



Incentive EMS – 2nd workshop

20 September 2024

Agenda

1. Recap of workshop 1
2. EMS requirements: proposed modifications
3. Monitoring of EMS requirements
4. Next steps

Context of the incentive (recall from WG BAL 18/12/2023)

EMS requirements today

- For aFRR and FCR, **Delivery Points with Limited Energy Reservoir (DP 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/FCR Service.
- **Elia 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.
- The **current EMS requirements for aFRR and FCR however do not (explicitly) consider the simultaneous participation of a Delivery Point to multiple (balancing) services.**
- No specific and systematic control mechanism is in place for monitoring the correct execution of the Energy Management Strategy.

Relevant evolutions

- It is expected that **the amount of Delivery Points with Limited Energy Reservoir participating to the balancing markets will increase, and that these DPs could stack revenues from different market segments.**
- **Discussions are ongoing at European level on EMS requirements for FCR.**

Context - Objective and work plan (recall from WG BAL 18/12/2023)

The objective is to develop/adapt/expand the EMS requirements for Delivery Points with Limited Energy Reservoir that participate to multiple services

This objective is translated into a **work plan consisting of 4 steps:**

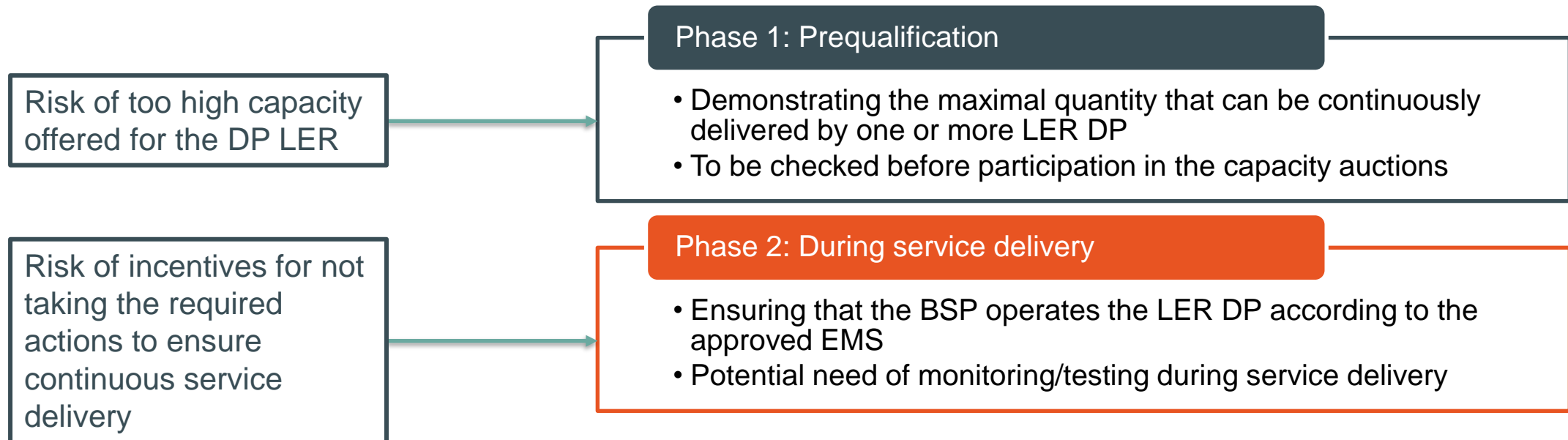
- 1) Provide an **overview of the current EMS requirements for FCR and aFRR and inform stakeholders on the progress on the discussions on European level on the harmonization of FCR requirements**
- 2) **Assess the sufficiency of the current EMS requirements in the context of a DP participating to multiple market segments (FCR, aFRR, mFRR and/or DA/ID markets)**
- 3) **Assess the need for specific control mechanisms** to ensure BSPs respect the EMS strategies and, if applicable, define possible control mechanisms
- 4) **Develop/adapt/expand the current documents describing the EMS requirements**

Recap of workshop 1: EMS requirements: What is it about?

- The **EMS aims to prove the ability of a Delivery Point with Limited Energy Reservoir**, on its own or together with other Delivery Points of the Pool, **to comply with requirements for provision of the service.**
- **Each DP with Limited Energy Reservoir participating to FCR or aFRR should be included in an EMS** that is submitted to Elia. Validation of the EMS is performed by Elia.
- **The EMS requirements published by Elia aim to provide clear guidance** for ensuring that the EMS is consistent with the correct delivery of contracted reserves. This need was identified by market parties and Elia in order to:
 1. Reduce entry barriers while limiting the risk of undelivered volumes.
 2. Foster transparency to guarantee a fair competition between market parties.
 3. Provide clear guidance to BSPs for their business plan.
- Currently, there are separate EMS requirements for FCR and aFRR (with guidelines published on Elia website)
 1. [FCR: EMS requirements](#)
 2. [aFRR: EMS requirements](#)
 3. [All technical documents concerning ancillary services](#)
- The BSP is contractually obliged to operate the Delivery Point(s) with Limited Energy reservoir in line with the corresponding EMS validated by Elia

Recap of workshop 1: Why are the EMS requirements useful/needed?

- The EMS requirements have been created **to respond to two different needs:**
 1. Demonstrating the maximum quantity of contracted aFRR/FCR that could be continuously delivered by the LER DP (on its own or together with other DPs in the pool) with the EMS proposed by the BSP.
 2. Ensuring that the BSP effectively operates at all times the LER DP in line with the approved EMS.



Recap Workshop 1

Maximal volumes that can be continuously delivered with a given EMS



1. It is **not straightforward to simply derive from the individual EMS for FCR and aFRR the maximal volumes combined FCR and aFRR volumes 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.
2. **It seems 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).

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)
- **Requesting only a single EMS to be described by the BSP* that includes the different contracted services (including combo's) for which the DP LER is to be used**

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

For the use of a DP LER for multiple services at the same time, 2 different cases should be considered:

1. The DP LER is intended to be used for two contracted services



Focus now on FCR and aFRR but Elia will investigate other products (mFRR)

2. The DP LER is intended to be used for a contracted service and for a non-contracted service



Similar requirements should apply for how non-contracted services should be considered in the EMS for a contracted service

As indicated, the **use of a DP 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**

Therefore, Elia believes the **intended use of the DP LER for non-contracted services needs to be described in the EMS as far it is relevant for ensuring the ability to continuously deliver the contracted service**. This would include:

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



Recap of workshop 1

Conclusions

1. The objective of the EMS requirements is twofold:

- a. Demonstrate the volumes of contracted services that can be continuously delivered (Phase 1 – during prequalification)
- b. Function as a reference of how the LER DP should be operated in order to ensure the ability to continuously deliver the service (Phase 2 – during normal operation)

Phase 1 : Determination of the maximum volume that can be continuously delivered for a given EMS

2. In case a LER DP is intended to be used for multiple contracted services at the same time:

- The combined volumes that can be offered cannot be simply derived from the individual EMS of the different services
- It seems possible to demonstrate which combinations of contracted services could be continuously delivered
- Elia therefore recommends combining the EMS requirements for all contracted services in a single document

3. While no EMS is needed for non-contracted services, the **intended use of the DP LER for non-contracted services needs to be described in the EMS submitted for contracted services**

Phase 2 : Monitor that the DP LER is operated in line with the validated EMS

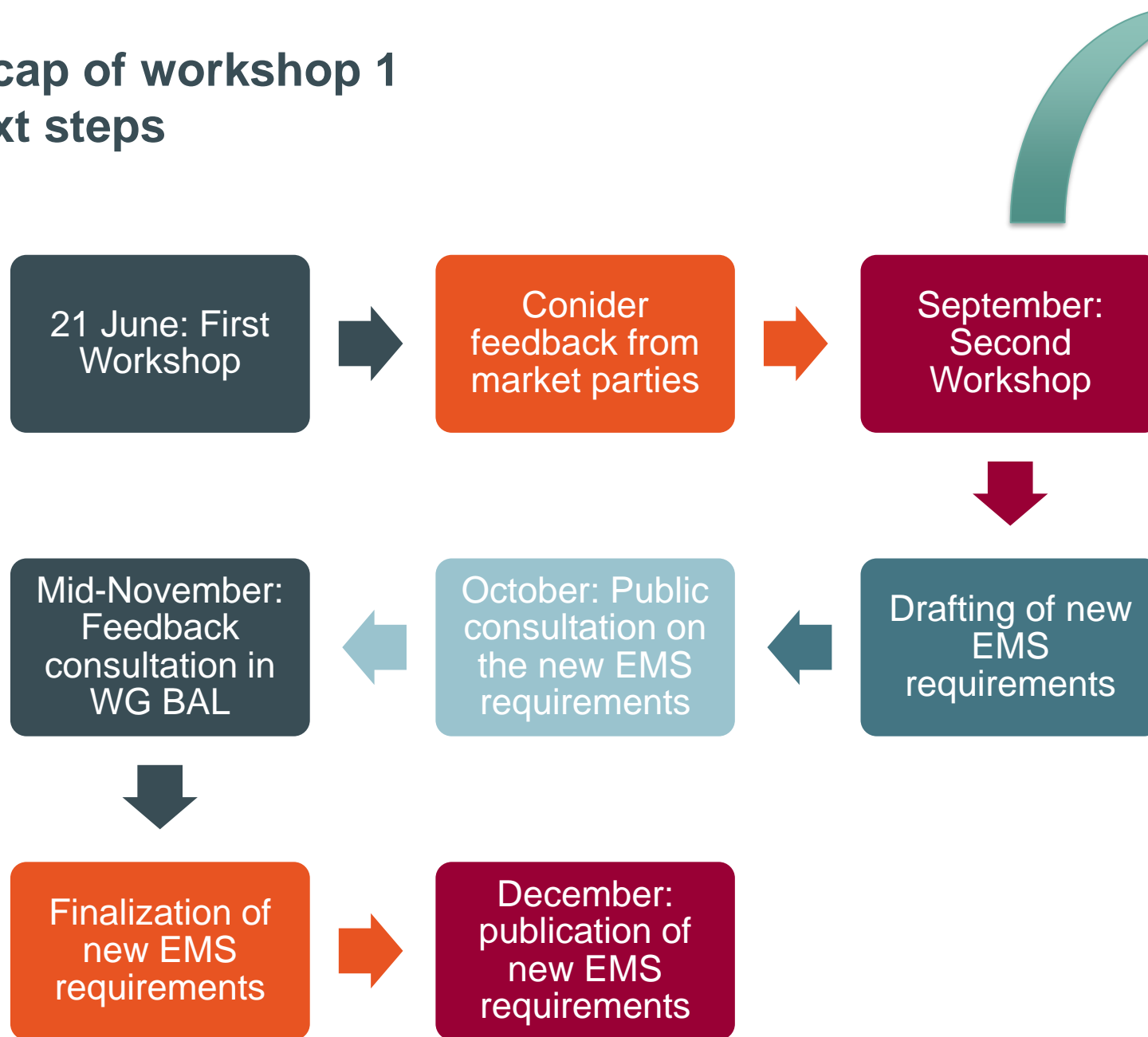
4. No additional monitoring needs are identified for FCR

5. For aFRR, **three different possibilities are being further considered:**

- Continuous monitoring.
- Ad-hoc monitoring.
- Extension of the “Energy Availability Test” to aFRR.

Recap of workshop 1

Next steps



- Phase 1:
 - Re-evaluate certain assumptions in the current EMS requirements
 - Identify needs for alignment to merge requirements for the combo FCR/aFRR
 - Extend analysis and conclusions to mFRR
 - (if applicable) consider further updates on the European discussion for FCR
- Phase 2:
 - Finalize analysis and recommendation for an appropriate monitoring approach for aFRR and combos.

Agenda

1. Recap of workshop 1
- 2. EMS requirements: proposed modifications**
3. Monitoring of EMS requirements
4. Next steps

EMS requirements: summary of proposed recommendations

#	Topic	Recommendation	Workshop 1	Workshop 2
1	EMS requirements in case of a combination of contracted services	aFRR-FCR	✓	
2		Extension to mFRR		✓
3	EMS requirements in case of a combo of contracted services (e.g., contracted aFRR) with non-contracted services (e.g., ID trades)	Elia recommends that the intended use of the LER DP for non-contracted services (together with contracted services) needs to be described in the EMS.	✓	
4	Evaluation of conditions related to an EMS based on Intraday transactions	Elia proposes that BSP are allowed to use 15' intraday products as part of their EMS under the condition that they can demonstrate that the required volumes are effectively present in the order books.		✓
5	Approach for updating the dataset to be used for the statistical proof of the EMS	Elia proposes to: <ul style="list-style-type: none"> • Harmonize the time period and granularity of the data sets for FCR and aFRR; • Make available every 6 months a new dataset that is to be used for new EMS. 		✓
6	EMS templates	Elia proposes to streamline the process of submitting and validating an EMS by providing a template for the EMS description and the statistical analysis.		✓

* Note that concerning the provision of FCR, as part of the European harmonization, Elia is investigating the introduction of a "Reserve Mode". DP LER may be requested to present their ability to provide the Reserve Mode.

1. EMS requirements for a combo of contracted services (aFRR and FCR)

Elia proposes to clarify the EMS requirements for a DP LER (or group of DP LER) intending to provide multiple contracted reserves at the same time. Concretely, Elia recommends:

- i. 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;
- ii. Harmonizing certain elements of the EMS requirements for FCR and aFRR** (e.g., dataset for the statistical analysis; see later slides)
- iii. Requesting only a single document by the BSP that describes the (possibly different) EMS for each (combination of) contracted service(s)* it intends to offer**
 - The EMS document should clearly specify the maximal volumes for each of the contracted services the BSP would like to be able to offer at the same time;
 - The EMS document should provide a description of the EMS and contain a proof via a simulation (or if applicable a deterministic proof) demonstrating the capabilities continuously deliver the(se) contracted service(s)/
 - The specific rules for each reserves must be respected (e.g., energy bands for FCR, no imbalance charging for aFRR)

* Note that:

- The BSP can submit an EMS for only FCR or only aFRR
- The BSP is free to submit an EMS for one product and later add the EMS for a different product or a combo of products

2. Extension of EMS requirements to mFRR

Considering that:

- There are no EMS requirements applicable for mFRR at this moment;
- Situations where LER DPs 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;
- At this moment, there are highly limited LER DPs participating to mFRR and it is uncertain whether a strong increase in LER DPs in the mFRR market segment is to be expected;
- The EMS requirements applicable for aFRR can be largely copied to the mFRR market segment;
- Introducing EMS requirements for mFRR would nevertheless require certain amendments to the mFRR design (and hence the T&C BSP mFRR) and corresponding developments (see next slide) on Elia and BSP side and is therefore not free of charge;

Elia considers the **extension of EMS requirements to the mFRR market segment not to be a priority** at this moment. **Elia therefore recommends to monitor the evolution LER DPs 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 LER DPs in the mFRR market segment.**

2. Amendments required for extending EMS requirements to mFRR

- Imposing EMS requirements to LER DPs participating to mFRR requires an amendment to the T&C BSP mFRR
- In addition, certain changes would be needed in the mFRR design (and hence the T&C BSP mFRR) in order to enable BSPs to use certain EMS strategies. 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 (e.g., in case of Last Qh or High X of Y baseline methodologies).
 - 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.
 - For **DPpg**, the Baseline can be one of the following (chosen by the BSP): -
 - **High X of Y Baseline**, i.e., the reference power calculated based on the measurements of a selection of days that are considered as representative for the day on which the concerned activation occurs. -
 - **Last quarter-hour Baseline**, i.e., the power measured during the last quarter-hour that preceded an mFRR activation request and that was not subject to a previously requested full delivery of mFRR power
- As a result, BSPs would be exposed to failing the mFRR activation control in case of state-of-charge supporting actions.
- A new term would 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 require implementation efforts on both Elia and BSP side.

3. EMS requirements for combo's of contracted and non-contracted services

The **use of a DP LER for non-contracted services** (e.g., intraday transactions, offering of non-contracted aFRR Energy Bids, reactive balancing, etc.) impacts the energy in the reservoir and hence **could impact the ability to continuously deliver a certain volume for a contracted service** in the same moment.

Therefore, Elia considers that the **intended use of the DP LER for non-contracted services needs to be described in the EMS**. 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)

Example: 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., as hourly ID products or as quarter-hourly products).
- The BSP must 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).

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

3. EMS requirements for combo's of contracted and non-contracted services

Simplified example

- Case of a battery of 24 MW / 72 MWh
 - Maximal symmetrical aFRR: 15 MW
- The EMS is based on ID transactions for SoC management:
 - when the energy is outside 40/60% range of SoC, the power band of +/- 9 MW is reserved/used for SoC management.
 - when the SoC is between 40 and 60%, there is a power band of +/-9 MW that is not foreseen to be used for SoC management. Therefore, this band could be valorized for non-contracted services as long as 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.

4. Evaluation of conditions related to an EMS based on Intraday transactions

- BSPs are currently allowed to have an EMS that is (among others) based on acting on the ID market under certain conditions.
- One of the conditions is that the ID trade reflects a trade of 1-hour block. This condition was imposed in 2022 based on statistics of 2021 showing limited liquidity of sub-hourly ID products.
- **Using sub-hourly products (e.g., 15-minute products) could however 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 energy is delivered.**
During this lead time, the energy reservoir (on its own) must be able to ensure service delivery.
 - 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 around 2 hours in some moments*
 - With ID transactions for quarter-hourly products, a BSP would be able to reduce this lead time to around 1h15 minutes.*
- Elia has observed a recent strong increase in the liquidity of 15-minute products. Although the traded volumes are still significantly lower for 15-minute products, the total number of conducted trades and the % of trading periods for which at least some trades have been conducted has become very similar for 15' and 60' products
- Therefore, **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-minute products continue to increase, Elia considers it could further relax this condition.

* Indeed, in case aFRR activations as of 13h01 result in a need to perform state-of-charge supporting Intraday trades, 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;
- would be the period 14h15-14h30 in case quarter-hourly products are traded.

5. Approach for updating the dataset to be used for the statistical proof of the EMS

- Current datasets to be used for BSPs to demonstrate the sufficiency of the proposed EMS:
 - aFRR:
 - Elia makes data available related to the local incremental/decremental merit orders as well as the global control target for aFRR. This data is to be used by BSPs to demonstrate their ability to deliver the service based on a statistical analysis
 - The dataset currently made available by Elia covers the period October 2020 to May 2022
 - FCR:
 - no specific data needs to be made available by Elia specifically for the EMS (frequency data is published with 10-second granularity on the OpenDataElia portal.
 - No specific period for the statistical analysis is specified but Elia requests at least one year of data.
- Elia considers there is **clear need for an approach for ensuring and maintaining sufficiently representative and up-to-date datasets** to be used for the EMS considering recent and future evolutions the market (e.g., changing technology mix and corresponding changes in the merit order, evolutions of the FRR activation strategy, connection to PICASSO, etc.).
- In addition, in the context of a combo aFRR/FCR (BSPs demonstrating their ability to continuously deliver a certain volume of FCR and contracted aFRR), **the time period and granularity of the datasets for the statistical analyses for aFRR and FCR need to be harmonized.**
- Finally, **following the connection to PICASSO** with the application of elastic aFRR demand, the **local merit order and the global control target might not be sufficient** for the BSP to simulate the aFRR activations. This because the application of elastic demand prevent the activation of (upward) aFRR Energy Bids with a bid price above (below) the aFRR CBMP Up (Down).

5. Approach for updating the dataset to be used for the statistical proof of the EMS

- Elia proposes to make a new dataset available on the Elia website every 6 months.
- The datasets will cover 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.*
- The dataset will span one full year.
- BSPs that want to provide a new EMS need to use the last dataset that has been made available.
- Following the publication of a new dataset, BSPs having a validated EMS based on a statistical analysis do not need (but are allowed) to provide a new demonstration of their capability to continuously deliver the service.

* 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.

6. EMS Template

- Current situation:
 - The EMS requirements provide clear guidelines on the information the BSP needs to include in the EMS description;
 - 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 the statistical analysis.
- Experience with the process of the validation EMS has highlighted a need to further develop the templates related to the information and data to be provided by the BSP for the validation of the EMS. This would allow a more streamlined process for evaluating the EMS proposed by the BSP (both on Elia and on BSP side).
- Therefore, **Elia proposes:**
 - **To develop a template (to be filled in) for the descriptive part of the EMS; and**
 - **To develop an excel template related to the statistical analysis**, which contains the information to be filled in related to the (possibly different) service(s); and
 - **To remove the requirements related to graphs that need to be provided by the BSPs.**

6. EMS Template statistical analysis



Category	Data Name	Unit	Sign convention	Data Source	Description
Date and Time		Date format			Express the date and hour - Question on the granularity remains
Contracted services	FCR	MW		BSP	Volume of reserves that are contracted. These should be constant over the CCTU and probably constant over a longer period for the validation phase.
	aFRR up	MW		BSP	
	aFRR down	MW		BSP	
LER information	State of Charge	MWh		BSP	The State of charge of the battery at the end of the time of the considered line.
	State of Charge			BSP	
	Power Output	MW		BSP	The average power that the LER has delivered during the considered period (line)
	EMS Intraday	MWh		BSP	The energy content available. In general, this value should be constant but in case of distributed batteries, it could vary in function of the availability of batteries.
	EMS back-up inside aFRR pool	MW		BSP	
	EMS back-up asset outside aFRR pool	MW		BSP	
FCR	Frequency	Hz		Eliq	Grid frequency in the Belgian grid.
	FCR delivered	MW		BSP	The actual FCR power delivered by the LER.
	Energy Band limit up	MWh		BSP	Only to verify if the energy bands are respected at all times.
	Energy Band limit down	MWh		BSP	For distributed batteries, the energy content of the battery can change at all times.
aFRR	Global Control Target	MW		Elia	To be checked what is needed after PICASSO connection
	Activated aFRR	MW		BSP	
	CBMP up	€/MWh		Elia	
	CBMP down	€/MWh		Elia	
	Bid Price Up	€/MWh		BSP	The bidding energy prices of the LER
	Bid Price down	€/MWh		BSP	
Uncontracted services	Power delivered for uncontracted services	MW		Elia	Any other power delivered for a service outside of FCR, aFRR and the EMS restoring actions.

- Only the data related to the services relevant for the EMS would need to be provided
- In case the BSP aims to provide more than one EMS, one statistical analysis is to be provided for each (combination of) contracted services it intends to offer

All power injecting into the grid is positive (LER to the grid)

EMS requirements: summary of proposed recommendations

#	Topic	Recommendation	Workshop 1	Workshop 2
1	EMS requirements in case of a combination of contracted services	aFRR-FCR	✓	
2		Extension to mFRR		✓
3	EMS requirements in case of a combo of contracted services (e.g., contracted aFRR) with non-contracted services (e.g., ID trades)	Elia recommends that the intended use of the LER DP for non-contracted services (together with contracted services) needs to be described in the EMS.	✓	
4	Evaluation of conditions related to an EMS based on Intraday transactions	Elia proposes that BSP are allowed to use 15' intraday products as part of their EMS under the condition that they can demonstrate that the required volumes are effectively present in the order books.		✓
5	Approach for updating the dataset to be used for the statistical proof of the EMS	Elia proposes to: <ul style="list-style-type: none"> • Harmonize the time period and granularity of the data sets for FCR and aFRR; • Make available every 6 months a new dataset that is to be used for new EMS. 		✓
6	EMS templates	Elia proposes to streamline the process of submitting and validating an EMS by providing a template for the EMS description and the statistical analysis.		✓

* Note that concerning the provision of FCR, as part of the European harmonization, Elia is investigating the introduction of a "Reserve Mode". DP LER may be requested to present their ability to provide the Reserve Mode.

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Monitoring – recap workshop 21/6

- **No additional monitoring needs are identified for FCR** (i.e., energy availability tests are considered an appropriate and sufficient tool for monitoring the EMS requirements for FCR)
- For aFRR, **three different possibilities are being further considered**:
 - Continuous monitoring.
 - Ad-hoc monitoring.
 - Extension of the “Energy Availability Test” to aFRR.

Solutions	What is it?	Pros	Cons
Continuous monitoring	The execution of the EMS is continuously monitored	Would allow complete and clearly-defined checks and consequences	Likely becomes highly complex and likely requires BSPs to send additional information in real-time
Ad-hoc monitoring	An analysis of specific moments/days is performed	Could be less complex to implement	Time consuming Consequences might need to be larger in case of deviations from the validated EMS
Energy availability tests for aFRR	Considering it was not an effective monitoring mechanism for aFRR and that stakeholders also did not support energy availability tests for aFRR, energy availability tests for aFRR have not been further investigated.		

Option 1 – continuous monitoring of the EMS execution



Option 1a: Continuously monitor that the LER DP is operated in line with the validated EMS

- Requirements:
 - Elia would need to implement the logic behind every individual EMS
 - The BSP would need to provide all the inputs used in its EMS
 - Elia would need to verify that the resulting outputs (dispatch of the LER DP and state-of-charge supporting actions taken) correspond to the simulated outcomes
- Benefits:
 - Would allow detecting swiftly whether a BSP deviates from the validated EMS
- Drawbacks:
 - Highly complex (considering increasing LER DPs; individual LER DPs can have multiple validated EMS + BSPs could regularly update their EMS)
 - Potentially not feasible for all cases (e.g., BSP using machine-learning for decision making on state-of-charge supporting actions)
 - Risk of discussions between BSP and Elia (e.g., to identify the cause of mismatches between observed and simulated outcomes)
 - Requires additional monitoring to verify that the EMS remains sufficient to ensure correct service delivery (e.g., related to changing market circumstances)

Option 1 – continuous monitoring of the EMS execution

Option 1b: Define “energy criteria” that can be more easily monitored close-to-real time

- Requirements:
 - Requires the definition of specific criteria.
 - Elia would require information related to the SoC and related to state-of-charge supporting actions taken by the BSP close-to-real time
- Benefits:
 - Enables verifying close-to-real time whether the state-of-charge supporting actions are taken (to meet the imposed criteria)
 - Enables verifying whether the EMS of the BSP as executed remains sufficient in changing market conditions
 - Limits the additional complexity (e.g., the BSP would need to additionally send information related to SoC and SoC-supporting actions close-to-real time and the complexity on Elia side would remain relatively limited)
- Drawbacks:
 - It does not directly monitor that the LER DP is operated in line with the validated EMS
 - It is difficult to justify imposing additional criteria
 - Too strict criteria could be overly restrictive leading to reduced volumes offered in the aFRR capacity auctions and possibly higher cost (cfr. Example on the previous slide)
 - In contrast to the T_{min}LER for FCR, there is no clearly defined basis for imposing such a criteria for aFRR

Option 2 – targeted monitoring

- For the EMS validation (phase 1), the BSP use historical data to prove that its EMS allows delivering the service continuously (if not demonstrated deterministically). In addition, the BSP currently provides specific information (e.g., graphs) related to the most critical moments (largest SoC deviations and long aFRR activations).
- **The idea of the targeted monitoring is to establish a process similar to the process for the validation of the EMS but now for monitoring the proper execution and sufficiency of the validated EMS with actual data (instead of via a simulation).**
- Requirements:
 - the BSP is to fill in a template with raw data related to the actual operation of the LER DP (e.g., baseline, physical injection/offtake, SoC) and the SoC-supporting actions that have been taken (the template will be largely aligned with the template for the EMS validation)
 - Elia performs a (semi-automated) monitoring based on the data provided by the BSP, focusing primarily on periods with longer aFRR activations.
- Benefits:
 - Enables verifying the proper execution as well as the sufficiency (e.g., in changing market conditions) of the validated EMS
 - Does not require introducing additional criteria that could be overly restrictive and difficult to justify
 - Minimizes the additional complexity on Elia and BSP side (no additional information would need to be sent in real-time)
- Drawbacks:
 - Does not enable a close-to-real time monitoring of the proper execution and/or sufficiency of the validated EMS

Process for the targeted monitoring – option 2a

- The monitoring is performed on an annual basis
- The **BSP submits 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 LER DP;
 - 15 months after the entry into force of the updated EMS requirements;
 - 12 months after the data for the previous year has been sent for the concerned LER DP.
- The required data covers a period of one year;
- Following the reception of the data, **Elia performs the monitoring.**
- **In case, the monitoring highlights potential issues related to the EMS Elia may, within two months following the reception of the data, request a sound justification to the BSP.**
- Potential issues could, among others, be that:
 - The LER DP is not operated in line with the validated EMS;
 - The awarded service cannot be delivered one or multiple times due to energy constraints.
- **In case**
 - **Elia did not receive a sound justification** within one month following Elia's request; and
 - the **BSP did not submit a new EMS** to Elia that is validated within two months following Elia's request for a justification,

Elia may reject the EMS of the BSP for the concerned LER DP. In such a case, Elia will provide a justification to the BSP and the CREG.

Note: while the targeted monitoring is developed for aFRR, Elia proposes to apply the monitoring equally for FCR (as well as for mFRR at the moment the EMS requirements are extended to mFRR).

This to enable monitoring in case of combo's FCR/aFRR/mFRR

Process for the targeted monitoring – option 2b

- Elia performs a simplified assessment based on a more restricted dataset.
- Based on this assessment, **Elia may request the BSP to submit the required data for the monitoring.** In that case, the **BSP must submit to Elia the required data at the latest one month after the request.**

- The required data covers a period of one year.
- Following the reception of the data, **Elia performs a targeted monitoring.**
- **In case, the monitoring highlights potential issues related to the EMS Elia may, within two months following the reception of the data, request a sound justification to the BSP.**
- Potential issues could, among others, be that:
 - The LER DP is not operated in line with the validated EMS;
 - The awarded service cannot be delivered one or multiple times due to energy constraints.
- **In case**
 - **Elia did not receive a sound justification** within one month following Elia's request; and
 - the **BSP did not submit a new EMS** to Elia that is validated within two months following Elia's request for a justification,

Elia may reject the EMS of the BSP for the concerned LER DP. In such a case, Elia will provide a justification to the BSP and the CREG.

Note: while the targeted monitoring is developed for aFRR, Elia proposes to apply the monitoring equally for FCR (as well as for mFRR at the moment the EMS requirements are extended to mFRR).

This to enable monitoring in case of combo's FCR/aFRR/mFRR

Same process than option 2a

Monitoring approaches - recommendation

	Option 1a- Continuous monitoring of the EMS execution	Option 1b- Continuous monitoring based on “energy criteria”	Option 2a - Targeted monitoring on an annual basis	Option 2b - Targeted monitoring based on simplified assessment
Enables verifying the proper execution of the validated EMS	✓	✗	✓	✓
Enables verifying the sufficiency of the EMS	✗	✓	✓	✓
Enables close-to-real time identification of potential issues	✓	✓	✗	✗
Does not lead to overly restrictive constraints	✓	✗	✓	✓
Complexity for BSPs and Elia	Very high	High	Low	Low
Feasibility	✗	✓	✓	Under investigation

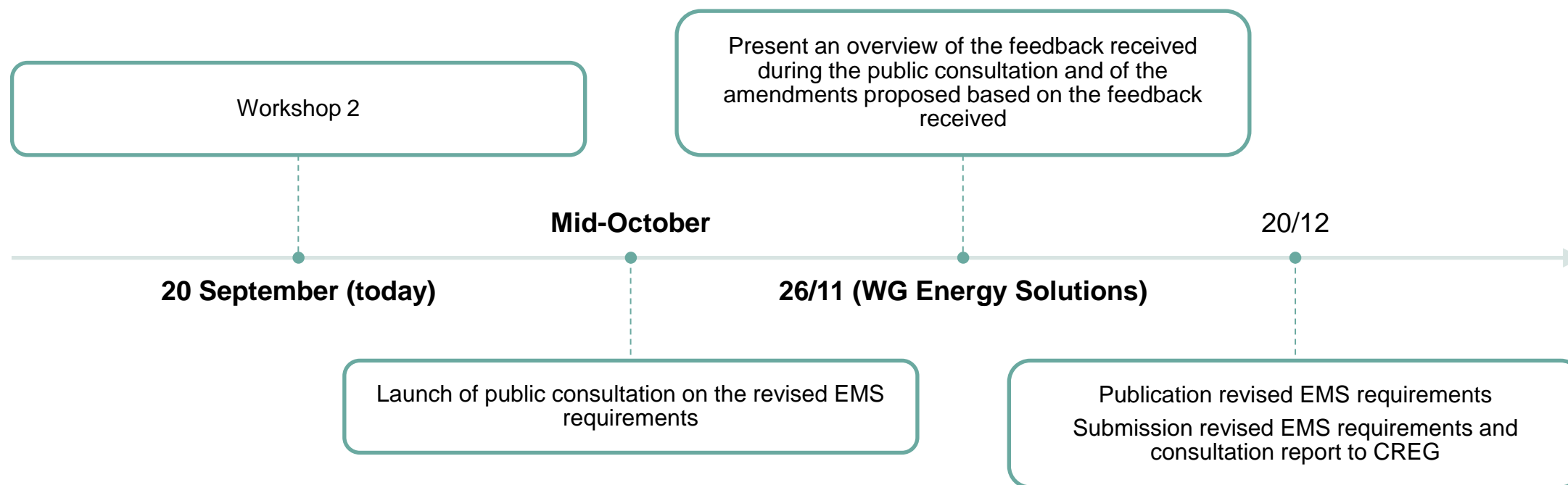
Recommended monitoring approach



Agenda

1. Recap of workshop 1
2. EMS requirements: proposed modifications
3. Monitoring of EMS requirements
4. **Next steps**

Planning and next steps



Discussion/questions

