

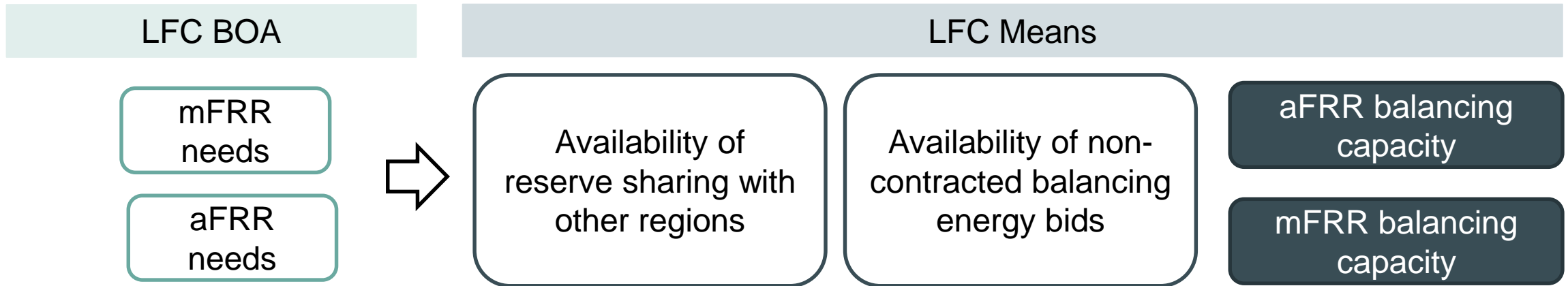
## Study on procurement strategies for a dynamic calculation of FRR means

Follow-up study on the daily prediction of non-contracted balancing energy bids

Workshop 1 – April 21, 2022, Kristof De Vos



# Reserve dimensioning framework



- In line with Article 157 of the SOGL, Elia determines the FRR / aFRR / mFRR needs following a methodology specified in its LFC block operational agreement.
  - FRR / mFRR needs are already dimensioned dynamically, i.e. on a daily basis based on expected system conditions
  - Elia presented in 2020 an implementation plan for a dynamic dimensioning of aFRR needs.
- In line with Article 32 of the EBGL, Elia determines in its LFC Means the optimal provision of reserve capacity taking into account sharing of reserves, the volumes of non-contracted balancing energy bids and the procurement of balancing capacity. This is currently still based on a 'static' approach.
  - Elia calculates on a periodic basis the availability of non-contracted capacity balancing energy bids and the availability of shared FRR capacity.
  - Potential 'firm' capacity is subtracted from the required mFRR / aFRR needs in order to determine Elia's balancing capacity (to be procured)

# In 2021, Elia published its study on the daily prediction of non-contracted balancing energy bids

**Question : can Elia's available non-contracted balancing energy bids for the next day be predicted in order to be used in the calculation of FRR balancing capacity (to be procured)?**



- **Step 1** : collection of data on all relevant system conditions known day-ahead and investigate potential correlations with the non-contracted balancing energy bids.



- **Step 2** : study several advanced statistical methods (cf. machine learning) and put forward a few methodologies to be tested



- **Step 3** : analysis of the results of the quantitative comparison of the selected methods for the proposed features.



- **Step 4** : put forward recommendations and an implementation planning

## Scope

- The balancing energy exchange platforms for aFRR and mFRR were to be implemented after 2021. It was therefore not possible to determine the quantitative impact on the results in the study
- Recent (new aFRR design in 2020) and foreseen (explicit bidding and 12.5' FAT foreseen in 2023) product developments were not (fully) represented yet in the available observations and results are subject to market evolutions.

Although Elia conducted its best efforts to make the methods as robust as possible, the methods and results will need to be updated after a return on experience on these evolutions

- This study focused only on the 'predictability' of the volumes, and not on market implications and procurement aspects of taking into account a dynamic calculation of the available FRR means.

Depending on the results of this study, follow-up analyses will further investigate these aspects.

# The study confirmed the prediction potential and proposed a multi-year roadmap to understand the full potential and implications of a dynamic means allocation before pursuing implementation



2021 : predictability

2022 : value generation

2023-24 : robustness

Scope

Investigate if available non-contracted FRR means can be predicted before the capacity tender (in view of balancing capacity reductions)

Investigate the procurement aspects of replacing (part of) the upward mFRR balancing capacity with non-contracted balancing energy bids

Confirm the robustness after implementation of EU balancing platforms, explicit bidding, shorter full activation time for mFRR)

Re-calibrate machine learning for implementation

(Expected) results

1. The available data and current state of the aFRR market does not allow to confirm the potential at this moment
2. Results confirm that available downward continue to almost always cover the FRR needs
3. Results demonstrate availability upward equals 500 MW on average (including up to 312 MW of reserve sharing).

*Disclaimers - results are subject to uncertainty following expected market evolutions : explicit bidding, full activation time reductions for mFRR and EU balancing energy platforms !*

- Potential procurement solutions for accounting non-contracted in the allocation of balancing means
- Identify risks and potential risk mitigation for market stability
- Update (where possible) the results and conclusions based on additional data).

- Confirm the potential value of accounting non-contracted balancing energy bids.
- Propose a planning for implementation.

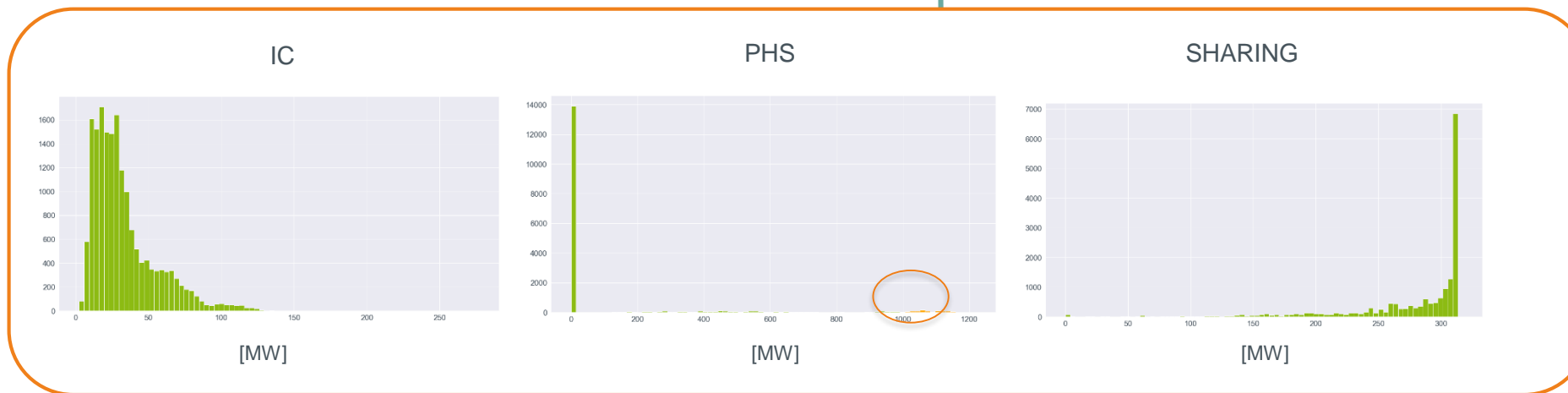
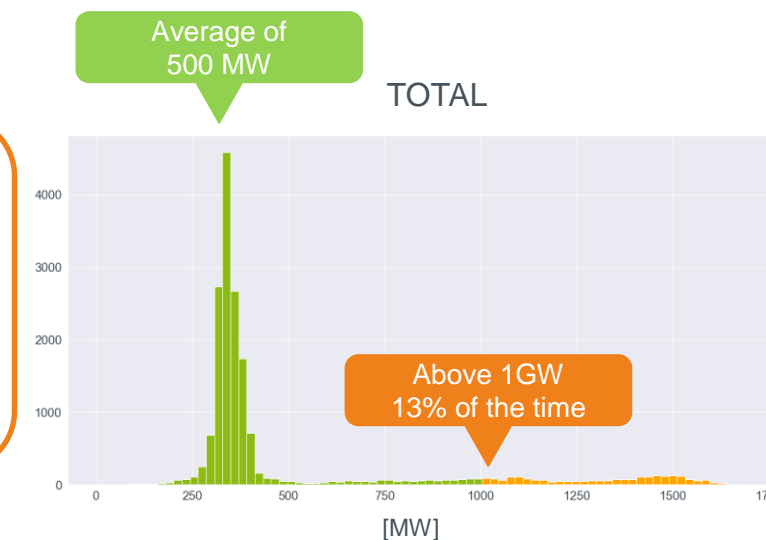
# Dynamic Means on mFRR

## Distribution of the predicted upward mFRR means

### Key results

- The upward forecasts is expected to provide an average predicted volume of 500 MW, including the mFRR sharing up to 312 MW
- The upward volumes is expected to exceed the threshold of 1 GW in 13% of the time

mean	500
std	314
min	12
25%	330
50%	330
75%	395
max	1700



After removal of balancing capacity, pumped-hydro storage and unscheduled CCGT units, the predicted volumes vary between 0 and 150 MW.

Contributions up to 1 GW and more but low in frequency as energy levels are assumed to be only available during night time

Large contributor of non-contracted capacity. Constrained by the SOGL limit of 312 MW.

## Objective and scope of the study

*The purpose of the study is to qualitatively examine possible solutions for the consideration of non-contracted balancing energy bids in the allocation of balancing means and to identify, for each approach, the benefits and risks for the parties involved, as well as the possible impact on market functioning.*



### In scope

- *Investigation of different procurement strategies, including ‘partial procurement’ and ‘intermittent procurement’*
- *Analysis on potential interactions with reserve sharing and implementation of the EU balancing energy platforms*
- *Evolution of offered non-contracted balancing energy volumes and impact of new market evolutions to the extent possible (including ‘go live’ Picasso in June 2022)\**
- *An update of the implementation roadmap based on the presented conclusions*

### Out of scope

- *Impact of mFRR market design evolutions (Go Live Mari, 12.5’ FAT and explicit bidding) → Latest planning assumes implementation in 2023.*
- *Update of the machine learning algorithms → Considering implementation planning of EU balancing energy platforms no sufficient data will be available [scope of follow-up study foreseen in 2023]*
- *Detailed implementation planning → Part of scope of follow-up study foreseen in 2023*

# Planning

-  Working group balancing
-  Milestone or deliverable



**Kick off**

- Present objective, scope and planning
- Collect potential feedback / expectations from market parties

**Workshops**

- Workshop 1 to discuss possible solutions for a dynamic procurement and market impact
- Workshop 2 for in depth discussion of feedback of the market parties

**Preliminary report and public consultation**

- Analysis of the consequences for the procurement strategy and recommendations
- Analysis of the evolution of local and cross-border volumes (to the extent possible)

**Final report**

- Update of the study
- Update of the implementation roadmap (if needed)
- Consultation report