# Explanatory Note related to the public consultation on the revision of the requirements concerning the Energy Management Strategy (EMS) for the Delivery Points with Limited Energy Reservoirs (DP with LER)

**October 2024**

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# 1 Practical information

This explanatory note provides more background and forms an integral part of the public consultation held in the context of the balancing incentive on the energy management requirements for Delivery Points with Limited Energy Reservoir (DP with LER) participating to multiple services at the same time.

**This main scope of this document is twofold:**

- **Highlight the changes proposed to the EMS requirements for FCR and aFRR and highlight the rationale behind these modifications.**
- **Present the analysis related to the need for a monitoring mechanism for the energy management strategies, the different possibilities identified for performing a monitoring and the option recommended by Elia.**

It must be noted that:

- The proposal for the updated EMS requirements for FCR and aFRR is available for consultation on the Elia website.
- The proposal related to the future monitoring approach proposed is not taken up in the proposed updated EMS requirements. The intent is however to embed the proposed monitoring approach in future revisions of the T&C BSP FCR, the T&C BSP aFRR and the EMS requirements.
- Furthermore, a public consultation for the proposal for amendment to the T&C BSP FCR will start on 18 October[1]. This updated version of the EMS requirements however considers the T&C BSP FCR currently into force. Some modifications might be needed in the EMS requirements in order to align with the future version of the T&C BSP FCR.

The proposed changes to the EMS requirements as well as the monitoring needs and possibilities have been discussed with the stakeholders during two public workshops. The slides presented during these workshops are available on the Elia website:

- Workshop 1 that took place on 21 June 2024 (link).
- Workshop 2 that took place on 20 September 2024 (link).

[1] Subject to confirmation.

The purpose of this consultation is to obtain comments from the market parties. At the end of the public consultation, Elia will provide a report available to all market parties. All responses to this public consultation will be made public on Elia's website, except the comments for which market parties ask to treat their contribution as confidential. Elia invites all stakeholders to submit any comments and suggestions they may have on the documents. The consultation period runs from 11 October 2024 to 11 November 2024. All responses must be submitted via the online form on the Elia website.

Questions regarding these documents can be sent to the following email address: kris.poncelet@elia.be with the Key Account Manager (KAM) in copy.

# 2 Introduction

For aFRR and FCR, BSPs with Delivery Points with Limited Energy Reservoir (DP with LER) must currently provide their Energy Management Strategy (EMS) to Elia. The EMS aims to prove the ability of the Delivery Point (on its own or together with other Delivery Points in the pool of the BSP) to comply with the requirements of the aFRR/FCR Service.

Elia currently publishes documents describing a non-exhaustive list of Energy Management Strategies (EMS) that Elia could approve or not approve, and the corresponding information required from the BSP. Separate documents currently describe the EMS requirements for aFRR and FCR, and both documents do not (explicitly) consider the simultaneous participation of a Delivery Point to multiple (balancing) services.

In addition, no specific and systematic control mechanism is currently in place for aFRR for monitoring i) whether the DP with LER are operated in line with the validated EMS, and ii) whether the validated EMS remains suitable for ensuring the ability to deliver the contracted service when needed in a changing market context.

In terms of relevant evolutions, it is expected that the number of DPs with LER participating to the balancing markets will increase, and that these DPs could stack revenues from different market segments.

Therefore, the sufficiency of the current EMS requirements is assessed in the context of a DP with LER participating to multiple market segments (FCR, aFRR, mFRR and/or DA/ID markets), leading to the proposed modifications to the EMS requirements. In addition, the evolving landscape and the experiences gained over time led to additional opportunities for revising some elements of the current EMS requirements. Finally, the need and possibilities for establishing specific control mechanisms has been investigated and a monitoring approach is proposed in this document.

# 3 Current situation

This section describes the current EMS requirements and the reasons why it is important to modify them. The Current requirements for FCR and aFRR are available on the Elia website (link).

For aFRR and FCR, DP with LER must currently provide their Energy Management Strategy to Elia, which aims to prove the ability of the Delivery Point (on its own or together with other Delivery Points in the pool of the BSP) to comply with the requirements of the aFRR or FCR Service based on the requirements available on Elia website.

To demonstrate the appropriateness of their EMS, BSPs need to provide a proof that can be either based on a simulation of the DP with LER behavior over a specific period (one year for FCR and 18 months currently for aFRR) or a deterministic proof (currently only applicable for aFRR).

For FCR, strict energy bands have been defined within which the DP with LER needs to operate during normal system state. Indeed, at any time, the DP with LER must be able to ensure at least 25 minutes of full activation of FCR in both directions as of the declaration of the alert state (also called T min LER).

# 4 Overview and rationale of the proposed modifications for the EMS requirements

In this section, the proposed modifications for the EMS requirements are explained. The proposed changes do not require BSPs to make changes to existing and validated EMS, however the changes do apply for any new or updated EMS.

## 4.1 Summary of the proposed modifications

| # | Topic | Proposed modification | |
|---|---|---|---|
| 1a | EMS requirements in case of a combination of contracted services | aFRR-FCR | Clarification concerning the EMS requirements for a DP with LER (or group of DP with LER) intending to provide FCR and contracted aFRR at the same time. |
| 1b | | Extension to mFRR | Extension of the EMS requirements to the mFRR market segment when there is clear evidence of an increase of DPs with LER in the mFRR market segment. |
| 2 | EMS requirements in case of a combo's of contracted services (e.g., contracted aFRR) and non-contracted services (e.g., ID trades) | | The intended use of the DP with LER for non-contracted services (together with contracted services) needs to be described in the EMS. |
| 3 | Evaluation of conditions related to an EMS based on Intraday transactions | | BSP can use 15' intraday products as part of their EMS if they can demonstrate that the required volumes are effectively present in the order books. |
| 4 | Approach for updating the dataset to be used for the statistical proof of the EMS | | Harmonize the period and granularity of the data sets for FCR and aFRR.<br>Make available every 6 months a new dataset for new EMS. |

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| 5 | EMS templates | Streamline the process of submitting and validating an EMS by providing a template for the EMS description and the statistical analysis. |

## 4.2 Proposed modification 1: EMS for combo's

### 4.2.1 Case 1a: aFRR - FCR

Currently, a BSP with a DP with LER can provide an EMS for participating to FCR and an EMS for participating to FCR. The EMS for FCR demonstrates the maximum FCR volume that can be delivered while respecting the requirements of the FCR service, and the EMS for aFRR similarly demonstrates the maximum aFRR volume that can be delivered. However, **it is not straightforward to simply derive from the individual EMS for FCR and aFRR what the maximal combined FCR and aFRR volumes are that could be continuously delivered**. This because:

- FCR, symmetric aFRR, and aFRR in one direction are different products with different energy requirements.
- The volumes that can be offered depend on the energy content available.

As an example, consider a 20 MW/40 MWh battery with an EMS for aFRR and an EMS for FCR that demonstrate the capability of continuously delivering the following volumes:

- aFRR: 10 MW symmetrically.
- FCR: 18 MW (symmetrically).

Assume now that the BSP is awarded for 9 MW of FCR, the question is how much aFRR could be offered in the subsequent aFRR capacity auction. One could reason that half of the maximum FCR volume has been awarded (9 MW out of 18 MW), and thus that half of maximum aFRR volume could be continuously provided, i.e., 5 MW symmetrical aFRR. However, considering that the energy requirements for FCR are less stringent as for aFRR, there would likely be a higher volume of aFRR that could be delivered. Indeed, if we assume that a 10 MW/14 MWh battery would be sufficient to deliver 9 MW symmetrical FCR[2], one could consider that the remaining part of the battery constitutes a 10 MW/26 MWh battery. Given the relatively higher energy reservoir of this remaining part of the battery (2.6 hours of

[2] Assuming around 1.5h per MW of FCR contracted.

storage instead of 2 hours), the volume of aFRR that can be delivered is likely to be higher than 5 MW.

Elia thus concludes that determining the maximum aFRR volume that could be continuously delivered given a certain FCR obligation requires a more detailed approach / a proper simulation. **It does however seem possible to demonstrate which combinations of FCR and aFRR volumes could be continuously delivered (e.g., a statistical demonstration showing that certain volumes of FCR and aFRR can be continuously delivered while respecting the FCR energy bands),** as presented in the examples of the EMS requirements.

To provide a clear framework for combo's of contracted services, **Elia therefore recommends**:

- **Describing the EMS requirements for FCR and aFRR in a single document** that describes i) the FCR requirements, ii) the aFRR requirements, iii) the requirements in case the BSP would like to combine contracted products.
- **Harmonizing certain requirements for the FCR and aFRR EMS** (e.g., dataset for the statistical analysis – see proposed modification 4)
- **Requesting only a single EMS to be described by the BSP that includes the different contracted services (including combo's) for which the DP with LER is to be used.**
    - The EMS document should clearly specify the maximal volumes for aFRR and for FCR that the BSP would like to be able to offer at the same time (if applicable).
    - The BSP needs to submit a proof (simulation or if applicable a deterministic proof) to Elia for each combination.
    - The specific rules for aFRR and FCR must be respected (e.g., energy bands for FCR).

Note that in case the BSP does not intend to use the same DP with LER for different contracted services at the same time, the current EMS for FCR and aFRR would remain sufficient and can be combined in a single document.

An estimation of the maximal volumes for combo's with aFRR and FCR is presented further below in the text.

### 4.2.2 Precision on the case of aFRR in one direction and aFRR symmetric

As aFRR Capacity can be offered in the upward direction, the downward direction or both, the provision of aFRR in both directions could already be considered as a combination of

two contracted products with regards to the EMS[3]. Therefore, the BSP that intends to offer aFRR Capacity in one direction and/or both directions (e.g., depending on the market circumstances) may provide a description of the EMS and a proof of the ability to deliver the maximal volumes the BSP intends to offer at a given time for each of the cases (aFRR Up, aFRR Down, aFRR Up and Down).

### 4.2.3 Case 1b: Extension to mFRR

Currently, no EMS requirement apply for mFRR, even though situations where DP with LERs would not be able to deliver the service in case of longer activations due to depletion of the energy reservoir could arise for mFRR in a similar manner as for aFRR.

Nevertheless, at this moment, there are highly limited DP with LERs participating in mFRR and it is uncertain whether a strong increase in DP with LERs in the mFRR market segment is to be expected.

The EMS requirements applicable for aFRR can be largely copied to the mFRR market segment. Nevertheless, introducing EMS requirements for mFRR would require certain amendments to the mFRR design (and hence the T&C BSP mFRR) and require corresponding developments to be made on Elia and BSP side. Specifically, in contrast to aFRR, BSPs might not be able to reflect state-of-charge supporting actions (such as the use of intraday trades) in their baseline for mFRR.

For **DPsu**, in the framework of an mFRR Energy Bid update, **the Baseline of a DPsu can be updated** so that it corresponds to the "new Daily Schedule" submitted by the BSP to ELIA in the context of the BSP Contract mFRR. Nevertheless, this possibility for baseline change was not foreseen to be implemented in the frame of an EMS, in which frequent updates are happening.

For **DPpg**, the baseline is determined by either the **High X of Y Baseline methodology** or the **Last quarter-hour Baseline methodology.** For both cases, there is no mechanism foreseen to adapt the baseline following state-of-charge supporting actions that are taken. As a result, with the current rules, the BSPs using a High X of Y or Last Qh baseline methodology would be exposed to failing the mFRR activation control in case of state-of-charge supporting actions.

As such, Elia considers that if the EMS requirements would be extended to mFRR at this moment, a new term might need to be introduced to modify the baseline or to be included in the mFRR activation control to properly reflect such SoC-supporting action. This would

[3] Regarding other aspects not related to EMS, such as baseline, activation control, etc., aFRR up and aFRR down are similar.

require implementation efforts on both Elia and BSP side. Introducing EMS requirements for mFRR should therefore hence not considered to be free of charge.

Considering all the above, **Elia considers the extension of EMS requirements to the mFRR market segment not to be a priority at this moment. Elia does however recommend monitoring the evolution of DPs with LER in the mFRR market segment and to start the extension of EMS requirements to mFRR** (and possible combo's of mFRR and other services) **when there is clear evidence of an (expected) increase of DPs with LER in the mFRR market segment**.

### 4.2.4 Format of the EMS documents

As a BSP could for a single DP with LER have multiple EMS depending on the volume(s) it intends to offer, Elia proposes that the EMS document to be submitted by the BSP consists of a general section with all information related to the concerned DP with LER, and a specific section concerning each EMS, corresponding volumes, and proof for the volumes he intends to offer. Furthermore, the BSP can submit an EMS for a particular service and add additional EMS for other services with the associated proofs (e.g., related to combo's of contracted services) later.

## 4.3 Proposed modification 2: combo's with non-contracted services

### 4.3.1 General principle

The principal objective of the EMS is to ensure that a DP with LER can provide the contracted services without being limited by its energy reservoir during service delivery. The EMS requirements thus apply to contracted services, and more specifically FCR and aFRR.

No energy management requirements apply for Delivery Points with Limited Energy Reservoir participating solely to non-contracted services, i.e., market segments or services for which there is no obligation to offer the service for a sustained period, such as the day-ahead and intraday energy markets.

However, the use of a DP with LER for non-contracted services impacts the energy in the reservoir and hence could impact the ability to continuously deliver a certain volume for a contracted service at the same time.

Therefore, Elia considers that the intended use of the DP with LER for non-contracted services needs to be described in the EMS and has clarified the required information in the EMS requirements. More specifically, the BSP would need to describe:

- The power that would be used for non-contracted services (together with the contracted service).

- The conditions under which this power could or would not be used (e.g., depending on the energy content of the reservoir and the contracted volumes).
- The indication of the lead times for stopping the provision of the non-contracted services (if applicable).

Furthermore, in operations, the BSP must operate the DP in line with the validated EMS.

The below examples illustrate the information that would need to be provided by the BSP in case of a combo with a non-contracted service.

### 4.3.2 Example 1: Provision of aFRR symmetrical (contracted) and ID trading

The BSP must explain the volume that could (maximally) be offered on the ID market (on top of the aFRR volumes) and the corresponding lead times (e.g., if the BSP intends to participate to close transactions within the last two quarters before the XBID GTC, the corresponding lead times would be up to 90 minutes before the start of the ID transactions).

The BSP must additionally explain the rules/conditions under which these volumes could be offered (e.g., depending on the SoC and the contracted aFRR volumes and/or earlier trades conducted).

### 4.3.3 Example 2: Provision of aFRR symmetrical (contracted) and use of the power band when SoC is within a range

For this example, a battery of 24 MW / 72 MWh is considered. This DP with LER is assumed to have an EMS based on ID transactions, and for which a proof has been provided that 15 MW upward and downward aFRR could be delivered while meeting the service requirements. The BSP intends to make ID trades to support the state-of-charge as soon as the energy level is outside 40/60% range. The ID trades are limited to a volume of +/- 9MW (in order to still be able to deliver 15 MW aFRR in both directions). In this EMS, the power band of +/- 9 MW is not foreseen to be used when the energy level is within the 40/60% range. Therefore, this +/- 9 MW band could be valorized for non-contracted services if it does not jeopardize the ability to deliver the contracted service.

Assuming in this example that the BSP intends to use this power band to respond to system imbalances, the information the BSP would need to provide as part of its EMS are:

- The power that would be used for non-contracted services: +/- 9 MW.
- The conditions under which this power could or would not be used: when SoC is between 40 and 60%.
- The indication of the lead times for stopping the provision of the non-contracted services: it can be stopped immediately if needed.

**Reactive balancing and imbalance charging**

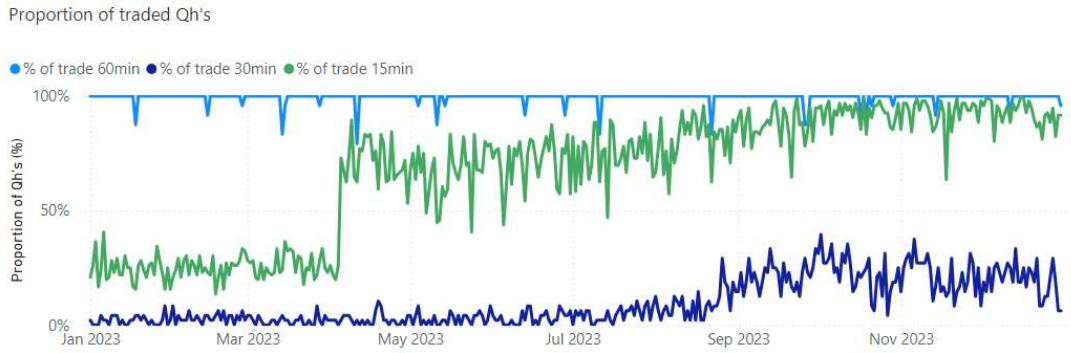
Elia permits the simultaneous provision of aFRR and reactive balancing to maximize the flexibility offered by LER, particularly for large units and in cases of partial selection in aFRR capacity auctions. However, imbalance charging remains strictly prohibited. The objective of reactive balancing is to contribute to the grid's safe operations by responding to the system imbalance and corresponding price signal.

During monitoring, Elia will be especially vigilant in ensuring market behavior complies with the prohibition on imbalance charging.

## 4.4 Proposed modification 3: intraday transactions

One of the current conditions for using intraday transactions as part of the Energy Management Strategy is to only use 1-hour products. This condition was imposed in 2022 based on statistics of 2021 showing limited liquidity of sub-hourly ID products.

Over the last year (and in particular during spring 2023), there has been a strong increase of the liquidity of 15' products. Although there has been an increase in the liquidity of 30' products as well, the overall liquidity for this product remains low. The graph below presents the percentage of quarter-hours within a day for which at least one trade happened for 60', 30', and 15' products.




As can be observed, the number of traded bids is now relatively equivalent for 15' and 60' products. However, Elia observes that the volumes traded are still lower for the 15' product.

Using sub-hourly products (e.g., 15' products) as part of the Energy Management Strategy could offer more flexibility to BSPs in managing the energy reservoir and could significantly reduce the lead time between the moment the transaction is done, and the moment the energy is delivered. During this lead time, the energy reservoir (on its own) must be able to

ensure service delivery (assuming the energy management strategy is purely based on intraday trades).

With ID transaction for hourly products, a BSP would need to consider a lead time (time between performing the transaction and the energy is delivered) of up to 2 hours. In contrast, with ID transactions for quarter-hourly products, a BSP would be able to reduce this lead time to around 1h and 15 minutes. Indeed, in case a BSP identifies a need to perform state-of-charge supporting Intraday trades shortly after the intraday gate closure time, for instance at 13h05, the earliest period for which the BSP would be able to buy energy on the intraday market would be the period 15-16h in case hourly products are traded. In contrast, when using quarter-hourly products (and assuming sufficient liquidity), the BSP would be able to buy energy for the period 14h15-14h30.

As the liquidity for 15' products has clearly increased, Elia proposes that BSP are allowed to use 15' products as part of their EMS under the condition that they can demonstrate that the required volumes are effectively present in the order books. If Elia observes that the volumes for 15' products continue to increase, Elia could further relax this condition.

Even though the liquidity of 30' products is currently not as developed as for 15' products, Elia proposes to allow BSPs to use 30' products under the same conditions. This would give the possibility to use 30' products as soon as the sufficient liquidity can be demonstrated.

It must be noted that the condition to perform ID trades one-hour in advance is kept. This because i) Elia observes that the liquidity is mainly in the cross-border intraday market, and ii) to limit the risk of trades without impact on changes of physical injections/offtakes.

## 4.5 Proposed modification 4: Approach for updating the dataset

As discussed in Section 3, BSPs can demonstrate the appropriateness of their EMS based on a simulation of the DP with LER behavior over a specific period. Currently, the datasets to be used by BSPs to demonstrate the sufficiency of the proposed EMS include:

- aFRR:
    - Local incremental/decremental merit orders as well as the global control target for aFRR made available by Elia. This data is to be used by BSPs to simulate aFRR activations (depending on the pricing of aFRR Energy Bids).
    - The dataset currently made available by Elia covers the period October 2020 to May 2022

- FCR:
    - Frequency data with 10-second granularity is available on the OpenData platform of Elia portal. This data is to be used by BSPs to simulate aFRR activations.
    - No specific period for the statistical analysis is specified but Elia requests at least one year of data.

Elia recognizes the need for an approach to ensure and maintain sufficiently representative and up-to-date datasets for the EMS, considering recent and future market evolutions. This includes changes in the technology mix, corresponding shifts in the merit order, evolutions in the FRR activation strategy, and the connection to the aFRR Platform, among others.

Additionally, in the context of a combined aFRR/FCR approach (where BSPs could demonstrate their ability to continuously deliver a certain volume of FCR and contracted aFRR), it is necessary to harmonize the time period and granularity of the datasets used for statistical analyses for both aFRR and FCR.

Furthermore, following the connection to the aFRR Platform and the application of elastic aFRR demand, relying solely on the local merit order and the global control target for simulating aFRR activations might be insufficient. This because the application of elastic demand prevents the selection and activation of upward aFRR Energy Bids with a bid price above the aFRR CBMP Up or downward aFRR Energy Bids with a bid price below the aFRR CBMP Down.

Elia proposes to make a new dataset, which spans one year, available on the Elia website every 6 months. BSPs that want to provide a new EMS need to use the last dataset that has been made available. However, BSPs already having a validated EMS based on a statistical analysis for one or more DPs with LER for a particular service or combo's do not need (but are allowed) to provide a new demonstration of their capability with the updated dataset.

The dataset that will be made available by Elia and must be used by the BSP will contain the data required for aFRR as well as the data required for FCR. For aFRR, following the connection to PICASSO, data related to the aFRR CBMP Up and Down will be added to the dataset. As such, BSPs will be given the possibility to consider the impact of elastic demand in their simulations. However, Elia does not impose BSPs to use this information considering that the application of the elastic demand could only lead to a reduction of activated volumes.

## 4.6 Proposed modification 5: EMS template

Currently, the EMS requirements provide guidelines on the information the BSP needs to include in the EMS description. In addition, when a BSP intends to demonstrate its capability to deliver a certain volume of FCR/aFRR via a statistical analysis, he must provide certain data and corresponding information:

- For aFRR, a template is provided for the data related to the statistical analysis that needs to be provided by the BSP.
- For aFRR and FCR, BSPs are requested to provide certain graphs related to statistical analysis.

The experience with the EMS validation process has highlighted the need to further develop the templates related to both the information and data that BSPs must provide. This would streamline the evaluation process for the EMS proposed by the BSP, benefiting both Elia and the BSPs.

Therefore, Elia proposes to:

- Develop a template for the descriptive part of the EMS.
- Further develop the excel template for the statistical analysis, which includes the information required for the various services.
- Remove the requirement for BSPs to provide graphs related to specific moments/days.

The template is part of the consultation and is available on the consultation webpage.

# 5 Needs and possibilities for the monitoring of the EMS

Energy Management Strategy requirements have been introduced as a mitigation against the risk that the contracted FCR/aFRR might not be available in case of longer FCR/aFRR activations due to depletion of the energy reservoir or due to a fully filled energy reservoir. In this regard, it must be noted that the risk mainly applies to contracted reserves, as non-contracted Energy Bids can be submitted and adapted until relatively close to real time. While long activations do not happen very frequently, it is particularly important for Elia to be able to count on the contracted reserves in these stressed moments. Moreover, the frequency of having long-duration activations could change in the future, for instance related to the connection to the European balancing platforms.

The risk of contracted reserves being unavailable due to energy reservoir constraints is primarily addressed by requesting BSPs to put in place an energy management strategy and requesting BSPs to demonstrate the effectiveness of their EMS in ensuring correct service delivery. However, a monitoring of the application of the energy management strategies would further mitigate the risk of contracted reserves being unavailable by i) ensuring that the DP with LER is effectively operated in line with the validated EMS (in line with the contractual requirements)[4], and ii) the validated EMS remains sufficient to ensure correct service delivery (e.g., related to changing circumstances).

In this section, Elia outlines the key points regarding the monitoring of the EMS. Various options for monitoring are discussed and a recommendation is made on the preferred monitoring approach. Additional information is provided in the material presented during the dedicated workshops.[5]

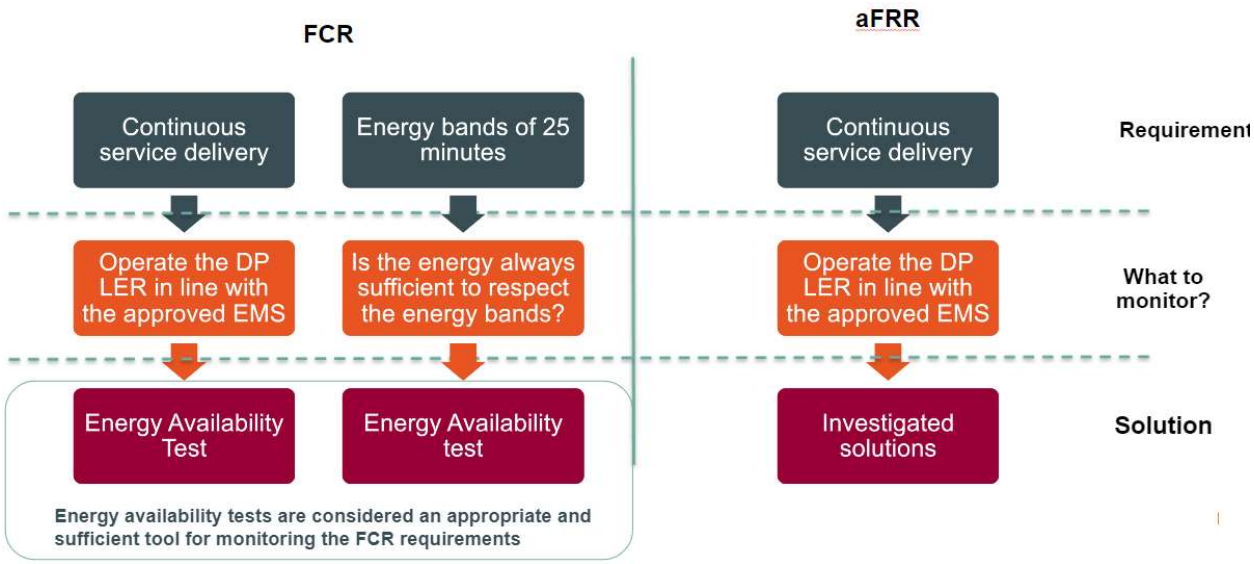
## 5.1 Current monitoring

The schematic below presents the current logic concerning the monitoring for FCR and aFRR.

[4] Indeed, there might be incentives for the BSP to deviate from the validated EMS considering that:

- State-of-charge supporting actions might be expensive (in certain moments)
- State-of-charge supporting actions typically have a lead time, resulting in some uncertainty related to the need (and related consequences) of taking the state-of-charge supporting action.

[5] The first workshop that took place on 21 June 2024 (link) and the second workshop that took place on 20 September 2024 (link).




Concretely, the monitoring for FCR is implicitly managed through Energy Availability Tests. For FCR, energy availability tests are considered an appropriate and sufficient tool for monitoring the FCR requirements. This because:

- The energy availability test allows to test the capability of the BSP to deliver the awarded power for a period of 25 minutes (corresponding to the requirement following the declaration of an alert state). As such, the energy availability test implicitly allows testing whether the BSP has taken the required actions to meet this requirement.
- The duration of the energy availability tests, and hence the system impact and costs related to the energy availability tests remains relatively limited.

For aFRR, no energy availability tests currently exist. Instead, the monitoring is performed on an ad-hoc basis. As the number of DPs with LER providing aFRR increases, Elia identified the need to improve and standardize the monitoring of EMS for aFRR and any combinations involving aFRR.

## 5.2 Considered monitoring approaches for aFRR

Three solutions have been considered for the monitoring of aFRR and combo's with aFRR: the introduction of energy availability tests for aFRR, continuous monitoring, and a process for a targeted monitoring. This section presents the reasoning for the three solutions and the justification on Elia's recommendation to foresee a structural targeted monitoring of the EMS.

### 5.2.1 Introduction of energy availability tests for aFRR

The **introduction of energy availability tests and energy bands for aFRR has been assessed, but Elia believes it is not a suitable mechanism for aFRR**, and this for several reasons:

- Energy availability tests are likely not effective for ensuring the DP with LER is effectively operated in line with the validated EMS. Indeed, energy availability tests could be effective in ensuring that a BSP can execute the validated EMS. However, an energy availability test might be insufficient for ensuring that a BSP will execute the EMS during normal operation (i.e., when no test is performed, and it is not known whether a long aFRR activation will effectively take place).
- There is no requirement for energy bands for aFRR. On the one hand, the duration would need to be sufficiently long to have a meaningful test. On the other hand, if tests would happen after a long activation, BSPs might need to reserve more energy in the reservoir in order to be able to pass the test (thereby artificially worsening the worst-case scenario). This could lead to a reduction of the volumes that could be offered and/or higher aFRR Capacity prices/costs.
- Energy availability tests could be highly expensive as the volumes of aFRR and the required duration of such tests would be significantly larger compared to FCR.
- Energy availability tests would reduce the available aFRR Energy Bids substantially, and this for a relatively long period, impacting system operation as well as price formation.

### 5.2.2 Continuous monitoring

Another solution considered is to monitor the EMS continuously and close to real-time. Two different options have been considered:

a. Monitor the application of the internal logic of the EMS.
b. Define and monitor one or more ”energy criteria”. An example of an energy criterion is that the available energy of the DP with LER always needs to be sufficient to deliver the contracted service for the next 60 minutes (together with SoC supporting actions).

The requirements, benefits and drawbacks of these monitoring approaches are presented in the table below.

| | **Continuously monitor that the DP with LER is operated in line with the validated EMS based on the internal logic of the individual EMS** | **Perform a continuous monitoring based on a simplified energy criterion** |
|---|---|---|
| **Requirements** | • The logic behind every individual EMS would need to be replicated by Elia.<br>• The BSP would need to provide all the inputs used in its EMS to Elia.<br>• Elia would need to verify that the outputs of the BSP's EMS (dispatch of the DP with LER and state-of-charge supporting actions taken) correspond to the simulated outcomes. | • Requires the definition of specific criterion that is difficult to justify.<br>• Elia would require close-to-real time information related to the SoC and related to state-of-charge supporting actions taken by the BSP. |
| **Benefits** | • It would allow detecting swiftly whether a BSP deviates from the validated EMS. | • It enables verifying close-to-real time whether the state-of-charge supporting actions are taken (to meet the imposed criterion).<br>• It enables verifying whether the EMS of the BSP as executed remains sufficient in changing market conditions.<br>• It limits the complexity compared to recreating the logic of the EMS. |
| **Drawbacks** | • Potentially complex considering it requires additional developments and data flows on both Elia and BSP sides. The increasing number of DP with LERs, multiple validated EMS for individual DP with LERs, and the possibility of BSPs regularly updating their EMS further contribute to the complexity.<br>• Possible feasibility issues: Replication of some EMS, such as EMS relying on machine | • Potentially difficult to directly monitor that the DP with LER is operated in line with the validated EMS.<br>• Selection of an adequate criterion might be complicated (balance between representativity and strictness, as well as finding a proper justification for a number). |

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| | learning for decision-making on state-of-charge supporting actions, may not be feasible.<br>• Risk of disputes: There is a risk of discussions between BSPs and Elia, particularly in identifying the causes of mismatches between observed and simulated outcomes.<br>• Additional monitoring would be required to ensure that the EMS remains adequate for ensuring correct service delivery, especially as market circumstances change. | |

After careful consideration, Elia considers that neither option for continuous monitoring is suitable for monitoring the energy management strategies as it seems at the current stage that the benefits would not completely justify the additional complexity and the costs.

### 5.2.3 The proposed monitoring: targeted monitoring

The proposed monitoring approach involves improving the current ad-hoc monitoring by integrating it into a formalized process. The concept of targeted monitoring is to establish a procedure similar to the EMS validation process but focused on verifying the correct execution and sufficiency of the validated EMS using real data rather than simulations.

The idea of the approach is that the BSP fills in a template with raw data related to the actual operation of the DP with LER and the SoC-supporting actions that have been taken (the template will largely be aligned with the template for the EMS validation), and that Elia performs a semi-automated monitoring process based on the data provided by the BSP, targeting primarily periods with longer aFRR activations in the relevant direction(s).

- The benefits of the targeted monitoring approach are that:
    - It enables verifying both the proper execution and the sufficiency (e.g., in changing market conditions) of the validated EMS.
    - It does not require introducing additional criteria that are difficult to justify and might be overly constraining.
    - It minimizes the additional complexity on Elia and BSP side (no additional information would need to be sent in real-time).
- The drawbacks are:

- It introduces a delay in the monitoring as it does not enable a close-to-real time monitoring of the proper execution and/or sufficiency of the validated EMS.

#### *5.2.3.1 Detailed process of the proposed targeted monitoring*

The monitoring would be performed on an annual basis. The BSP would therefore need to submit to Elia the required data for the monitoring at the latest of either:

- 15 months after the validation of the first EMS for the concerned DP with LER.
- 15 months after the entry into force of the updated EMS requirements and the T&C BSP aFRR describing the monitoring process (see implementation plan).
- 12 months after the data for the previous year has been sent for the concerned DP with LER.

The data to be submitted by the BSP would cover the last year of available data. Following the reception of the data, Elia performs the monitoring. In case the monitoring would highlight potential issues related to the EMS, Elia would be able to, within two months following the reception of the data, request a sound justification from the BSP. Potential issues could, among others, be that:

- The DP with LER does not seem to be operated in line with the validated EMS.
- The awarded service cannot be delivered one or multiple times due to constraints related to the energy in the reservoir.

In case Elia would not receive a sound justification within one month following its request and the BSP would not have submitted a new EMS that addresses Elia's concerns, Elia would be allowed to reject the EMS of the BSP for the concerned DP with LER. In such a case, Elia would provide a justification to the BSP and to the CREG.

With respect to the overall process, Elia targets investigating whether a meaningful indicator could be identified based on a more restricted dataset. If that would be possible, Elia could request the BSP to submit the required data for the monitoring only in case the indicator would reveal potential concerns.

#### *5.2.3.2 Impact assessment for the proposed targeted monitoring*

It should be noted that the targeted monitoring described above is Elia's proposal for a future monitoring process. The proposal would however require amendments to the T&C BSP FCR/aFRR in order to introduce and/or clarify the fundamental requirements related to the proposed monitoring approach. This includes introducing the requirement for BSPs to submit the data required for performing the monitoring of the EMS, the right of Elia to request a justification related to the provided information and to clarify the right and process for Elia

to ultimately reject the EMS for the concerned DP(s). Therefore, contrary to the modifications on the EMS requirements presented in Section 4, this monitoring approach will not be applicable before amending the T&C BSP FCR/aFRR accordingly.

## 5.3 Application of the targeted monitoring for FCR

Even though the targeted monitoring has been developed for aFRR, Elia proposes to also apply it for FCR . This extension is aimed to facilitate the monitoring in case of combo's. It should be noted that energy availability tests will continue to exist for FCR.

# 6 List of abbreviations

| | |
|---|---|
| aFRR | Automatic Frequency Restoration Reserves |
| CREG | Commission for Electricity and Gas Regulation |
| DP with LER | Delivery point with limited Energy Resources |
| EMS | Energy Management Strategy |
| FCR | Frequency Containment Reserves |
| ID | Intraday |
| LER | Limited Energy Resources |
| mFRR | Manual Frequency Restoration Reserves |
| QH | Quarter-hour |
| SoC | State of Charge |