoS (through existing CUSC provisions)

### Expected outcomes:

- **Reduced consumer costs:** By eliminating the distortion caused by subsidies in the Bid Price, the Balancing Mechanism will operate more efficiently, leading to lower costs for consumers.
- **Fairer competition:** Removing subsidies from Bid Prices will create a more level playing field for generators, promoting fair competition.
- **Increased market transparency:** A more accurate reflection of generation costs will improve market transparency.

## P462 Solution Overview

$$\begin{array}{ccccccccccc}
 \boxed{\text{CBM}_{ij}} & = & \boxed{\sum^n \text{Con}_{ij}} & + & \boxed{\sum^n \text{CBn}_{ij}} & + & \boxed{\text{NQB}_{ij}} & \times & \boxed{\text{SRP}_{ij}} & & \text{with standard BSC sub-/super-scripts:} \\
 \text{BMU Cashflow} & = & \text{Offer Cashflow} & + & \text{Bid Cashflow} & + & \text{Net Accepted Bid Volume} & \times & \text{Subsidy Replacement Price} & & \text{for each BMU, } i \\
 & & & & & & & & & & \text{for each settlement period, } j \\
 & & & & & & & & & & \text{for each bid-offer pair, } n
 \end{array}$$

### Net Accepted Bid Volume

Accepted bid volume in settlement period, net of any accepted offer volume, i.e., the actual volume curtailed

### Subsidy Replacement Price

Calculated according to the relevant subsidy arrangements per BMU, per settlement period.

#### Renewables obligation

Calculated according to:

- Unit's RO banding (e.g. 0.9 ROC/MWh)
- ROC buy-out price (revised annually)

#### Contract for Difference

Calculated with reference to unit's strike price and relevant market reference price, as specified in their CfD agreement and calculated by EMR Settlement

- Intermittent Market Reference Price, for technologies such as wind and solar (calculated hourly)
- Baseload Market Reference Price, for technologies such as biomass with CHP (calculated seasonally)

- **CBM** is Period BM Unit Cashflow;
- $\sum^n$  represents the sum over all Bid-Offer Pair Numbers for the BM Unit;
- **Con** is Period BM Unit Offer Cashflow
- **CBn** is Period BM Unit Bid Cashflow.

For the avoidance of doubt the Bid Price (CBn ) itself remains set at the operator's discretion and should continue to reflect reasonable recovery of costs and profits in line with wider market rules on pricing. This Modification does not establish any new limitations on bid prices.

- **NQB** is the bid volume net of unwind offers, i.e., the sum of bids and offers for pairs where  $n < 0$ . NQB is zero or negative
- **SRP** is the support mechanism replacement price. As appropriate:
  - **RO**: buy-out price multiplied by the banding rate (e.g. 0.9)
  - **CFD**: difference between Market Reference Price and Strike Price

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## Additional complexities

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- Non-delivery- what happens if NQB wasn't actually delivered?
- Loss adjustments- Metered volumes used for subsidy calculations haven't necessarily been adjusted for losses in the same way as NQB. RO Distribution losses are trickier. You may have to back calculate to 'undo' distribution losses adjustments
- Baseload CfDs- not all CfD contracts are paid for 100% of the output e.g. Renewable Qualifying Multiplier, CHP Qualifying Multiplier or ACT Efficiency Multiplier
- All CfDs are capped for the volume they are paid for i.e maximum contract quantity
- Negative Price Periods-Some CfDs include contract terms so that the generator is not paid any subsidy at all when the Intermittent Reference Price is negative
- Hybrid/aggregated BM Units, a mixture of different subsidy regimes

# CFD DEEP DIVE

## 1. Market Price:

- The relevant electricity market price, typically the Baseload and Intermittent Reference price, for each generation period.
- This price is used to calculate the difference between the strike price and the market price.
- Retrieve from Website or new interface, frequency of the data to be explored.
- Seasonal reference prices will also be considered, Biomass CfD units have quarterly reference prices

## 2. New Registration Data for BM Units for CfDs:

- Strike Price- CfD Register
- Multipliers
- Maximum contract quantity
- CfD contract version-CfD Register

## 3. Transmission Loss Multiplier:

- How is this data received into SAA?



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# CfD Calculation

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## Calculating CfD Payments

The data inputs outlined on the previous slide are used to determine the difference between the strike price and the market price for each generation period. This difference, multiplied by the volume of electricity generated, forms the basis for the CfD payment.

### Calculation Process:

- **Determine NQB:**
  - Adjust for non-delivery?
  - Adjust for Multipliers and Maximum Contract Quantity
  - Adjust for Transmission Losses
- **Calculate Market Price Difference:**
  - The market price for each period is subtracted from the strike price to determine the price difference.
  - Set to zero in negative price periods where appropriate
- **Calculate Lost Subsidy Payment:**
  - The price difference is multiplied by adjusted NQB to determine the lost subsidy payment.

## CfD Calculation

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### Example:

- **Generation Output: 100 MWh**
- **Market Price: £50/MWh**
- **Strike Price: £60/MWh**
- **TLM: 1.01**
- **CHP Qualifying Multiplier: 0.6**
- **Lost Subsidy Payment:  $(£60 - £50) * 100 \text{ MWh} * 1.01 * 0.6 = £606$**

**If market price is higher than strike price then generator would need to repay difference and gain from bid whilst if market price is lower than strike price, generator would receive a top-up payment.**

# RO DEEP DIVE

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## RO Data Inputs

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The Renewables Obligation (RO) scheme requires electricity suppliers to source a specified proportion of their electricity from renewable sources. To comply, suppliers needed to acquire Renewables Obligation Certificates (ROCs) from renewable energy generators.

### 1. ROC Market Price: Available via Ofgem Website

- The market price of ROCs, which fluctuates based on supply and demand.
- Used to calculate the revenue from selling ROCs.

### 2. New Registration Data:

- The type of renewable technology used (e.g., wind, solar, hydro).
- RO multipliers.

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## RO Calculations

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The number of Renewables Obligation Certificates (ROCs) generated by a renewable energy project is calculated based on the specific parameters outlined in the RO scheme.

### Key steps in the calculation:

- **Determine NQB:**
  - Adjust for Non-delivery?
  - Adjust for Distribution Losses?
- **Apply Technology Multiplier:**
  - The generation volume is multiplied by the appropriate technology multiplier to account for the varying environmental benefits of different renewable technologies.
- **Calculate by the price:**
  - $\text{NQB} * \text{Technology multiplier} * \text{ROC Buy Out Price}$

### Example:

- **NQB: 100 MWh**
- **Technology Multiplier: 0.5 (for example)**
- **Buy out Price: £64.73**
- **Lost Subsidy=  $100\text{MWh} * 0.5 * 64.73 = £3236.5$**

# HYBRID/AGGREGATED BM UNITS



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## Hybrid/Aggregated BM Units

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Previous slides assume the BM Unit has the same Subsidy Regime, which won't be true for

- Aggregated BM Units (supplier BMU, secondary BMUs)
- Hybrid BM Units (recent DESNZ consultation on AR7)

The challenge this brings is that NQB will need to be broken down by Subsidy Type

Options include

1. Apply an average breakdown to every bid- e.g. 80% CfD generator, 20% unsubsidised
2. Lead Party carries out per Bid calculation (assurance by Elexon)
3. SAA carries out a per bid calculation

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## Hybrid/Aggregated BM Units

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1. Clearly define which subsidy components should be excluded from the bid price. This includes identifying the specific subsidies (e.g., CfDs, ROs) and the relevant cost elements within those subsidies.
2. Lead Parties to Register the different subunits (e.g. one for unsubsidised assets, one for assets getting 0.9 ROCs per MWh, one for assets getting 0.5 ROCs per MWh)
3. New Registration Data previously discussed is at Subunit Level

## Splitting NQB between Subunits

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1. Process to agree the static split and update it from time to time
2. New interface to inform which subunit delivered each bid
  - Data Reconciliation: In Settlement we would check the data against the total delivered Bid volume we calculated. For example, the Lead Party tells us that Subunit 1 delivered -10 MWh and Subunit 2 delivered -15 MWh. But we calculate the total Bid Volume to be -20 MWh (rather than the -25 MWh the Lead Party is claiming). We would adjust per rata, so Subunit 1 has delivered -8 MWh and Subunit 2 has delivered -12 MWh. Settlement will calculate the lost subsidy at Subunit level, and aggregate up to the BM Unit
  - Monitoring Techniques: The potential of a Lead Party 'gaming' their submissions will be handled (like other Settlement Risks) through the Performance Assurance Framework, with the risk assessed, and relevant techniques applied.
3. SAA would have to calculate how much of the bid was delivered by each subunit
  - Metered Data for subunits- Either from MDS or EMRS
  - Baselines for the Subunits

## Splitting NQB between Subunits- Pros & Cons

Option 1 Pros	Option 1 Cons
Less impact on Lead Parties	Estimated split
Less system changes	Regular monitoring to adjust Estimation
Cheaper cost to implement	Complex governance and processes to update
Option 2 Pros	Option 2 Cons
Accurate calculations	New interfaces required
Detailed breakdown of each Subunit	Additional processes for Lead Parties
Option 3 Pros	Option 3 Cons
Sub-units would be calculated independently, removing gaming risks and the need for assurance	Complex changes to Elexon systems
	Greater cost to implement
	Relies on baselining of sub-units, subject to baseline error



# NEXT STEPS

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## Next steps

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- Summary of Workgroup meeting decisions and actions by 23 August
- Elexon to commence CBA procurement process

## Progression plan

Event	Date
Present IWA to Panel	9 November 2023
ToR agreed by Panel	14 December 2023
Workgroup meeting 1	16 January 2024
Workgroup meeting 2	27 February 2024
Workgroup meeting 3	2 April 2024
Workgroup meeting 4	20 May 2024
Workgroup meeting 5	9 July 2024
Workgroup meeting 6	20 August 2024
Workgroup meeting 7	September 2024
Workgroup meeting 8	...
Assessment Procedure Consultation	22 November 2024 – 12 December 2025
Workgroup meeting	W/C 13 January 2025
Present Assessment Report to Panel	13 February 2025
Report Phase Consultation	17 February – 17 March 2025
Present Draft Modification Report to Panel	10 April 2025
Issue Final Modification Report to Authority	14 April 2025



MEETING CLOSE

# ELEXON

THANK YOU

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**Jacob Snowden**

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20 August 2024

## Closed Actions

No.	Workgroup raised	Action	Owner	Due by	Status
1.	WG1	To consider ToR (m) 'Is the BSC an appropriate route to amend the issue identified in P462?' in more detail at WG2.  NGESO to show other routes considered prior to raising P462. Along with their impacts. To allow Workgroup feedback on these other solutions to the issue identified as part of P462.	NGESO/Workgroup	WG2	<b>Closed</b>
2.	WG1	NGESO to provide a detailed list of the assumptions in the analysis presented at WG1.	NGESO	WG3	<b>Closed</b>
3.	WG1	NGESO to present back an issues case illustrating the carbon impact of the proposal and what percentage of transactions might displace conventional units in the same settlement period (as opposed the renewable generators with support mechanisms). To consider this has a Wider Impact as per ToR (e).	NGESO	WG3	<b>Closed</b>
4.	WG1	Review of the Wider Impacts as per ToR (e). This includes suggestions raised prior to the Workgroup. Along with issues raised from WG1. WG1 Issues raised: <ul style="list-style-type: none"> <li>• Impacts on Wind curtailment</li> <li>• Impacts on Storage</li> <li>• Impacts on Flexibility markets</li> <li>• Impacts on the interaction between the Wholesale market and Balancing Mechanism</li> <li>• Potential Carbon impact (as per Action 3)</li> <li>• Interaction with TCLC (as per action 6)</li> </ul>	NGESO/Workgroup	WG2	<b>Closed</b>
6.	WG1	Consider if the issue identified is covered as part of TCLC.	NGESO/Workgroup	WG2	<b>Closed</b>
8.	WG2	Present proposed Cost Benefit Analysis process to the Workgroup	Elexon	WG3	<b>Closed</b>
9.	WG2	NGESO to present further analysis on specifically RO and REGO impacts	NGESO	WG3	<b>Closed</b>
5.	WG1	To review the potential REMA impacts once the consultation is published by DESNZ	NGESO/Workgroup	WG4	<b>Closed</b>
10.	WG3	NGESO to provide data used in the analysis to provide further context.	NGESO	WG4	<b>Closed</b>