Battery Storage & Skip Rates Webinar

27 February 2025

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Presenters and Q&A Panel

Please note, we will be recording today's session.

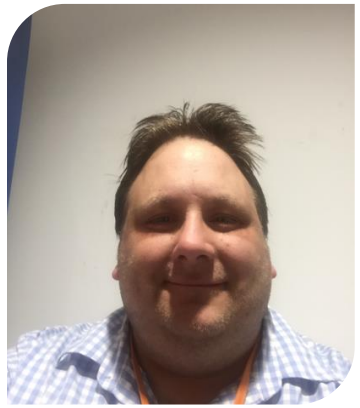
Mili Gupta
Head of Systems, Support & Insight

Cathy Fraser
Head of Market Requirements

Hannah Kernthaler
Head of Power Systems

Anna Blackwell
Battery Storage Technical Manager

Jean Hamman
Control Future Design Energy and Strategy Lead



Leon Walker
Governance & Insights Manager

Sam Mancey
Senior Engineer

Katherine Munns
Senior Operational Insight Analyst

Alice Taylor
European Industry Frameworks Manager

Will Seward
Data Engineer

Welcome and Agenda

	Agenda Item	Presenter
13:05 – 13:10	**2024 recap & 2025 roadmap**	Anna Blackwell
13:10 – 13:40	**Methodology & data interpretation**	Sam Mancey Katherine Munns
13:40-13:50	**Root Cause Analysis**	Will Seward
13:50 – 14:00	**30 min rule & GC0166**	Cathy Fraser
14:00 – 14:10	**P462 Update**	Alice Taylor
14:10 – 14:15	**Upcoming engagements**	Cathy Fraser
14:15 – 14:30	**Q&A**	Bea Marques

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To interact throughout the event, go to Sli.do code #NESO

Submit questions to be answered in a live Q&A

Please note the following:

- **Ask your questions as early as possible** to give our experts time to respond
- **Please provide your name or organisation** as we won't answer live questions from unidentified parties
- **Questions will be answered in the upvoted order** whenever possible
- **All questions will be recorded and published,** and any questions not answered on the day will be included, with answers, in the slide pack in our next webinar

Polls will also be provided throughout the event – please give us your thoughts!

The Sli.do link will remain open until **5.30pm Feb 27th** for questions and poll responses

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2024 Recap & 2025 Roadmap

Anna Blackwell

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2024 Recap: What we've delivered

Battery Dispatch
- Release of Balancing Platform dispatch algorithm and dispatch efficiency constraint methodology
- Additional battery dispatch engineers provided to the Control Room
- Workflow automation for the OBP
- Implementation of VERGIL control room improvements to address constraint despatch
- Quick reserve penalties implemented
- Ofgem collaboration document exploring exclusion rationale and roadmap to improvement

LCP Methodology
- Industry Webinar held
- Full report published – LCP Delta definition and methodology

New Transparency Tools
- All BM Skip rate and Post System Actions skip rate monitor live in the ENCC

Customer Engagement
- CEO Roundtable
- Customer visits to Control Room and NESO visits to Customer sites

Battery Storage Forum
- First Battery Storage forum hosted with the industry

External Dataset Release
- 3 datasets published

2025: What we're doing

Transparency tool improvements
UI improvements live in Control Room

OBP: constraint management
Improved situational awareness for dispatch of units behind constraints

LCP Delta Phase 3
Kicking off skip rate materiality work

✓ **Increased response holding**
Managing frequency fluctuations

✓ **Additional dispatch control engineers**
Full-time battery dispatch engineer providing 24/7 cover

✓ **Fourth dataset release**
Including unit exclusion reasons

Skip Rate Methodology improvements
Addressing limitations in LCP Delta Methodology

Slow Reserve Go Live
More sustained delivery in a post fault event

OBP: constraint optimisation
Further improved dispatch efficiency for units behind constraints

Quick Reserve Phase 2 Go Live
Quicker energy imbalance restoration

GC1066 Approval
Ofgem approval of GC0166 code modification

OBP: national optimisation
Improved dispatch advice and efficiency

Continuous improvements
Ongoing skip rate monitoring and improvements

Forecasting improvements
Implemented in Control Room

Roadmap Key

- Forecasting improvements
- IT system updates
- Market changes
- Skip rates measurement & transparency
- ✓ Complete

2025 | Jan-March 2025 | Apr-Sep 2025 | Oct-Dec 2025 | **2026**

Industry engagement
Regular forums and webinars, supplemented by monthly drop-in sessions

Methodology and data interpretation

Sam Mancey and
Katherine Munns

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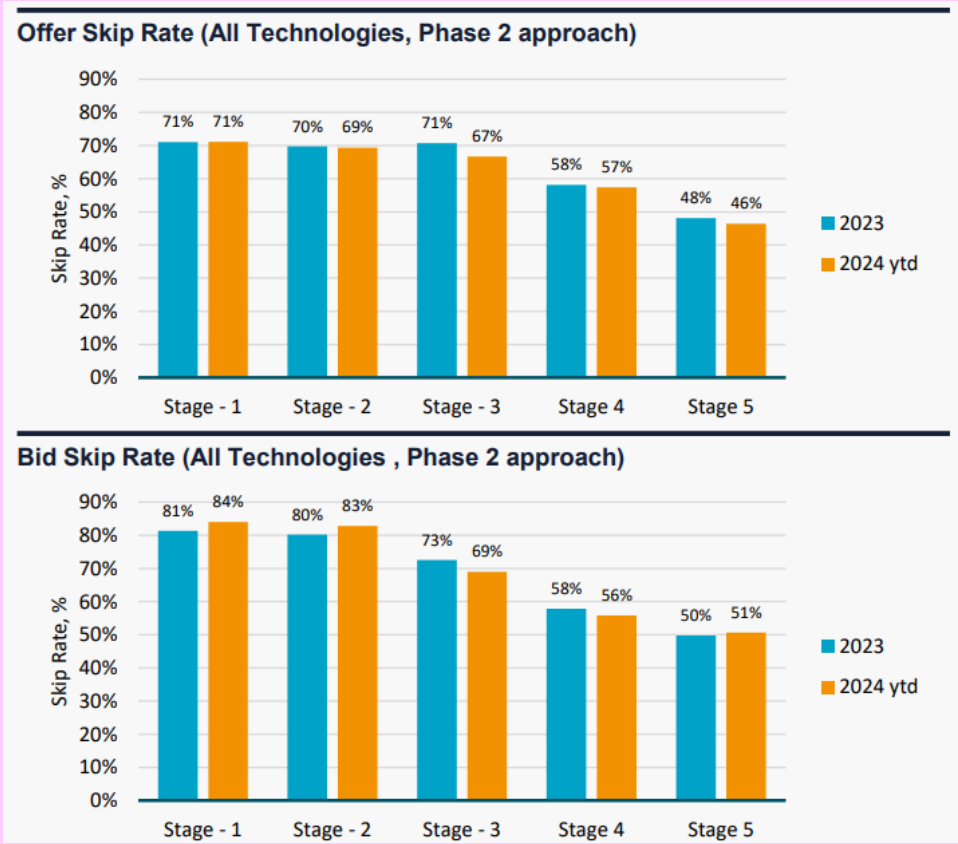
Introduction to the LCP Delta methodology

The **LCPDelta** methodology focuses on measuring and improving the efficiency of operational decisions in the energy balancing process.

[Skip rates | National Energy System Operator]



Skip rate methodology

*All blocks represent 1 MWh

Calculated at **5-minute granularity** for bids & offers

$$\text{Skip rate} = \frac{2\ MWh\ (green)}{5\ MWh\ (green + purple)} = 40\%$$

NESO exclusions

Exclusions are made because **not all units can be dispatched in real time**.

Stage 0 — All bids and offers available in a 5-minute period.

↓

Stage 1 — Exclude volume **not accessible in the BM**.
Wind offers

↓

Stage 2 — Exclude volume **not accessible in BM timescales** or unavailable due to **Constraints**
Very long notice plants: MZT* >= 12 hours, MNZT** >= 12 hours and NDZ*** >= 90 mins.

↓

Stage 3 — Exclude volume that is **System Flagged**.

↓

Stage 4 — Exclude **Unwind** volume.

↓

Stage 5 — Exclude volumes that could **not be accessed by the balancing team in the control room**.
Long notice plants: MZT >= 31 mins, MNZT >= 31 mins, NDZ >= 31 mins and pumped storage through zero.

*MZT: Minimum Zero Time
**MNZT: Minimum Non-Zero Time
***NDZ: Notice to Deviate from Zero

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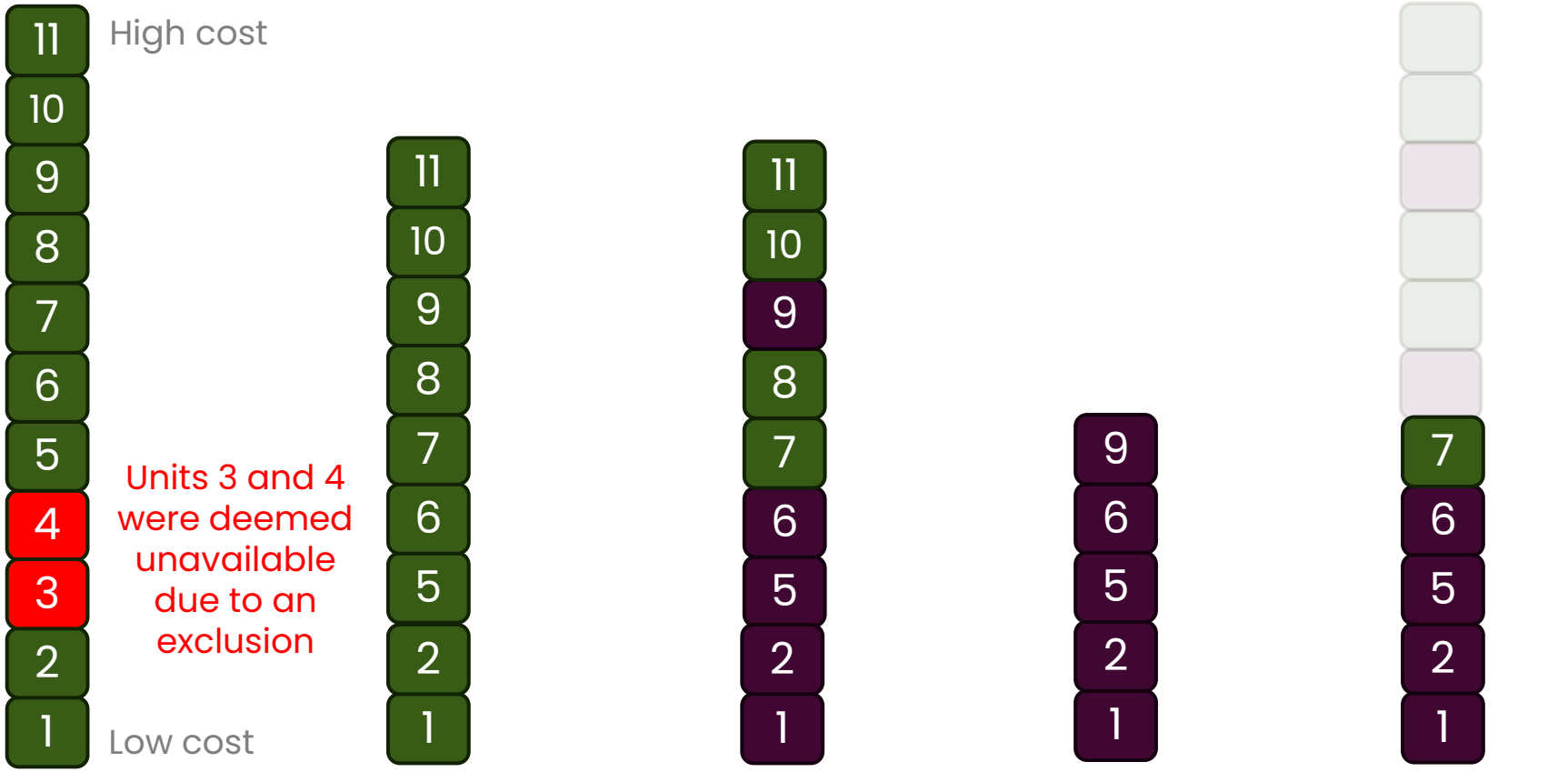
Exclusions example



Feasible merit stack

Feasible merit stack after exclusions

Accepted volume in purple

Accepted stack (5 MWh) (Required imbalance volume)

Volume Adjusted In-Merit Stack

Calculated at **5-minute granularity** for bids & offers

Skip rate = $\frac{1}{5}$ = 20%

*All blocks represent 1 MWh

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Skip rate definitions

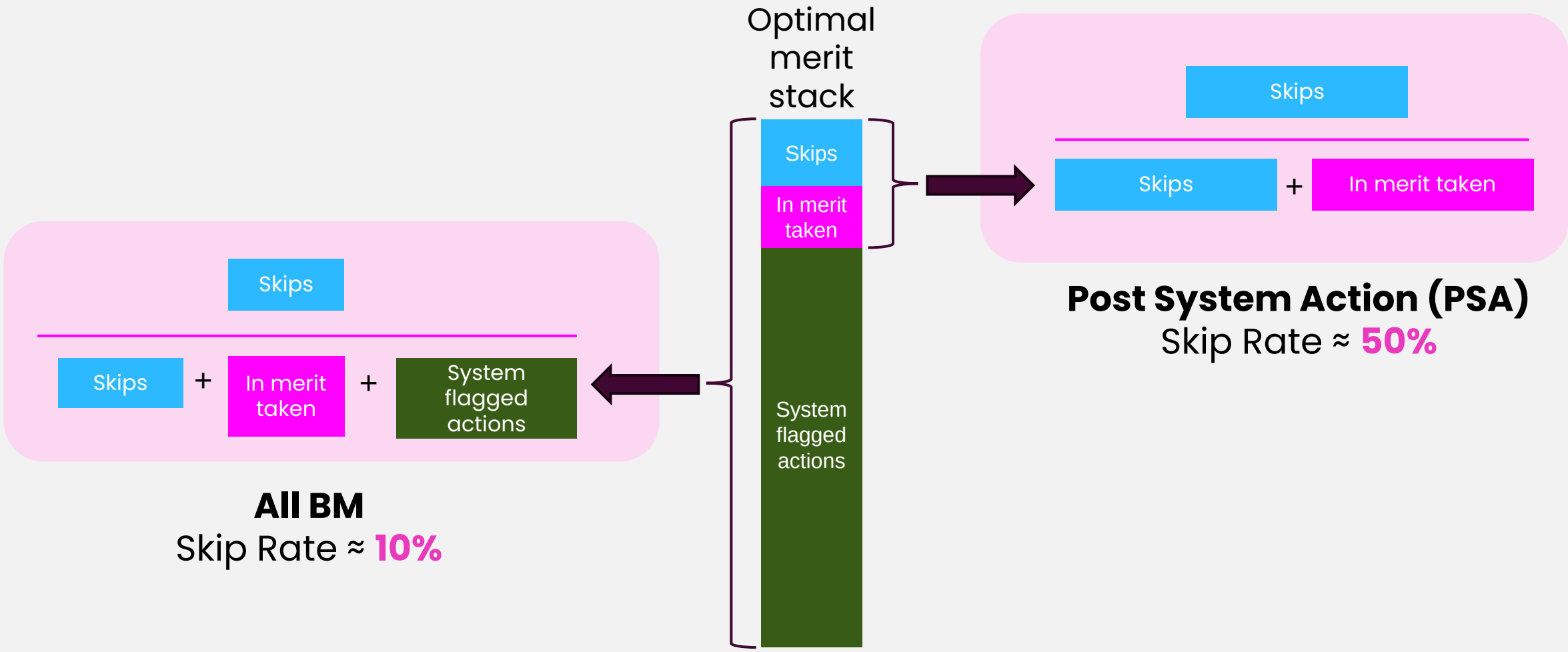
All Balancing Mechanism (BM) Skip Rate

A measure of skips, taking into consideration all BM actions we could have taken over the relevant period.

Post System Actions Skip Rate

A more targeted measure of skips; this measure disregards actions taken for system reasons.

Skip rate definitions



How to interpret the datasets

We published 4 datasets on the data portal here at Day + 1.

Skip Rates

A new dataset to calculate Skip Rates using the methodology developed with LCP Delta. For more information on this methodology see the Skip Rate section of the website. This dataset provides the skip rates per 30mins of each day following each stage of exclusions as set out in the methodology on the website.

Balancing costs

4 Data Files

Name	Format	Last Changed
Skip Rate - In Merit All Balancing Mechanism	CSV	2 hours ago
Skip Rate - In Merit Post System Action	CSV	1 day ago
Skip Rate - Exclusion Reasons	CSV	1 day ago
Skip Rate - Summary	CSV	1 day ago

Note: we are aware of an issue with the 'In Merit All BM' dataset not updating. As an interim solution we have created separate files for each month but we are working on an enduring solution.

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Summary of the datasets

This dataset shows skip rate data aggregated to 30-minute Settlement Periods for all stages of the methodology

Time period (00:00-00:30)

All BM for offers (% and skipped volume)

All BM for bids (% and skipped volume)

Date	Stage	All BM Skip Rate Offers %	All BM Total Volume Skipped Offers MWh	Post System Action Skip Rate Offers %	Post System Action Total Volume Skipped Offers MWh	All BM Skip Rate Bids %	All BM Total Volume Skipped Bids MWh	Post System Action Skip Rate Bids %	Post System Action Total Volume Skipped Bids MWh
2025-02-01T00:00:00Z	0	82.75	248.17	82.75	248.17	41.63	199.08	41.63	199.08
2025-02-01T00:00:00Z	1	82.75	248.17	82.75	248.17	41.63	199.08	41.63	199.08
2025-02-01T00:00:00Z	2	82.75	248.17	82.75	248.17	41.63	199.07	41.63	199.07
2025-02-01T00:00:00Z	3	8.05	24.15	39.01	24.15	41.46	198.24	41.53	198.24
2025-02-01T00:00:00Z	4	5.87	17.6	28.42	17.6	41.46	198.24	41.53	198.24
2025-02-01T00:00:00Z	5	5.02	14.56	27.85	14.56	41.46	198.24	41.53	198.24

Stage (0-5)

Post System Action (PSA) for offers (% and skipped volume)

Post System Action (PSA) for bids (% and skipped volume)

Note: Skipped volume is the same in All BM and PSA because the only difference is the denominator

‘In Merit’ dataset overview

- There are **two ‘In Merit’ datasets** which contain the same column headings – one for **All BM** and one for **Post System Action**.
- These datasets show the units that were **in merit** and therefore **should** have been instructed if decisions were solely based on price.
- The difference between these datasets is that the **All BM includes the system actions**, which are assumed to have been taken in merit.

Date	BM Unit	Fuel	Bid/Offer	Stage	Available Volume MWh	Average Price £/MWh	Pair Id	Accepted Volume MWh	In Merit Volume MWh	Skipped Volume MWh
2025-02-01T00:00:00	COSO-1	CCGT	Offer	0	62.76	130.0	1	0.0	18.37	18.37
2025-02-01T00:00:00	CONTB-1	BATTERY	Bid	0	1.42	95.41	-1	1.42	1.42	0.0
2025-02-01T00:00:00	MOYEW-1	WIND	Offer	0	4.33	95.0	1	0.(		
2025-02-01T00:00:00	PINFB-1	BATTERY	Bid	0	0.83	94.0	-1	0.		

Note: this dataset does not show all units that were instructed so the volume does not match the total accepted volume datasets in Elexon.

It’s possible that the list of units increases, decreases, or stays the same between stages, but the total ‘In Merit Volume’ will either remain the same (if no volume is excluded) or decrease (due to exclusions).

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‘In Merit’ column guide

Filter on both to see the in-merit stack

Volume that was skipped

Time period (00:00-00:05)

Bid or Offer

Stage (0-5)

Available volume & average price

Pair ID in merit

Volume that was in merit

Date	BM Unit	Fuel	Bid/Offer	Stage	Available Volume MWh	Average Price £/MWh	Pair Id	Accepted Volume MWh	In Merit Volume MWh	Skipped Volume MWh
2025-02-01T00:00:00	COSO-1	CCGT	Offer	0	62.76	130.0	1	0.0	18.37	18.37
2025-02-01T00:00:00	CONTB-1	BATTERY	Bid	0	1.42	95.41	-1	1.42	1.42	0.0
2025-02-01T00:00:00	MOYEW-1	WIND	Offer	0	4.33	95.0	1	0.0	4.33	4.33
2025-02-01T00:00:00	PINFB-1	BATTERY	Bid	0	0.83	94.0	-1	0.83	0.83	0.0

BMU and fuel type

Volume that was accepted, as a subset of the in-merit volume

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‘In Merit’ example

In Merit Volume = **Accepted Volume** + **Skipped Volume**

Volume that was available

Volume that was accepted, as a subset of the in merit volume

Volume that was in merit

Volume that was skipped

Available Volume MWh	Average Price £/MWh	Pair Id	Accepted Volume MWh	In Merit Volume MWh	Skipped Volume MWh
17.08	93.1	-1	9.58	13.57	3.99

In Merit Volume (13.57 MWh) = Accepted Volume (9.58 MWh) + Skipped Volume (3.99 MWh)

Sum of In Merit Volume is the imbalance requirement -> filter by time, stage, bid/offer

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‘In Merit’ edge cases

In Merit Volume = **Accepted Volume** + **Skipped Volume**

Except when…

1) The marginal unit is accepted and multiple units are available at same marginal price

At the marginal price, the remaining imbalance volume is divided proportionally based on available volume, between all units, capped at available volume at that price

For marginal units that have been accepted, their accepted volume can be greater than their in merit volume

2) The methodology deems feasible volume < accepted volume

The methodology can calculate the feasible volume as less than the accepted volume because of how the exclusions are applied

For these units, the accepted volume can be greater than the in merit volume

Exclusion reasons

This dataset shows the BMUs that have been excluded from one of the stages of the methodology with a reason for the exclusion

Whether volume was excluded from the 'Feasible Merit' stack or 'Accepted' stack

Excluded volume & reason for exclusion

Date ↑	BM Unit	Fuel	Bid/Offer	Excluded from Accepted or Feasible Merit Stack	Exclusion Stage	Pair Id	Average Price £/MWh	Excluded Volume MWh	Exclusion Reason
2025-02-01T23:55:00	CLAYB-2	BATTERY	Bid	Feasible Merit	2	-1	70.74	1.42	Behind constraint
2025-02-01T23:55:00	VKNGW-1	WIND	Bid	Accepted	2	-1	-4.75	7.83	Behind constraint
2025-02-01T23:55:00	AG-HLIM02	BATTERY	Bid	Feasible Merit	2	-1	70.04	0.58	Behind constraint
2025-02-01T23:55:00	EECL-1	CCGT	Offer	Accepted	2	1	129.0	15.48	Behind constraint

Stage the BMU was excluded from

Exclusion reasons

Stage	Exclusion Reason
1	Wind offer
2	Behind constraint
2	Unit ramping between 0 and SEL or 0 and SIL
2	Inaccessible very long notice unit
2	Invalid physical/dynamic parameter
3	System-tagged
4	Unwind
5	Inaccessible long notice unit
5	Long notice 0 to SIL or 0 to SEL
5	Inaccessible pumped storage through zero
5	Cannot take a long notice unit offline

If a unit if excluded for multiple reasons in the same stage, then all reasons will be listed.

5	-1	88.0	1.25	Long notice 0 to SIL or 0 to SEL, Cannot take a long notice unit offline

If a unit has been excluded, it will not be checked against the exclusion reasons in subsequent stages.

Exception: if unit is behind a constraint but there is enough headroom for some volume, and the unit is excluded at a subsequent stage, both reasons will be given:

5	-1	73.39	0.58	Behind constraint, Cannot take a long notice unit offline

Let us know: Is this exception helpful or confusing?
Contact us at Box.SkipRates@nationalenergyso.com

How to use these datasets

Example: 08/02/2025 03:40-03:45 Offers

Stage 0 Total In Merit Volume: 70.9 MWh

bm_unit	fuel	pair_id	average_price_per_MWh	in_merit_volume_MWh
BROCW-1	WIND	1	10.5	2.47
BNWKW-1	WIND	1	95	0.93
LCLTW-1	WIND	1	95	5.5
MOYEW-1	WIND	1	95	4.5
TULWW-1	WIND	1	95	1.25
TULWW-2	WIND	1	95	1.87
TRLGW-1	WIND	1	100	1.08
AG-JUKP01	BATTERY	1	120	0.17
EECL-1	CCGT	1	128.9	35
RHEI-4		1	128.9	0.92
RHEI-4		2	128.9	1.75
RHEI-4		3	128.9	1.42
MRWD-1	CCGT	1	129	14.04

Stage 1 Total In Merit Volume: 70.9 MWh

bm_unit	fuel	pair_id	average_price_per_MWh	in_merit_volume_MWh
AG-JUKP01	BATTERY	1	120	0.17
EECL-1	CCGT	1	128.9	35
RHEI-4		1	128.9	0.92
RHEI-4		2	128.9	1.75
RHEI-4		3	128.9	1.42
MRWD-1	CCGT	1	129	15
NTRVB-1	BATTERY	1	129.9	1.38
SHOS-1	CCGT	1	129.9	7.6
SHOS-1	CCGT	2	129.9	7.66

[In Merit All BM]

Exclusion Reasons
[Exclusions]

bm_unit	fuel	excluded_fror	pair_id	exclusion_reason
BNWKW-1	WIND	Feasible Merit	1	Wind offer
BROCW-1	WIND	Feasible Merit	1	Wind offer
LCLTW-1	WIND	Feasible Merit	1	Wind offer
MOYEW-1	WIND	Feasible Merit	1	Wind offer
TRLGW-1	WIND	Feasible Merit	1	Wind offer
TULWW-1	WIND	Feasible Merit	1	Wind offer
TULWW-2	WIND	Feasible Merit	1	Wind offer

How to use these datasets

Example: 08/02/2025 03:40-03:45 Offers

Stage 1 Total In Merit Volume: 70.9 MWh

bm_unit	fuel	pair_id	average_price_per_MWh	in_merit_volume_MWh
AG-JUKP01	BATTERY	1	120	0.17
EECL-1	CCGT	1	128.9	35
RHEI-4		1	128.9	0.92
RHEI-4		2	128.9	1.75
RHEI-4		3	128.9	1.42
MRWD-1	CCGT	1	129	15
NTRVB-1	BATTERY	1	129.9	1.38
SHOS-1	CCGT	1	129.9	7.6
SHOS-1	CCGT	2	129.9	7.66

Marginal unit

Stage 2 Total In Merit Volume: 70.9 MWh

bm_unit	fuel	pair_id	average_price_per_MWh	in_merit_volume_MWh
AG-JUKP01	BATTERY	1	120	0.17
EECL-1	CCGT	1	128.9	35
RHEI-4		1	128.9	0.92
RHEI-4		2	128.9	1.75
RHEI-4		3	128.9	1.42
MRWD-1	CCGT	1	129	15
NTRVB-1	BATTERY	1	129.9	3.14
SHOS-1	CCGT	1	129.9	2.78
SHOS-1	CCGT	2	129.9	2.8
ARNKB-1	BATTERY	1	129.94	3.83
COVNB-1	BATTERY	1	140	4.08

Exclusion Reasons

bm_unit	fuel	excluded_fror	pair_id	exclusion_reason
ARNKB-1	BATTERY	Accepted	1	Behind constraint
COVNB-1	BATTERY	Accepted	1	Behind constraint
NTRVB-1	BATTERY	Accepted	1	Behind constraint

How to use these datasets

Example: 08/02/2025 03:40-03:45 Offers

Stage 2 Total In Merit Volume: 70.9 MWh

bm_unit	fuel	pair_id	average_price_per_MWh	in_merit_volume_MWh
AG-JUKP01	BATTERY	1	120	0.17
EECL-1	CCGT	1	128.9	35
RHEI-4		1	128.9	0.92
RHEI-4		2	128.9	1.75
RHEI-4		3	128.9	1.42
MRWD-1	CCGT	1	129	15
NTRVB-1	BATTERY	1	129.9	3.14
SHOS-1	CCGT	1	129.9	2.78
SHOS-1	CCGT	2	129.9	2.8
ARNKB-1	BATTERY	1	129.94	3.83
COVNB-1	BATTERY	1	140	4.08

Stage 3 Total In Merit Volume: 70.9 MWh

Marginal unit

bm_unit	fuel	pair_id	average_price_per_MWh	in_merit_volume_MWh
AG-JUKP01	BATTERY	1	120	0.17
EECL-1	CCGT	1	128.9	35
RHEI-4		1	128.9	0.92
RHEI-4		2	128.9	1.75
RHEI-4		3	128.9	1.42
MRWD-1	CCGT	1	129	0.62
NTRVB-1	BATTERY	1	129.9	3.11
ARNKB-1	BATTERY	1	129.94	3.83
COVNB-1	BATTERY	1	140	4.08
SEAB-2	CCGT	1	194	20

System tagged

Exclusion Reasons

bm_unit	fuel	excluded_fror	pair_id	exclusion_reason
EECL-1	CCGT	Accepted	1	System-tagged
SEAB-2	CCGT	Accepted	1	System-tagged

How to use these datasets

Example: 08/02/2025 03:40-03:45 Offers

Stage 3 Total In Merit Volume: 70.9 MWh

bm_unit	fuel	pair_id	average_price_per_MWh	in_merit_volume_MWh
AG-JUKP01	BATTERY	1	120	0.17
EECL-1	CCGT	1	128.9	35
RHEI-4		1	128.9	0.92
RHEI-4		2	128.9	1.75
RHEI-4		3	128.9	1.42
MRWD-1	CCGT	1	129	0.62
NTRVB-1	BATTERY	1	129.9	3.11
ARNKB-1	BATTERY	1	129.94	3.83
COVNB-1	BATTERY	1	140	4.08
SEAB-2	CCGT	1	194	20

Stage 4 Total In Merit Volume: 70.9 MWh

bm_unit	fuel	pair_id	average_price_per_MWh	in_merit_volume_MWh
AG-JUKP01	BATTERY	1	120	0.17
EECL-1	CCGT	1	128.9	35
RHEI-4		1	128.9	0.92
RHEI-4		2	128.9	1.75
RHEI-4		3	128.9	1.42
MRWD-1	CCGT	1	129	0.62
NTRVB-1	BATTERY	1	129.9	3.11
ARNKB-1	BATTERY	1	129.94	3.83
COVNB-1	BATTERY	1	140	4.08
SEAB-2	CCGT	1	194	20

No exclusions

How to use these datasets

Example: 08/02/2025 03:40-03:45 Offers

Stage 4 Total In Merit Volume: 70.9 MWh

bm_unit	fuel	pair_id	average_price_per_MWh	in_merit_volume_MWh
AG-JUKP01	BATTERY	1	120	0.17
EECL-1	CCGT	1	128.9	35
RHEI-4		1	128.9	0.92
RHEI-4		2	128.9	1.75
RHEI-4		3	128.9	1.42
MRWD-1	CCGT	1	129	0.62
NTRVB-1	BATTERY	1	129.9	3.11
ARNKB-1	BATTERY	1	129.94	3.83
COVNB-1	BATTERY	1	140	4.08
SEAB-2	CCGT	1	194	20

Stage 5 Total In Merit Volume: 70.9 MWh

bm_unit	fuel	pair_id	average_price_per_MWh	in_merit_volume_MWh
AG-JUKP01	BATTERY	1	120	0.17
EECL-1	CCGT	1	128.9	35
MRWD-1	CCGT	1	129	4.7
NTRVB-1	BATTERY	1	129.9	3.11
ARNKB-1	BATTERY	1	129.94	3.83
COVNB-1	BATTERY	1	140	4.08
SEAB-2	CCGT	1	194	20

Marginal unit

System tagged

Exclusion Reasons

bm_unit	fuel	excluded_fror	pair_id	exclusion_reason
RHEI-4		Feasible Merit	3	Inaccessible long notice unit
RHEI-4		Feasible Merit	2	Inaccessible long notice unit
RHEI-4		Feasible Merit	1	Inaccessible long notice unit
SHOS-1	CCGT	Feasible Merit	1	Inaccessible long notice unit
SHOS-1	CCGT	Feasible Merit	2	Inaccessible long notice unit

What's next?

Methodology

Potential changes

1. Exclude units scheduled for **ancillary services**.
2. Treatment of **pumped storage units** when in either spin gen or spin pump mode.
3. Consider the **time required** for a unit to deliver an offer or bid acceptance.
4. Consider **unit ramp rates** to ensure feasible volume delivery.
5. Consider **State of Charge** – this requires a review of GC0166

Datasets

Necessary data change:

- **All datasets –** Retrospectively rerun all data to remove nondeterminism

  Note: There will be small changes to data, particularly for marginal units where multiple units could have met the requirement for the same price but this change shouldn't affect overall skip rate percentages

Potential changes to improve transparency:

- **In Merit datasets**
  1. Reorder columns to make more intuitive
  2. Remove 'average' from price column heading
  3. Consider only publishing stage 5 in merit data as the exclusions dataset provides similar information in smaller file
- **Exclusion dataset –** Remove exception listed on exclusion slide

Would you value these potential changes?
Please contact us at Box.SkipRates@nationalenergyso.com or attend a drop-in session

Answer the poll on Sli.do now

To what extent has this presentation improved your understanding of the skip rate methodology and data interpretation?

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Root Cause Analysis

Will Seward

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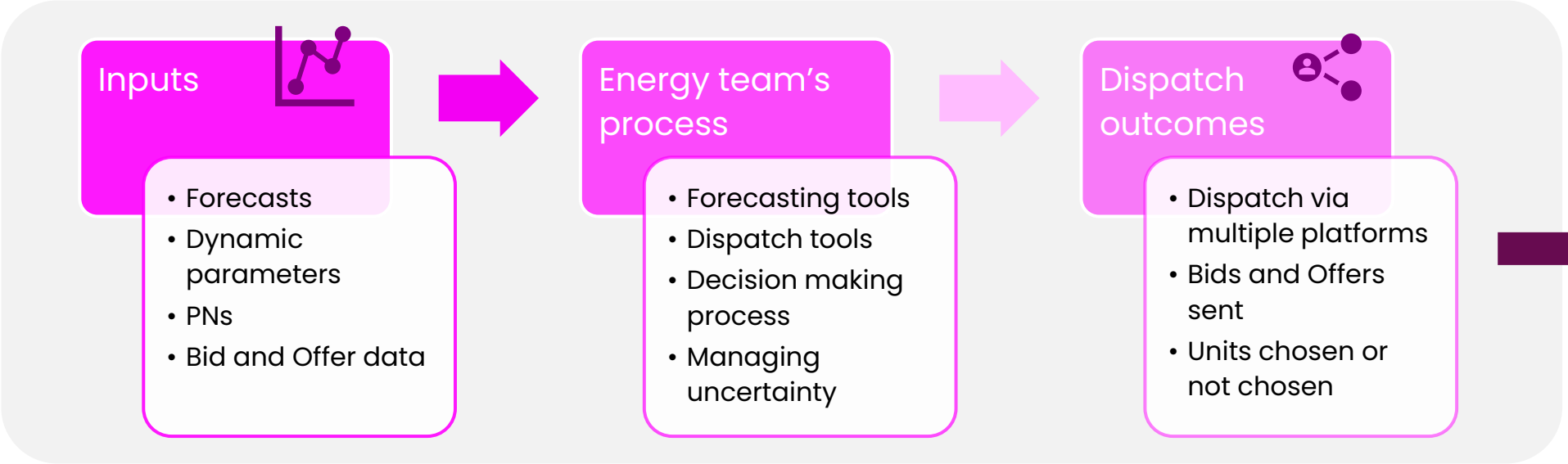
Introduction to Root Cause Analysis

Our aim is to identify root causes of skips, propose changes and build data driven evidence to support changes.

- We are recording root causes and factors influencing skip rates and relating them to the energy team's process in the control room.
- We currently measure the output skip rate, but we intend to evaluate how different factors in the energy team's process impact skip rates.



Approach to Root Cause Analysis

Real-time analysis

Aim: identify when skips are happening in real-time, identify inefficiency when skips happen and find the root cause.

Process:

- Possible skips investigated in real time, on operational system, with Energy Team.
- Record root causes for all technologies are stored in a tracker.

Post-event analysis

Aim: use a data driven approach to evaluate contributing factors and propose high value changes.

Process:

- Identify and prioritise factorings contributing to higher skip rates.
- Collect relevant data and apply data analysis techniques such as correlation and regression analysis.
- Recording skip rate trends, contributing factors and the impact of changes & updates.

Please continue to send queries to:
box.SkipRates@nationalenergyso.com

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30-minute rule & GC0166

Cathy Fraser

NESO
National Energy System Operator

30-minute rule & GC0166

Background:

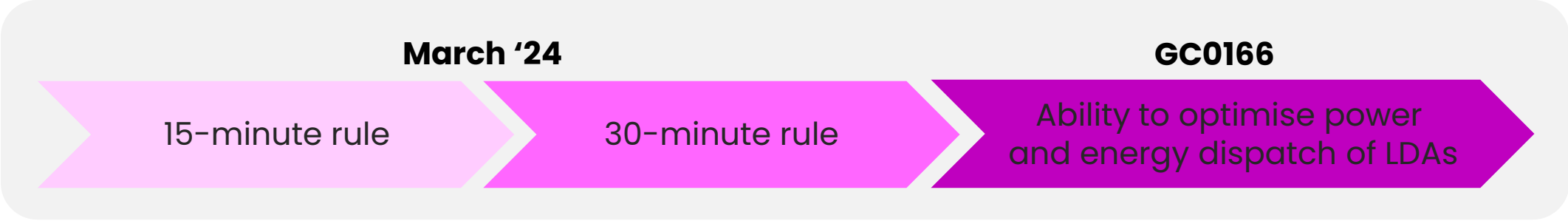
- NESO **cannot be sure of the available energy** from a limited duration asset/ battery and so puts **time limits** on Bid Offer Acceptance (BOA) instructions to minimise the chance of instructions being rejected due to a lack of energy
- As of 25th March 2024, NESO provided guidance for storage providers to submit data that shows their ability to sustain Bid Offer Acceptance (BOA) instruction lengths for **up to 30 minutes (this was previously 15 minutes)**

30-minute rule operation:

- Once a BOA is received, the Maximum Import Level (MIL) and Maximum Export Level (MEL) of the unit is redeclared if required to reflect the updated energy availability.
- Once MEL/MIL is redeclared, NESO systems will continue to optimise battery volume in cost and issue further BOAs, meaning that in total **a provider will be instructed for longer than 30 minutes, just over several instructions.**

What is GC0166?

- The GC0166 is a code change that will enable NESO to **better understand and optimise dispatch** of storage providers allowing for instructions to use the full Power and Energy Volume capability with no time limits on a BOA



Next Steps for GC0166

What is the latest update?

- NESO have now **completed Workgroup Consultation** on GC0166
- Next workgroup meeting **4 March 2025**
- NESO will develop detailed next steps and dates with participants for storage assets to transition away from 30-minute rule once GC1066 is ready for Ofgem decision; this will require **collaborative support**

For any questions specific to GC0166…

Please email

- Box.Battery-Storage-Strategy@nationalenergyso.com or box.SkipRates@nationalenergyso.com

For more detailed information, see our Industry Information site:
GC0166: Introducing new Balancing Mechanism Parameters for Limited Duration Assets | National Energy System Operator

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P462

Alice Taylor

NESO
National Energy System Operator

P462

P462 is a BSC modification that seeks to resolve an identified structural issue with the interaction between the Balancing Mechanism (BM) and support mechanism arrangements

This aims to align bid price merit order with consumer cost of the transaction and promote competition to reduce balancing costs

What is the latest update?

- It is an ongoing BSC modification in the Assessment Stage. As part of the Assessment Stage, an independent Cost Benefit Analysis (CBA) is taking place, which has been approved by the BSC Panel with the contract having been awarded to the preferred supplier this month.
- We are aware of the concerns that have been raised around the possible impact of P462 on flexible assets and these wider impacts have been included within the scope of the CBA.

How to get involved?

- We encourage participation in the BSC Workgroups to ensure your views are heard and to bring forward alternative solutions. You can sign up here.
- We are also happy to have bi-lateral conversations if this is preferable.
- Please feel free to reach out to alice.taylor@nationalenergyso.com

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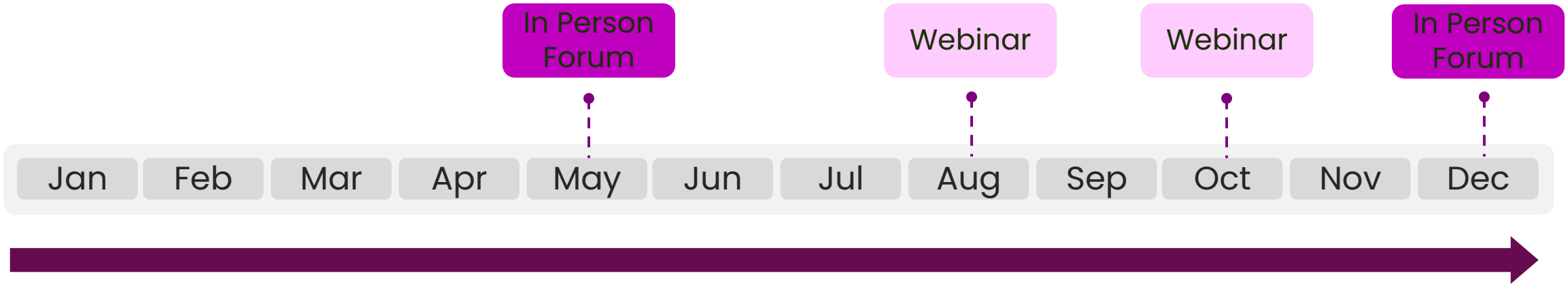
Upcoming engagements

Cathy Fraser

NESO
National Energy System Operator

2025 Engagement



Drop-in sessions will run on all months with no other events

How to register

- **Forum:** Invites to be sent out. If you'd like to be included, please email us at:
  - Box.Battery-Storage-Strategy@nationalenergyso.com or box.SkipRates@nationalenergyso.com
- **Webinars:** Will be advertised on OTF and on our webpages: Battery storage | National Energy System Operator & Skip rates | National Energy System Operator
- **Drop-In Sessions:**
  - Please register here for 12.03.25 Methodology, data and tools session
  - Up coming drop-in sessions will be advertised on OTF with registration links

Answer the poll on Sli.do now

Which topics would you like us to cover during the drop-in sessions?

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We want to hear from you!

Sli.do will remain open until 5.30pm 27th Feb.

Please continue to submit questions and respond to the polls until then.

You can contact us anytime…

…about queries, events, and 1-2-1 engagements at:

- Box.SkipRates@nationalenergyso.com

Stay up to date on our webpage

Battery storage | National Energy System Operator or Skip rates | National Energy System Operator

(Q&A is published with slide packs)

Q&A

Sli.do code #NESO

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slido

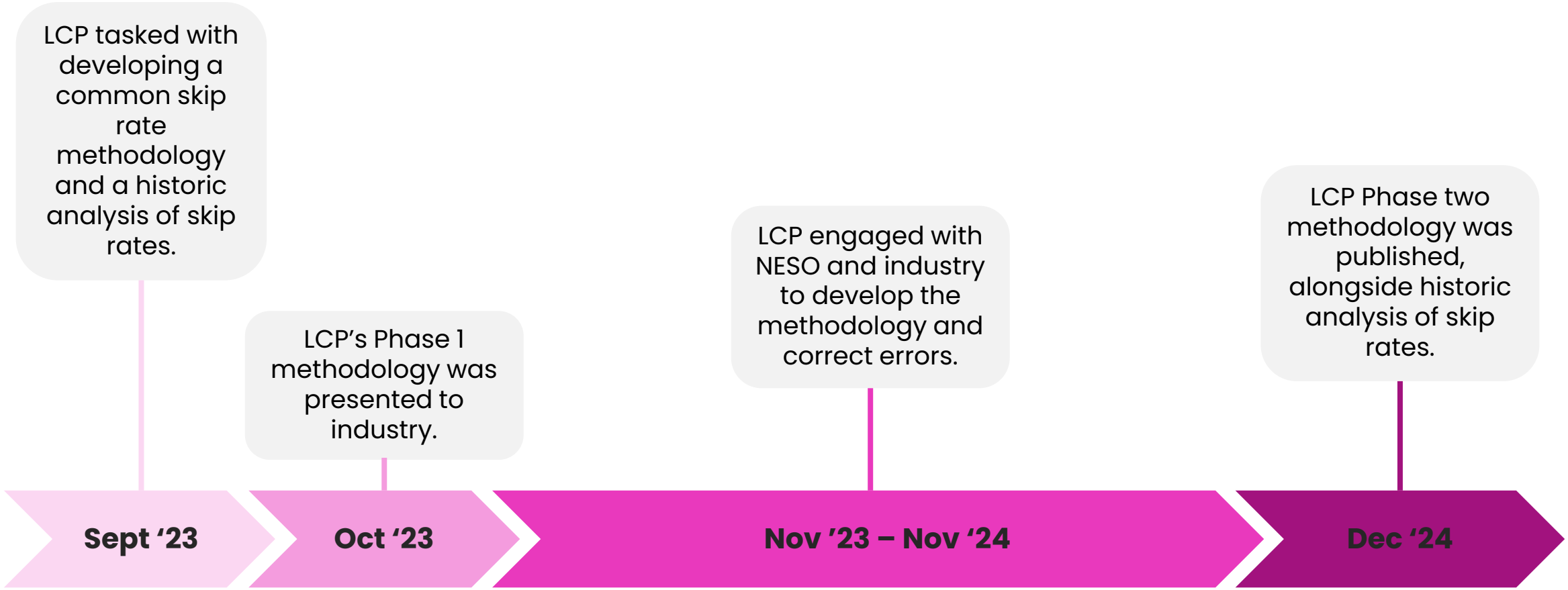
Audience Q&A

ⓘ Start presenting to display the audience questions on this slide.

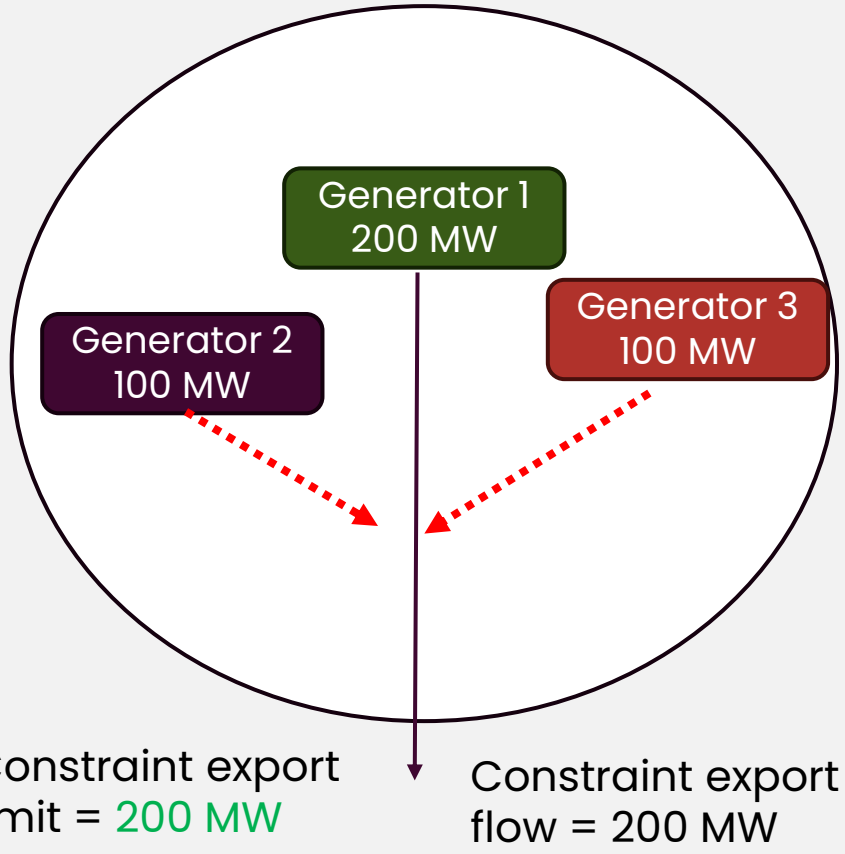
Useful Resources

- LCP Methodology
  - Webinar (7 November)
  - Webinar (19 December)
- Battery Storage Forum(4 December)
  - Slidepack
  - Recording
- Skip Rate Webpage
- Battery Storage Webpage
- GC0166 webpage
- P462 webpage

Introduction to the LCP methodology



NESO implementation: LCP method & constraints



Neglecting constraints is a key limitation of the LCP method.

- Units behind active constraints **cannot be dispatched**.
- These should be excluded as they are not available to the control room.
- NESO's method **includes constraints as an exclusion**.

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Calculating ‘In Merit’ volume

In Merit Volume = **Accepted Volume** + **Skipped Volume**

- The recreated ‘in merit’ stack showing the **lowest cost units** that were available to meet the requirement, where the requirement is based on the volume of units that were actually instructed
- This is the volume that should have been accepted if decisions were **solely based on price**
- The sum of this column is the **total instructed volume in the 5 minute period** (subject to the relevant exclusions)

- The **volume that was accepted in merit**, as a subset of the ‘In Merit Volume’ column – i.e. how much volume was accepted in merit
- The sum of this column will be **less** than the sum of the ‘In Merit Volume’ column, unless there is no skipped volume

Note: this column does not list all instructed units

- This is the **volume that was skipped**, as a subset of the ‘In Merit Volume’ column – i.e. of the volume that we should have instructed, how much was skipped

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Timeline

Objectives

Review Worked Example

Workgroups	
GC0166 Workgroup 1	01/02/2024
GC0166 Workgroup 2	07/03/2024
GC0166 Workgroup 3	08/04/2024
GC0166 Workgroup 4	15/05/2024
GC0166 Workgroup 5	10/06/2024
GC0166 Workgroup 6	21/06/2024
GC0166 Workgroup 7	18/07/2024
GC0166 Workgroup 8	20/08/2024
GC0166 Workgroup 9	22/10/2024
GC0166 Workgroup 10	12/11/2024
GC0166 Workgroup Consultation	18/11/2024 - 06/12/2024
GC0166 Workgroup 11	20/01/2025
GC0166 Workgroup 12	04/02/2025
GC0166 Workgroup 13	04/03/2025
GC0166 Workgroup 14	01/04/2025
GC0166 Workgroup Report to Panel	23/04/2025
Post Workgroups	
GC0166 Code Administrator Consultation	06/05/2025 - 06/06/2025
GC0166 Draft Final Modification Report to Panel	18/06/2025
GC0166 Final Modification to Ofgem	08/07/2025
GC0166 Implementation Date	10 Business Days post Authority Decision

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