EDT EDL Submission Guidance

Guidance to support ongoing resilience of IT Systems

Version 4 – December 2024

NESO
National Energy System Operator

Contents

Introduction

This is an update to the initial guidance which was issues in December 2023 to reflect changes to the 15-minute rule for batteries, which will be extended to 30-minutes from the 11th March 2024.

The focus of this document is on opportunities for limited duration and fast acting assets to optimise redeclaration submissions, with guidance for other asset types provided where appropriate. The objective of this document is to support the reduction in volumes of data submitted via EDT and EDL without adversely impacting the utilisation of assets, whilst also providing guidance regarding the use of MEL/MIL declarations for visibility of stored energy capacity.

This guidance is part of a suite of activities seeking to address the challenges to our legacy systems, which also includes code improvements and hardware upgrades. Our enduring solution will be delivered via the Open Balancing Platform, which is designed to accommodate an increasing number of participants and associated data flows, but until the time at which the EDL/EDT transition is complete we will continue to be reliant on our existing systems.

The guidance in this document falls into the following areas:

1. The use of MEL/MIL declarations for visibility of stored energy capacity (the "30 minute rule")
2. Reduction of duplicate records – where the same information is being sent to NESO on multiple occasions.
3. Reduction of redundant records – where we are receiving records covering periods that have already been submitted but the key fields remain unchanged.
4. Reducing unnecessary granularity – where records are sent at shorter time periods than necessary, and as the data has not changed between periods, could be combined into a single record covering a longer duration.
5. Reducing unnecessary precision – where data is being refined outside of the time horizon of NESO decision making or within an area of price infeasibility (during the provision of dynamic response contracts).
6. Spreading systematic submission from assets in a portfolio across the half-hour rather than for the same minute.

This guidance seeks to provide best practices to reduce the volume of data being sent to NESO via EDL/EDT, without compromising industry code requirements or introduce financial impacts to market participants.

This guidance is provided for information only. It is subsidiary to legal, regulatory, and contractual requirements.

Overarching Principles in Creating Guidance

This guidance aims to uphold efficiency and transparency in balancing activities. Key principles include:

1. Transparent Balancing Mechanism operations.
2. Compliance with code obligations by providers.
3. No adverse impact on providers' revenues through application of this guidance.
4. Providers can fully demonstrate their flexibility to NESO.
5. The application of this guidance will not result in the issuing of Bid/Offer Acceptances (BOAs) that contradict the rue dynamics of the provider's asset.

This ensures clarity and fairness, whilst safeguarding providers' operational and financial interests.

Updated rule for batteries, from 15 Minutes to 30 Minutes Transition Plan

We are implementing a change to the existing 15-minute rule, which is in place for batteries as part of initiatives for enhancing utilisation of energy storage in the Balancing Mechanism. The timing is also planned to be aligned with the implementation of our new Balancing Reserve product. This rule is intended as an interim arrangement, ahead of the outcome from grid code modification *GC0166: Introducing new Balancing Programme Parameters for Limited Duration Assets.*

The rule, as constructed, will largely remain the same apart from a change from 15 minutes to 30 minutes. The process will be as follows:

- Providers are to submit MEL/MIL values which can be sustained for a 30-minute period (with one minute ramp either side).
- Following the issue of a Bid or Offer Instruction – of up to 30+2 minutes including ramps - providers are expected to submit updated MEL/MIL values again which can be sustained for a 30-Minute period. Our Open Balancing Platform will check for resubmission before another bid or offer instruction can be issued. You do not need to resubmit all MEL/MIL values if some remain unchanged, any MEL/MIL redeclaration will be deemed as validating all existing records that have not been updated. Further details on the 30 minute rule are provided in the following section.

We are conscious of the potential impact of this change from 15-minute rule for 30-minutes and have been engaging with providers to ensure the requirements and impacts are understood. Whilst most of the feedback received about this change has been positive and suggests that this change will be relatively easy to implement, we appreciate this may not be the case for all providers. If you have concerns about the adopted approach, please reach out to us directly at

box.balancingprogramme@nationalenergyso.com we are happy to discuss any concerns you may have.

Transition to the new arrangements:

We are asking for providers to start transitioning from 11th March 2024, looking to have completed by 25th March 2024. During this period, we will implement temporary internal procedures to manage receiving both 15-minute and 30-minute submissions.

We require a staggered approach to this transition, so we are asking providers to inform us of their intended date and time of transition, including the applicable Balancing Mechanism Units. We will respond to confirm the proposed time, to ensure the collective impact of the transition is managed appropriately.

We ask that communications are sent in the following format to

Subject Line: Transition to 30 Minute Rule
Email Content: Intended date and time of start and completion of transition to 30-minute rule, including the BM units which will be transitioned over.

box.balancingprogramme@nationaleneryso.com

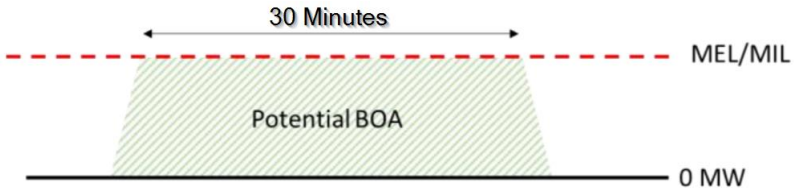
We ask that as part of the transition, providers consider the remaining guidance in this document for EDT/EDL submissions and look to stagger transition focussing on shorter timescales first i.e., up to 90 minutes ahead followed by longer timescales.

The 30 minute MIL/MEL redeclaration rule

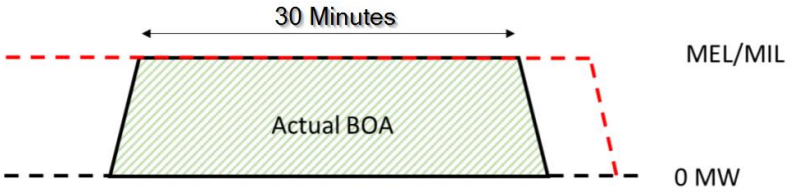
The Balancing Mechanism (BM) system architecture has some limitations in its representation of storage assets. NESO are working towards developing solutions to factor real time stored energy capacity/capability of energy storage assets within the BM. Until this work is delivered, NESO are operating the below principles for energy limited assets within the BM.

The examples below illustrate how battery Balancing Mechanism Units (BMUs) are accessed in the BM. The examples operate on the principle that battery BMUs should be able to operate at their Maximum Export Limit (MEL)/Minimum Import Limit (MIL) for at least 30 minutes.

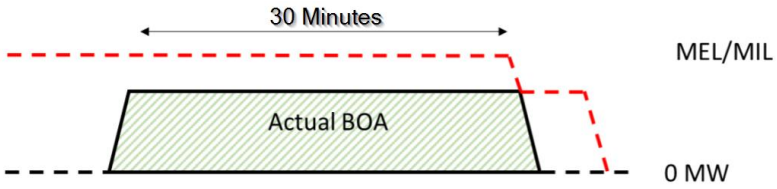
- Battery BMUs should declare their MEL and MIL open-ended such that it reflects the capacity to follow a Bid Offer Acceptance (BOA) which ramps from the current Physical Notification (PN) to the MEL or MIL and remains at the MEL or MIL for a duration of 30 minutes before ramping back to the Physical Notification. Ramping rate to be the Run Up Rate (RUR) or Run-Down Rate (RDR) as applicable.



- If a BOA is issued to MEL/MIL, the State of Energy should be recalculated, and the MEL or MIL should be redeclared as soon as possible starting from the point at which the current MEL/MIL level could not be sustained if the BOA were to be extended. This redeclaration will be a minimum of 32 minutes from the first point of instruction (30 minutes duration and 1-minute ramp either side) but may be longer.



- If a BOA is issued which part-loads a unit below MEL/MIL, then the above principle should also be applied for a subsequent MEL/MIL based upon the State of Charge at the end of the current BOA. The MEL/MIL should remain at the original level for the first 31 minutes of the BOA (reflecting the 1-minute ramp and 30-minute duration), and then drop to the new level no sooner than the end of the BOA.



- On returning to PN, the BMU should resubmit their MEL/MIL as per the first bullet point.

Should any of these principles contradict with the Grid Code at any point, then the Grid Code will take precedence.

Guidance for EDT/EDL Submissions (updated with 30-min rule)

When to use EDT or EDL

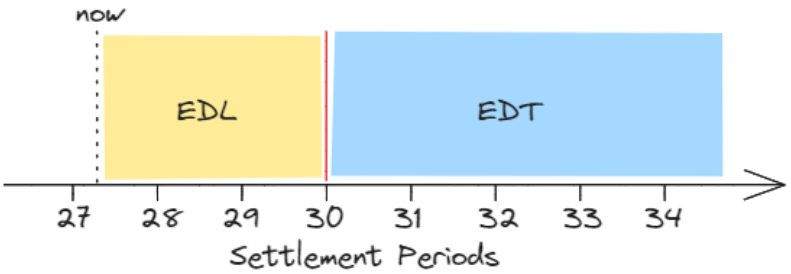
Guidance is applicable to	EDL	EDT
MEL	✓	✓

MIL	✓	✓
Other data items (including PN)	✗	✗

EDL is designed to quickly transfer critical data that is required for real time operations.

Receipt of EDL messages triggers NESO processes to interpret the message and apply changes to operational systems with minimal delay. It is vital that messages are processed sequentially, as there are limitations on the rate at which messages can be processed.

Therefore, EDL should be used within the Balancing Mechanism (BM) window (up to the end of the last settlement period for which the BM gate has closed), otherwise submissions should be via EDT. Figure 1 below provides an example of when to use EDL and EDT.



Removal of duplicate submissions

Guidance is applicable to	EDL	EDT
MEL	✓	✓
MIL	✓	✓
Bid Offer Data	✗	✓
Other data items	✗	✗

For assets other than battery assets:

If the submissions from market participants results in no change in the submission of for example MEL/MIL data, effectively a duplicate of existing data, then remove these instances.

We would only require updates to submissions which are changing, so if MEL changes but MIL does not, only submit MEL data, and if MIL changes but MEL does not, only submit MIL data.

Examples of duplicates is shown in the following example:

Submission Time	From Time (GMT)	From Level (MW)	To Time (GMT)	To Level (MW)
01/01/2023 13:05	01/01/2023 14:00	0	01/01/2023 14:30	30
01/01/2023 13:38	01/01/2023 14:00	0	01/01/2023 14:30	30

In the above table the same information has been sent twice, there is no change between the first and second record other than the submission time, we do not require the second record.

For battery assets (including aggregated assets which contain solely batteries) which are instructed by our Open Balancing Platform the 30-minute rule has been applied. In the instances where BOAs are not instructed then please remove duplicates as per the above guidance. The 30-minute rule comes in two parts:

1. Provide a MEL/MIL value which confirms the level that NESO can dispatch in 30 minutes (strictly 32 minutes, allowing for 1-minute ramps either side of an instruction).
2. After a Bid Offer Instruction has been received the MEL or MIL should be redeclared as soon as possible starting from the point at which the current MEL/MIL level could not be sustained if the BOA were to be extended. Without this, NESO has no visibility of capacity of a battery unit, and therefore NESO may not issue instructions until a post-instruction submission. To be clear, you do not need to resubmit all MEL/MIL values if some remain unchanged, any MEL/MIL redeclaration will be deemed as validating all existing records that have not been updated. See the section above (The 30 minute MIL/MEL redeclaration rule) for further details.

Outside of the up-and-coming 30-minute window following a BOA (for battery assets), the previous guidance for removal of duplicates still applies.

For all assets (including batteries), for Bid and Offer data submission through EDT the same principle applies, that duplicate records with no changes in price submissions for the same effective settlement periods/half hours should not be submitted.

Removal of redundant submissions

For assets other than battery assets:

If the submissions from market participants results in no new information in the submission of MEL/MIL data, effectively redundant information, then remove these instances. This covers instances where although From and To times are different, for all minutes covered in the

submission, MW values are the same in both the new and prior submissions i.e., the MW minute by minute profile remains exactly the same.

We would only require updates to submissions which changes the MW minute by minute profile. In addition, if MEL changes but MIL does not only submit MEL data and if MIL changes but MEL does not only submit MIL data.

Submission Time	From Time (GMT)	From Level (MW)	To Time (GMT)	To Level (MW)
02/01/2023 20:13	02/01/2023 21:04	0	02/01/2023 21:30	0
02/01/2023 20:23	01/01/2023 14:00	0	02/01/2023 21:30	0

The table above shows an example of where the second record submitted provides no new information (i.e., MW profile) and is therefore redundant. As the first record already covers the time range provided by the second record and the minute-by-minute MW values are unchanged the second record is not required.

For battery assets (including aggregated assets which contain solely batteries) which are instructed by our Open Balancing Platform the 30-minute rule has been applied. In the instances where BOAs are not instructed then please remove duplicates as per the above guidance. The 30 -minute rule comes in two parts:

1. Provide a MEL/MIL value which confirms the level that NESO can dispatch in 30 minutes (strictly 32 minutes. Allowing for 1-minute ramps either side of an instruction)
2. After a Bid Offer Instruction has been received the MEL or MIL should be redeclared as soon as possible starting from the point at which the current MEL/MIL level could not be sustained if the BOA were to be extended. Without this, NESO has no visibility of capacity of a battery unit, and therefore NESO may not issue instructions until a post-instruction submission. To be clear, you do not need to resubmit all MEL/MIL values if some remain unchanged, any MEL/MIL redeclaration will be deemed as validating all existing records that have not been updated. See the section above (The 30 minute MIL/MEL redeclaration rule) for further details.

Outside of the up-and-coming 30-minute window following a BOA, the previous guidance for removal of redundant submissions can be applied.

For all assets (including batteries), for Bid and Offer data submission through EDT the principle applies those redundant records with no changes in price submissions.

Reduction of submissions outside of NESO decision making time horizons

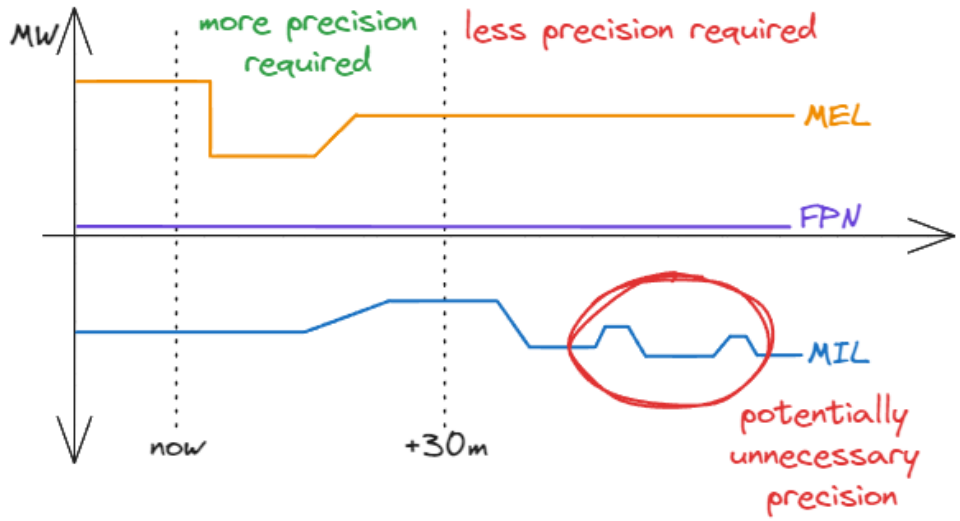
Guidance is applicable to	EDL	EDT
MEL	✓	✓

MIL	✓	✓
Other data items	✗	✗

The guidance in this section is in addition to the previous guidance on use of EDT/EDL and implementation of the 30-minute rule for batteries and removal of duplicates.

For batteries, while it remains important to ensure that MEL and MIL profiles accurately reflect the availability, there is less value in having a high degree of precision far away from real-time. This is particularly so in cases, for example, where the available energy is likely to change between the current time and when the capacity is likely to be dispatched, for example when providing frequency response.

When it comes to dispatch decisions for energy minute by minute balancing, NESO will look to avoid the need to reverse a prior instruction. Increasing levels of uncertainty and volatility in system operation, mean that dispatch decisions are focused close to real time. For batteries, in combination with the updated 30-minute guidance, precise profiles of available capacity between 30-minutes ahead and the end of the BM window, which are likely to change, do not provide useful information for energy balancing decisions in dispatch timescales. Simple and indicative profiles are sufficient.



For all Balancing Mechanism Units, when it comes to scheduling decisions, it is also important to have accurate data for NESO to assess the relative costs of available scheduling actions.

Therefore, an understanding of whether assets are available is key and any changes in full availability, zero availability or partial availability going forward. For the purposes of accurate decision making in the control room, we would ask that MEL/MIL submissions which cover the next twenty-four hours are accurate where:

- NDZ/MNZT are greater than 60-minutes.
- Physical Notifications (PN) are zero.

For periods which are greater than 60-minues ahead, where physical notifications, are zero and non-zero across a twenty-four-hour window, focus data submissions covering times where physical notifications are zero and minute by minute MEL/MIL MW profiles have changed as per previous guidance in this document.

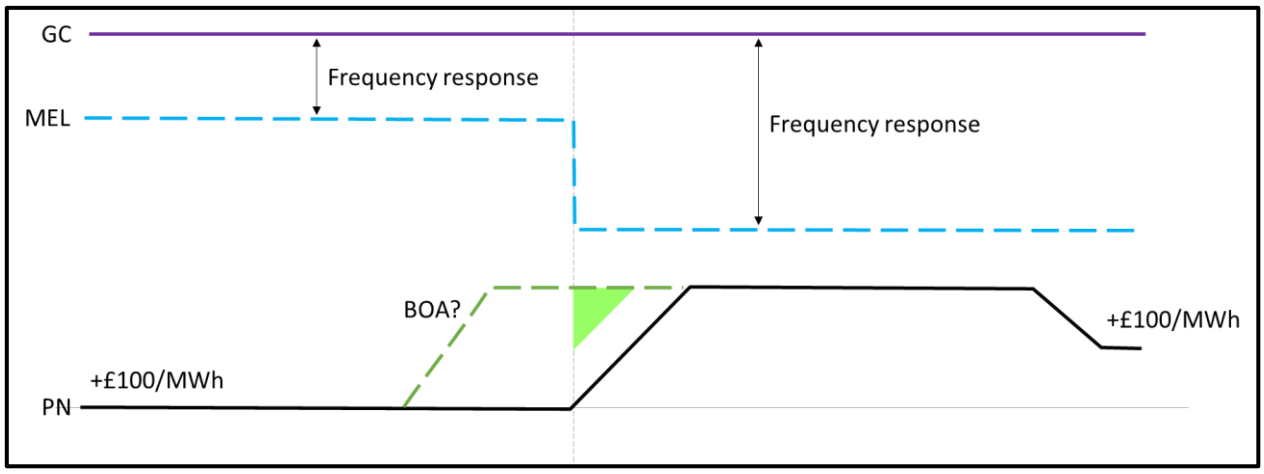
Exemptions to this specific guidance are:

- Day-ahead submissions. We recognise the requirement to provide accurate data ahead of the 11am (Local Time) day ahead stage, so would ask that market providers continue to ensure that 11am MEL/MIL data accurately reflects current availability for the period until two days into the future for the effective period until 5am.
- Any obligations, code or REMIT obligations which apply.

Reductions in the number of submissions withing the area od the price infeasibility

For short-duration storage assets, who are providing Dynamic Moderation (DM), Dynamic Regulation (DR), Dynamic Containment (DC), the existing advice for making bid-offer capacity available in the BM while providing frequency response services, leads to scenarios where units use very high prices to restrict access to the power range required for the delivery of frequency response, and also use MEL/MIL to indicate energy available. This creates potentially for scenarios where small volumes with high prices might be unintentionally accepted and from a ENCC process perspective decision making is more complex.

We propose that MEL/MIL should be used to indicate the dispatchable power capacity up to the level that could be sustained for at least 30 minutes. This removes the need to submit very high prices to restrict access to capacity, which also addresses the unintended consequence of those very high prices encroaching on power capacity that the provider would want to make available in the BM.



MEL would therefore represent the lower of:

- Maximum power output without losing frequency response capacity.
- Maximum power output that could be instructed for 30 minutes, without eroding energy required for frequency response provision.

For MIL the converse applies.

The existing approach using prices to indicate unavailability means that often, MEL/MIL are updated while the values remain in the very high-priced range. NESO will not dispatch into the high-priced range, these updates have no impact on NESO's dispatch decisions.

Bid-Offer prices are always relative to the PN, it also means that as the PN changes level, the high-priced range can inadvertently encroach on the power capacity that could be dispatched without impacting the unit's ability to meet its frequency response obligations. See yellow shaded area of diagram below.

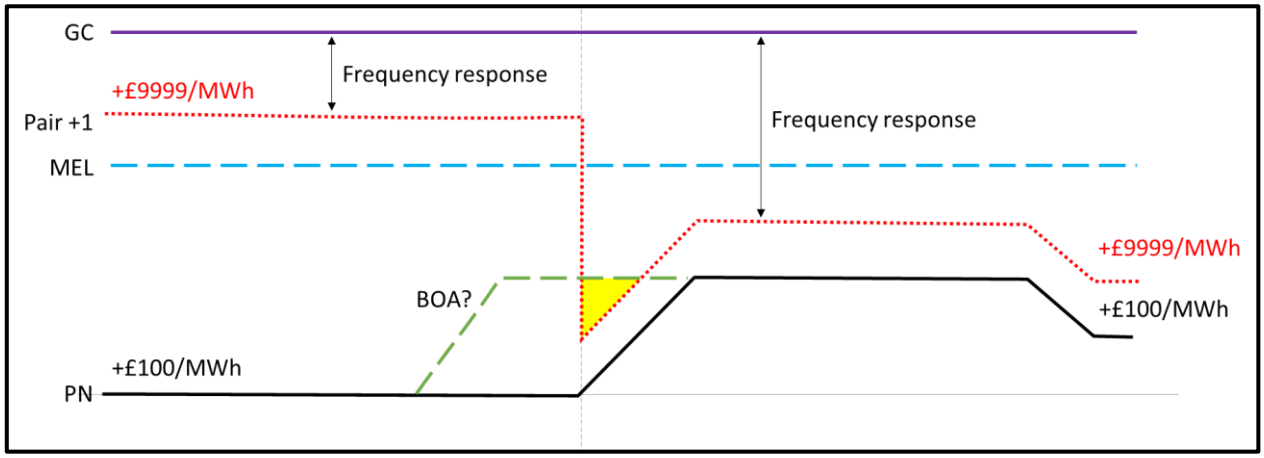


Diagram notes: GC – Generation Capacity, MEL – Maximum Export Limit, PN – Physical Notification and BOA – Bid-Offer Acceptance. Only export region shown for clarity.

Efficient data file creation/submission

Guidance is applicable to	EDL	EDT
MEL	✓	✓
MIL	✓	✓
Bid Offer Data	✗	✓
Other data items	✗	✗

For submissions which have the same MW value or same ramp rate across subsequent records, the guidance is to efficiently combine records together into one. The general guidance for submission via EDL or EDT still applies here, so where submissions are for both within gate closure and outside gate closure, create one record for EDL and one record for EDT.

Submission Time	From Time (GMT)	From Level (MW)	To Time (GMT)	To Level (MW)
01/01/2023 13:05	01/01/2023 15:00	0	01/01/2023 15:30	0
01/01/2023 13:05	01/01/2023 15:30	0	01/01/2023 16:00	0
01/01/2023 13:05	01/01/2023 16:00	0	01/01/2023 16:30	0

In efficient data submission with the same MW values

Submission Time	From Time (GMT)	From Level (MW)	To Time (GMT)	To Level (MW)
01/01/2023 13:05	01/01/2023 15:00	0	01/01/2023 16:30	0

Efficient data submission with the same MW values

Submission Time	From Time (GMT)	From Level (MW)	To Time (GMT)	To Level (MW)
01/01/2023 13:05	01/01/2023 15:00	0	01/01/2023 15:30	100
01/01/2023 13:05	01/01/2023 15:30	100	01/01/2023 16:00	200
01/01/2023 13:05	01/01/2023 16:00	200	01/01/2023 16:30	300

Inefficient data submission with the same ramp rate

Submission Time	From Time (GMT)	From Level (MW)	To Time (GMT)	To Level (MW)
01/01/2023 13:05	01/01/2023 15:00	0	01/01/2023 15:30	300

Efficient data submission with the same ramp rate

The same principles apply for submission of Bid / Offer data. For data which is the same across multiple half hours the data can be combined into one set of records. This is shown in the simplified example below:

Submission Time	Bid Offer Pair Number	From Time (GMT)	From Level (MW)	To Time (GMT)	To Level (MW)	Bid Price (£/MWh)	Offer Price (£/MWh)
01/01/2023 13:05	1	01/01/2023 15:00	100	01/01/2023 15:30	100	30	40
01/01/2023 13:05	2	01/01/2023 15:00	200	01/01/2023 15:30	200	25	45
01/01/2023 13:05	3	01/01/2023 15:00	50	01/01/2023 15:30	50	50	50
01/01/2023 13:05	-1	01/01/2023 15:00	40	01/01/2023 15:30	40	25	30
01/01/2023 13:05	-2	01/01/2023 15:00	60	01/01/2023 15:30	60	20	35
01/01/2023 13:05	-3	01/01/2023 15:00	50	01/01/2023 15:30	50	10	40
01/01/2023 13:05	1	01/01/2023 15:30	100	01/01/2023 16:00	100	30	40
01/01/2023 13:05	2	01/01/2023 15:30	200	01/01/2023 16:00	200	25	45
01/01/2023 13:05	3	01/01/2023 15:30	50	01/01/2023 16:00	50	50	50
01/01/2023 13:05	-1	01/01/2023 15:30	40	01/01/2023 16:00	40	25	30

01/01/2023 13:05	-2	01/01/2023 15:30	60	01/01/2023 16:00	60	20	35
01/01/2023 13:05	-3	01/01/2023 15:30	50	01/01/2023 16:00	50	10	40
01/01/2023 13:05	1	01/01/2023 16:00	100	01/01/2023 16:30	100	30	40
01/01/2023 13:05	2	01/01/2023 16:00	200	01/01/2023 16:30	200	25	45
01/01/2023 13:05	3	01/01/2023 16:00	50	01/01/2023 16:30	50	50	50
01/01/2023 13:05	-1	01/01/2023 16:00	40	01/01/2023 16:30	40	25	30
01/01/2023 13:05	-2	01/01/2023 16:00	60	01/01/2023 16:30	60	20	35
01/01/2023 13:05	-3	01/01/2023 16:00	50	01/01/2023 16:30	50	10	40

Inefficient data submission with the same bid offer data

Submission Time	Bid Offer Pair Number	From Time (GMT)	From Level (MW)	To Time (GMT)	To Level (MW)	Bid Price (£/MWh)	Offer Price (£/MWh)
01/01/2023 13:05	1	01/01/2023 15:00	100	01/01/2023 16:30	100	30	40
01/01/2023 13:05	2	01/01/2023 15:00	200	01/01/2023 16:30	200	25	45
01/01/2023 13:05	3	01/01/2023 15:00	50	01/01/2023 16:30	50	50	50
01/01/2023 13:05	-1	01/01/2023 15:00	40	01/01/2023 16:30	40	25	30
01/01/2023 13:05	-2	01/01/2023 15:00	60	01/01/2023 16:30	60	20	35

01/01/2023 13:05	-3	01/01/2023 15:00	50	01/01/2023 16:30	50	1	40
01/01/2023 13:05							

Efficient Data submission with the same bid offer data

Spreading systematic data submission of MEL/MIL

Guidance is applicable to	EDL	EDT
MEL	✓	✓
MIL	✓	✓
Bid Offer Data	✗	✓
Other data items	✗	✗

We would ask that providers with portfolio of Balancing Mechanism Units look to spread any automatic submission of data encoded within systems where for instance data is routinely sent at specific times across the day. Exceptions to this guidance are:

- If the automation is as a result of a change to the physical or dynamic parameters, then submission (while maintaining alignment to other guidance areas above) can continue as normal.
- The way data is constructed across files result in other submission data which is provided to be inaccurate.

Glossary of Terms

Term	Description
EDT	Electronic Data Transfer, a communication route for submission of data pre-gate closure.
EDL	Electronic Dispatch and Logging, a communication route for submission of data and for receipt of instructions between market providers and NESO.
MEL	Maximum Export Limit, the maximum positive availability (export) of an asset in the Balancing Mechanism.
MIL	Maximum Import Limit, the maximum negative availability (import) of an asset in the Balancing Mechanism.
PN	Physical Notification, the indicated output of a Balancing Mechanism Unit before any NESO instructions.
NDZ	Notice to deviate from zero. The time for a Balancing Mechanism Unit to synchronise from zero with the National Grid system and start to generate/demand.
MMZT	Minimum Non-Zero Time, the duration which a Balancing Mechanism Unit is required to be scheduled and instructed if Physical Notification is zero.
BOA	Bid Offer Acceptance, an instruction to vary output of a Balancing mechanism Unit received from NESO and accepted by that Balancing Mechanism Unit.

Related documents Related documents

- EDL Message Interface Specification (Issue 6)
- Data Validation, Consistency and Defaulting Rules
- Grid Code Glossary and Definitions
- Balancing Reserve Guidelines
- Dynamic Response Services Provider Guidance

Contact

- For any queries in relation to this guidance please direct these to mailto:box.balancingprogramme@nationalenergyso.com

Appendix 1: Unlocking Stacking of BOAs with Dynamic Response Services

This document explains how NESO and energy limited providers can unlock stacking of the Dynamic Frequency Response (DFR) services (Dynamic Containment (DC), Dynamic Moderation (DM) or Dynamic Regulation (DR)) with bid-offer acceptances (BOAs) in the Balancing Mechanism (BM).

1. Service stacking principles

- Stacking means the simultaneous delivery of two or more services
- Stacking of multiple DFR with the BM is permitted and is explained in detail in this document

To participate in service stacking a provider will need to:

- Ensure EDL and EDT connections (or wider access API) are working;
- Ensure all necessary PN data and commercial data (bid-offer pairs) are submitted in line with BM gate closure timings;
- All Dynamic Data (MEL, MIL, SEL etc.) is submitted showing correct unit availabilities and available volumes. This data can also be submitted in real-time/within the BM gate closure;
- Ensure telephone contact methods are working and available;
- Ensure possibility to receive BOAs manually via telephone if required (this is the backup method if EDL is unavailable);
- Ensure that any data or BOA issues are reported via telephone to the NESO Control Engineer as soon as possible. **Please note that all BOA rejections, including automatic rejections by a control system, must be immediately followed up by a telephone call from the operator to the NESO Control Engineer explaining the reason for rejection (this is a 24/7 requirement under the Grid Code).**

Questions

If you have any questions, please contact the team at:
box.futureofbalancingservices@nationalenergyso.com

2. Existing principles for energy limited providers in the BM

The Balancing Mechanism (BM) system architecture has some limitations in its representation of storage assets. NESO are working towards developing system solutions to factor real time stored

energy capacity/capability of energy storage assets within the BM. Until this work is delivered, NESO are operating the principles as outlined previously in this document.

Should there be any conflict with the Grid Code, then the Grid Code will take precedence.

3. DFR and BM interaction

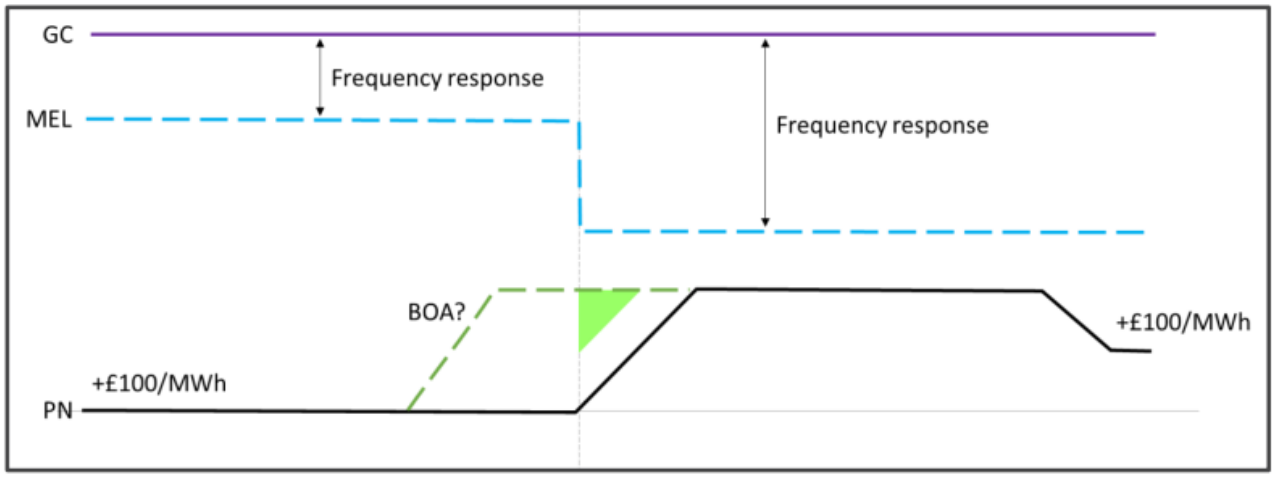
For NESO, DFR services are crucial to operational security so providers of DFR wishing to participate in the BM should ensure that any BM activity does not unintentionally erode or compromise the ability to deliver their DFR obligations.

General principles

1. **Maximum Export Limit (MEL) and Minimum Import Limit (MIL) should be used to reflect the availability for BOAs while preserving response delivery as detailed previously in this document.**
2. **Bid-Offer Data (BOD)** - If MEL/MIL submissions are not sufficient to inform BM availability while preserving response provision, then pricing data can be used to 'price out' tranches of capability to indicate that the unit committed that quantity to the DFR service. We believe that this will only apply to Bid or Offer volume in the range from FPN to 0 as MEL/MIL cannot be negative submissions, and that providers should only use this approach when MEL/MILs are insufficient.
3. **Stable Export Limit (SEL) and Stable Import Limit (SIL)** - these should reflect the physical capability of the unit.
4. **Operational Baseline (OB)** - this should match the Physical Notification.
5. **Notice to Deliver Offers (NTO) and Notice to Deliver Bids (NTB)** - as per the grid code this must be less than or equal to 2 minutes, we no longer advise a minimum as actual BOA delivery can be added in to the performance baseline and we do not wish to artificially slow units' delivery, but this can remain at the discretion of the providing units.
6. **Run-Up Rate (RUR) and Run-Down Rate (RDR)** - we have updated the service terms to make it clear that the baseline ramp-rate rules will not apply to baselines adjusted by BOAs. So RUR and RDR can remain as technical parameters.

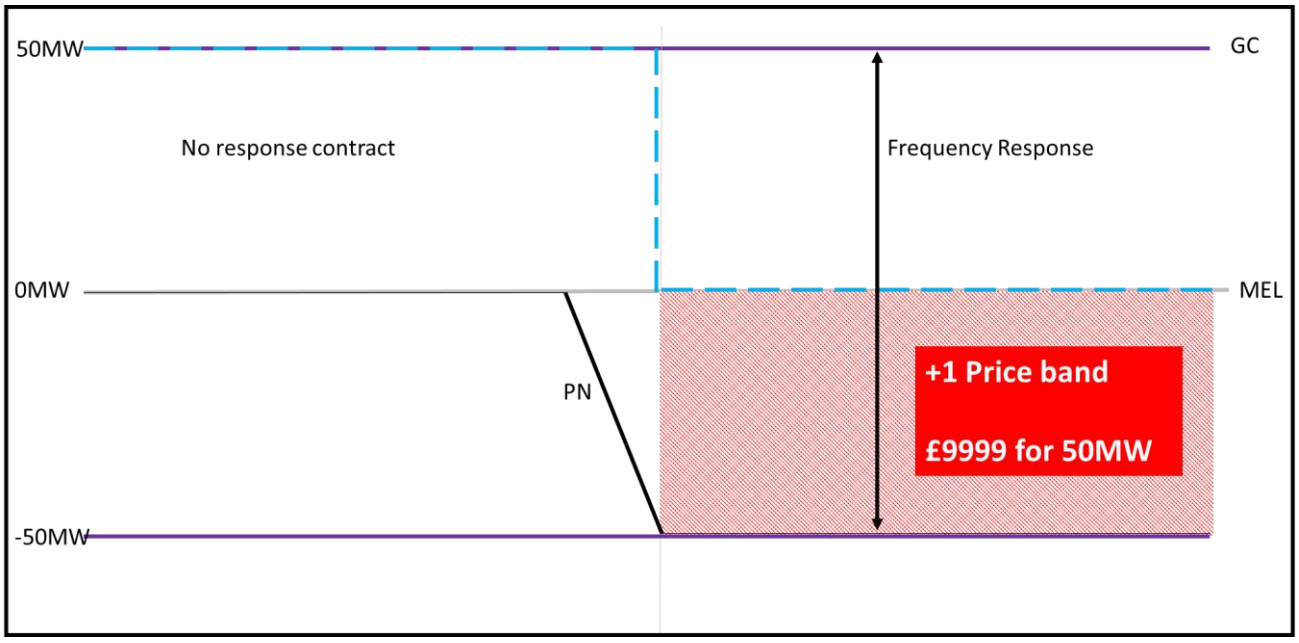
Worked examples to support

MEL/MIL should be used to indicate capacity unavailable due to providing Dynamic Response:, shown in the below diagram

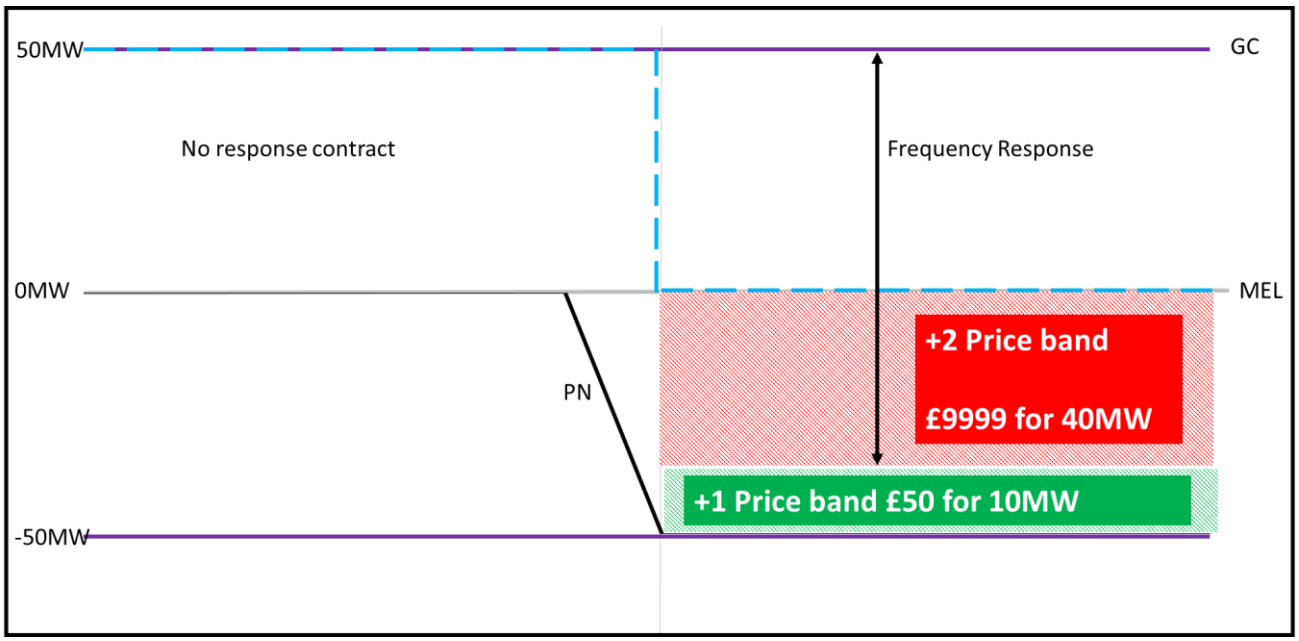


As mentioned, there is a specific set of circumstances where this may be insufficient information to avoid a BOA eroding response, and so the following example shows the additional use of Bid Offer Data to solve this issue:

In this case, the unit has a negative Physical Notification of –50MW, and has contracted for 100MW of Dynamic Containment Low. Full delivery of the response service would take the asset from its PN to its full Generation Capacity (GC) of 50MW. As any offer would erode the response capacity, to avoid being sent offers the unit submits a Maximum Export Limit of 0MW, however as MEL cannot be negative this does not prevent an offer being sent from -50MW up to 0MW. In this case, the unit also submits a +1 price band, with 50MW of volume at £9999/MWh. Although a BOA is still possible, the high price means that the BOA is extremely unlikely to be in merit and therefore is very unlikely to be sent. The MEL is still reduced to zero during the period to minimise the volume of expensive price band required.



This is expected to be an unusual case, and so we expect MEL/MIL to be the main method for avoiding response erosion. It may also be the case that there is some flexibility for offers, but that price bands are still needed – in the case below only 90MW of DCL has been contracted and so the +1 price band is a reasonable price, and the +2 band is used to avoid response erosion.



Note, there is no need to submit a price in excess of £9999/MWh for offers (or £-9999/MWh for Bids), as higher prices only increase the risk associated with any rounding of BOAs (to MW and minute) on settlement period boundaries clipping some of a high price band.

The key principles:

- MEL and MIL should always reflect the availability for BOAs as per the general guidance in this document.
- Unavailability of Dynamic Containment should be communicated directly to NESO control room via the methods laid out in the Service Terms.
- Any bid/offer acceptance does not remove the contractual obligation to deliver Dynamic Containment
- Performance monitoring will be based on the BM-adjusted baseline - i.e. the PN + any BOA

4. Performance data submissions

Performance data is submitted through an API service as CSV files. The operational baseline needs to be adjusted to reflect the BOA. Providers should add/subtract the BOA quantity from their original operational baseline.

In the future, we intend to add an additional column to the performance reporting file specifically to record delivered BOA quantities. Any changes such as this will follow the normal consultation approach before being implemented.

The table below illustrates how an operational baseline of 0MW may be updated to reflect a BOA acceptance. The unadjusted baseline would normally be flat at 0MW.

unit	t	f_hz	baseline_mw	p_mw	soe_import_mwh	soe_export_mwh	availability
ABCDE	2020-08-04T12:29:00.850Z	50.0	0	0	25.0000	25.0000	1
ABCDE	2020-08-04T12:29:00.900Z	50.0	0	0	25.0000	25.0000	1
ABCDE	2020-08-04T12:29:00.950Z	50.0	0	0	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.000Z	50.0	0	0	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.050Z	50.0	-0.0208	-0.0208	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.100Z	50.0	-0.0416	-0.0416	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.150Z	50.0	-0.0624	-0.0624	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.200Z	50.0	-0.0832	-0.0832	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.250Z	50.0	-0.1040	-0.1040	25.0000	25.0000	1

Point of instruction

BM BOA instructions are timestamped with a granularity of minutes. However, we acknowledge that units with 0 or 1-minute NDZ can receive a BOA after its point of instruction. E.g. a BOA with an instruction to start at 12:01:00 may be received anywhere up to 12:01:59. For this reason, and to encourage the use of 0 and 1-minute NDZs which provides value to NESO, we propose that providers use their discretion when incorporating the BOA into their baseline. The guiding principle should be that the reported baseline is an accurate representation of what the asset was doing without any response provision.

In the case where a BOA stamped to start at 14:02:00 was received at 14:02:37 (for example), we would accept an operational baseline that included this BOA change at any point between 14:02:00 and 14:03:00 - not constrained only to the minute boundary. The BOA will be submitted by NESO in-line with the unit's run-up and run-down rate parameters, the adjusted baseline should reflect this. Imbalance arising from not following a BOA will be treated in the normal way - providers may wish to consider this when following a BOA instruction and representing this in their operational baseline. As it stands with regards to performance monitoring, we will not penalise any small differences between the operational baseline and the BOA-adjusted FPN.

5. Operational metering & settlement

Operational metering

No change required. ENCC will be able to follow the delivery of the BOA and any DFR response using existing tools.

Settlement

The response energy computation for DFR is unaffected by this change and will continue to be based on accepted MW and system frequency deviation from the target frequency.

Consequently, any BOA will not impact the determination of response energy volume data which is provided to Elexon under the Applicable Balancing Services Volume Data (ABSVD) submission, and an imbalance will arise if the service provider does not supply the tendered level of response.

6. Additional Clarifications of the service terms

Providers should always seek to ensure they are following the latest version of the Service Terms.

Further clarifications of the Service Terms can be found below.

Submission of baseline, MEL, MIL, SEL & SIL

We would like to clarify that a baseline does not have to be at the same level throughout a settlement period.

Baseline ramp-rates

Clause 6.8 states that baselines (for energy limited providers) must comply with a maximum ramp rate. Clause 6.9.i describes, with reference to the guidance document, how the maximum ramp rate is to be calculated. Clause 6.9.iii confirms that and baseline adjusted by a BOA is considered compliant with the ramp rate limitation.

Therefore, there is no need to change the (BM parameters) 'RUR' or 'RDR' for DFR participating units to comply with the baseline ramp rate limitation.

Appendix 2: Further guidance on representing BOAs in performance baselines

This document explains how providers should incorporate BM BOAs into their performance data baseline submissions to NESO.

The issue

Some providers of the Dynamic Response Services are incorporating BM BOA adjustments to their baseline in a way that results in performance monitoring scores that do not reflect the actual Dynamic Response performance of the unit.

Section 4 in appendix 1 anticipated this issue and suggested that providers use their 'discretion' when incorporating BOAs into their baseline.

Provider interpretation of this optional 'discretion' differs, and this document aims to clarify.

The key principles:

- Baselines (both Operational and Performance) should accurately represent the natural state of the unit without delivery of Dynamic Response (e.g. assuming frequency is at 50Hz +/- 0.015Hz)
- Performance monitoring will be based on the BM-adjusted baseline - e.g. the PN + any BOA
- NESO reserves the right to investigate any differences between Operational and Performance baselines and any suspected unwarranted manipulation of Performance data

Advice for incorporating BOAs

Providers are permitted to pre-process or clean their Performance Data before submission to NESO.

This means that the Performance baseline can and should reflect the actual delivery and deviation from any BOA, not just the BOA instruction.

For example, a unit may experience a lag between the time-stamp of a BOA instruction and the unit's actual change in active power. In this case the actual delivery of the BOA (i.e. including the lag) should be represented in the Performance Data baseline submission to NESO.

Providers should not use pre-processing to artificially increase their apparent performance in delivery of Dynamic Response or mask any underperformance.

Performance data submissions

Performance data is submitted through an API service as CSV files. The operational baseline needs to be adjusted to reflect the BOA. Providers should add/subtract the BOA quantity from their original operational baseline.

In the future, we intend to add an additional column to the performance reporting file specifically to record delivered BOA quantities. Any changes such as this will follow the normal consultation approach before being implemented.

The table below illustrates how an operational baseline of 0MW may be updated to reflect a BOA acceptance. The unadjusted baseline would normally be flat at 0MW.

unit	t	f_hz	baseline_mw	p_mw	soe_import_mwh	soe_export_mwh	availability
ABCDE	2020-08-04T12:29:00.850Z	50.0	0	0	25.0000	25.0000	1
ABCDE	2020-08-04T12:29:00.900Z	50.0	0	0	25.0000	25.0000	1
ABCDE	2020-08-04T12:29:00.950Z	50.0	0	0	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.000Z	50.0	0	0	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.050Z	50.0	-0.0208	-0.0208	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.100Z	50.0	-0.0416	-0.0416	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.150Z	50.0	-0.0624	-0.0624	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.200Z	50.0	-0.0832	-0.0832	25.0000	25.0000	1
ABCDE	2020-08-04T12:30:00.250Z	50.0	-0.1040	-0.1040	25.0000	25.0000	1

Point of instruction

BM BOA instructions are timestamped with a granularity of minutes. However, we acknowledge that units with 0 or 1-minute NDZ can receive a BOA after its point of instruction. E.g. a BOA with an instruction to start at 12:01:00 may be received anywhere up to 12:01:59. For this reason, and to encourage the use of 0 and 1-minute NDZs which provides value to NESO, we propose that providers use their discretion when incorporating the BOA into their baseline. The guiding principle should be that the reported baseline is an accurate representation of what the asset was doing without any response provision.

In the case where a BOA stamped to start at 14:02:00 was received at 14:02:37 (for example), we would accept an operational baseline that included this BOA change at any point between 14:02:00 and 14:03:00 - not constrained only to the minute boundary. The BOA will be submitted by NESO in-line with the unit's run-up and run-down rate parameters, the adjusted baseline should reflect this. Imbalance arising from not following a BOA will be treated in the normal way - providers may wish to consider this when following a BOA instruction and representing this in their operational baseline. As it stands with regards to performance monitoring, we will not penalise any small differences between the operational baseline and the BOA-adjusted FPN.

Appendix 3: Questions and Answers

Question	Answer
Will this guidance be subject to change?	We have considered some overarching principles in pulling together this guidance as described above. If through monitoring or feedback we create unintended consequences which betray our overarching principles, there are updates to 30-minute rule guidance or we require additional measures, we will review and update our guidance accordingly. We will also review in light of the process for grid code change being followed for GC0166 covering new dynamic parameters for limited duration assets.
Will this guidance be enforced?	Whilst it is not our intention to enforce this guidance through code changes, failure to follow the 30-minute MEL/MIL submission may result in reduced utilisation of assets in the BM. For specific requirements regarding data submissions for Balancing Reserve, please consult the service terms which can be found on our website.
Can I expect all instructions to be 30 mins in length (32 including ramps)	The change to the 30-minute rule means that the control room will be able to dispatch instructions of up to 30 minutes for battery assets (32 minutes including ramps), however this does not mean all instructions will be of this length. The length of dispatch instructions will be determined by system requirements, pricing and market conditions, but the instruction will not exceed the energy capacity indicated through MIL/MEL submissions.
Will downstream systems (e.g., Elexon) be able to handle the volume of data with OBP	Elexon have also implemented performance improvements to their systems to deal with volumes of data.

Will the OBP resolve these data handling issues and if not, what is the plan?	OBP has been designed in a way to handle large volumes of data. We will be operating both existing and OBP over the next few years until full reliance on OBP for all required functionality, planned for 2027. In the meantime, we will continue to monitor and improve the existing systems.