



WG BAL workshop on aFRR elastic demand

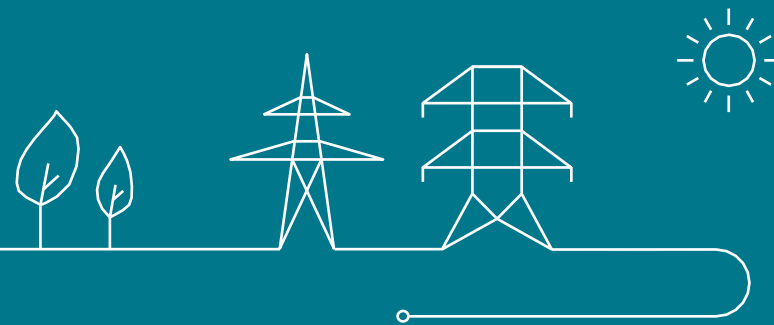
29/2/2024

Agenda

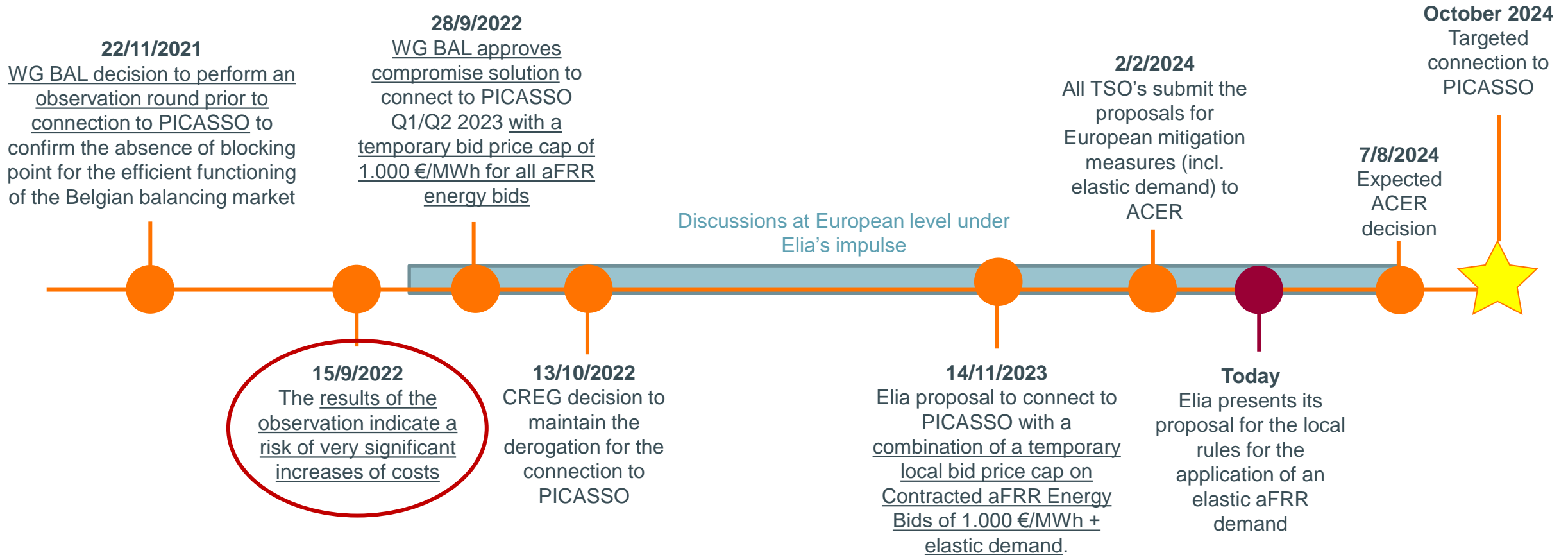
- Reminder of the context
- Elia's proposal of the local rules for the application of the aFRR elastic demand in Belgium
- Impact of the aFRR elastic demand as proposed by Elia
- Planning and next steps



Reminder of the context



A brief overview of a not so brief history

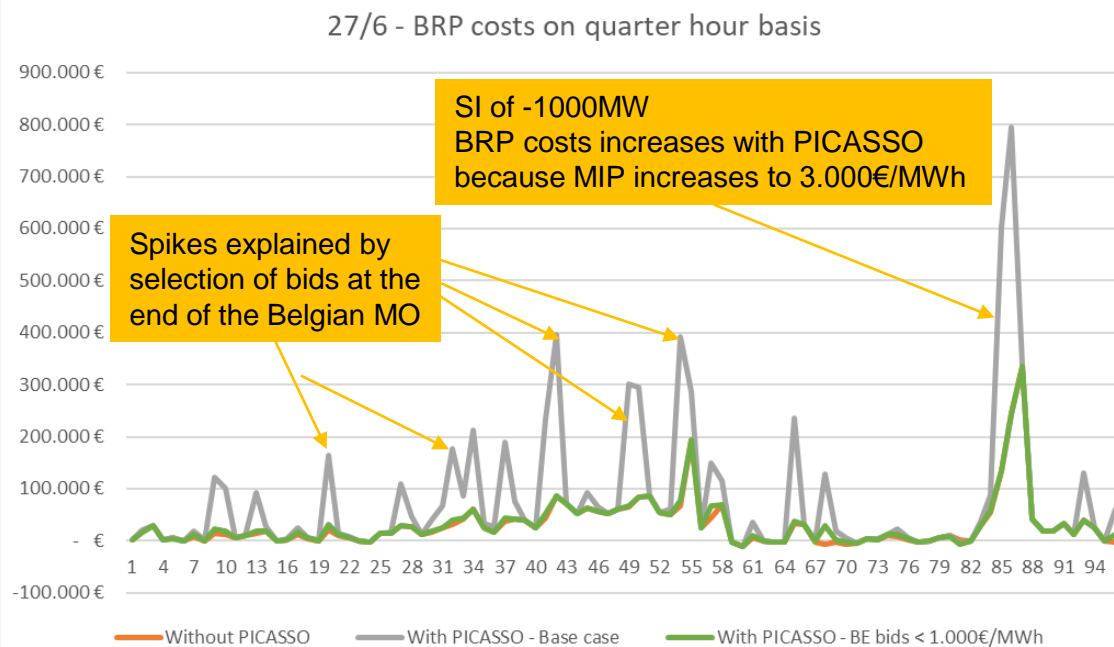


Reminder of the context

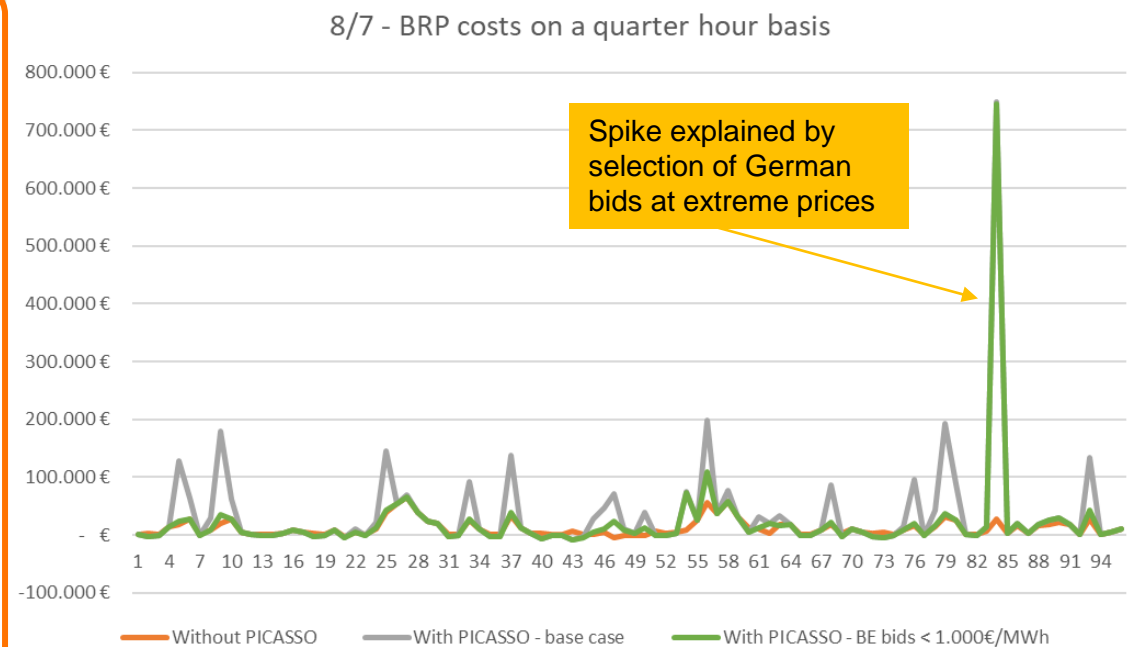
- Belgian has a limited aFRR merit order that is currently fully activated on a regular basis
- The connection to PICASSO comes with important design changes (mitigation measures not considered):
 - Paid-as-bid remuneration of aFRR Energy Bids \Rightarrow paid-as-cleared remuneration
 - Local bid price cap of +/- 1.000 €/MWh \Rightarrow harmonized price limit of +/- 15.000 €/MWh until July 2026, and afterwards +/- 99.999 €/MWh
 - aFRR component of the imbalance price based on weighted average price of selected bids \Rightarrow aFRR component of the imbalance price based on marginal price of selected bids

Recall: simulations of the 2022 observation round indicated a high risk of significant cost increase in Belgium in the absence of mitigation measures

Focus of the proposed mitigation measures

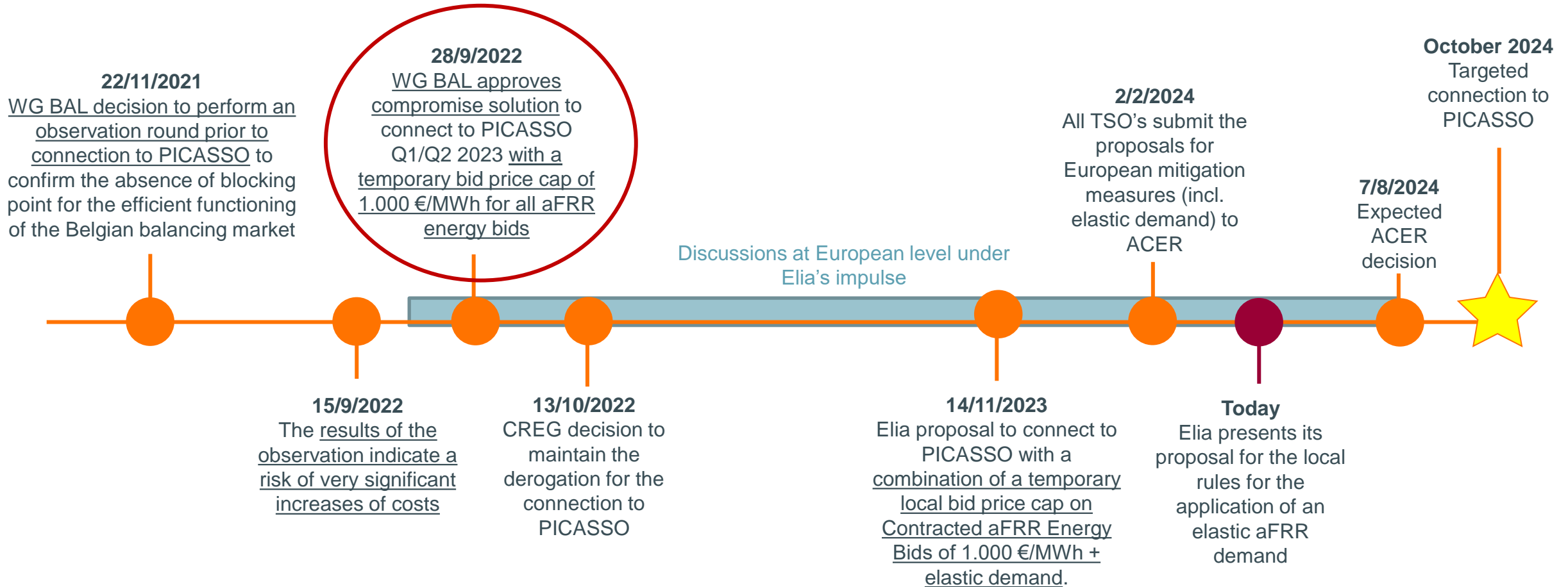


- Main risk relates to the activation of high-priced bids in the Belgian merit order (typically in moments of limited ATC)
- This risk is strongly mitigated if aFRR bid prices in Belgium remain within the current price cap (+/- 1.000€/MWh)



- High prices can also be imported in case of very high aFRR demands from other participating TSOs
- Considering the large aFRR merit-orders of our neighboring countries, such occurrences are expected to be less frequent

A brief overview of a not so brief history



Recall: 2022 WG BAL agreement to connect with a bid price cap of 1.000 €/MWh

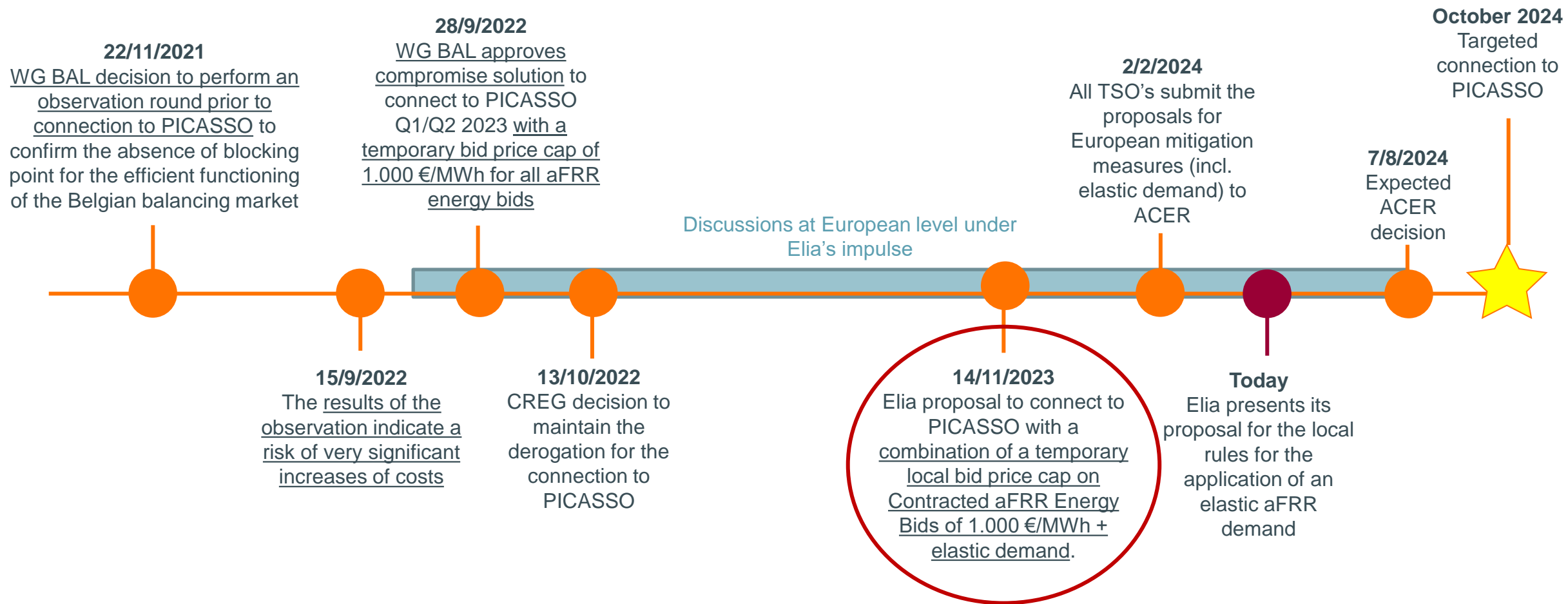
Extract from the 2022 Position of the WG BAL concerning the connection to the aFRR-Platform

The Working Group balancing of Elia recommends to postpone the connection to the aFRR-Platform to the **28th of March 2023** provided that following conditions are satisfied:

- A **temporary price cap** on the Belgian aFRR Energy bids³ is implemented. The price cap is considered as an appropriate, proportionate and temporary measure, as an answer to the market failure resulting from the combination of the factors listed under point 1) above;
- As of 1st of March, the volume offered in the Belgian aFRR energy market at least corresponds to 120% of the aFRR capacity procured by Elia (i.e. 117 MW) for 75% of the time.

The price cap will be **based on the cap currently applying to the Belgian aFRR energy market** and adjustable in order to ensure robustness against a strong increase of the BSP's aFRR energy costs. The precise modalities of the price cap will be further discussed between Elia, market parties and the CREG.

A brief overview of a not so brief history



Local mitigation measure

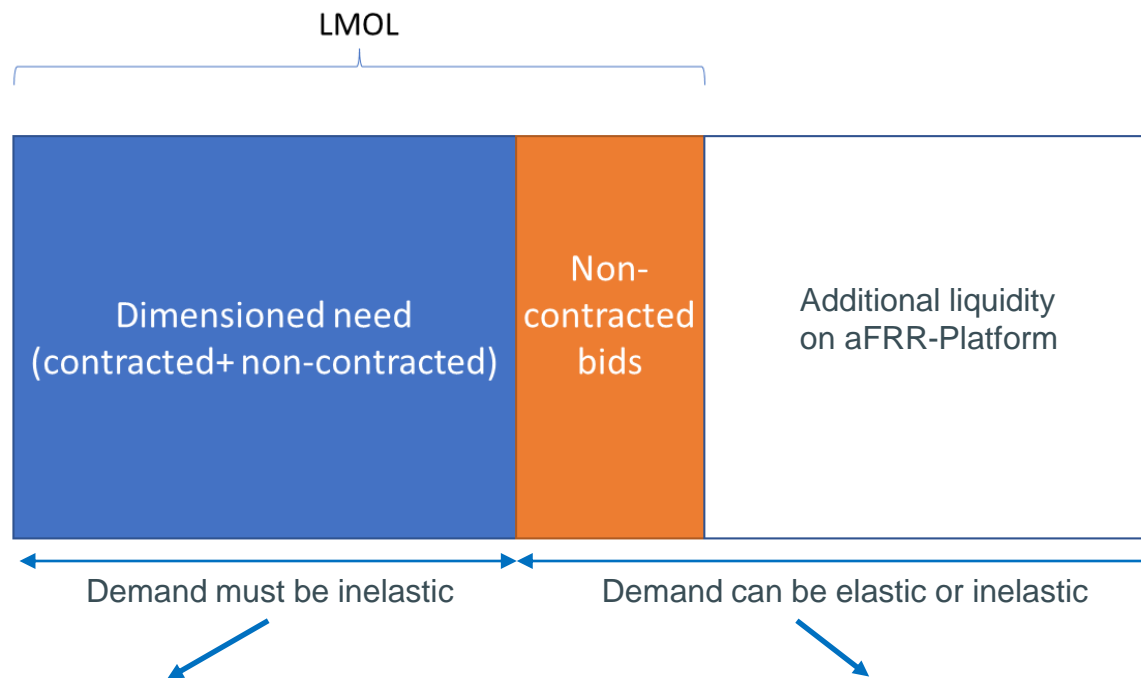
- After discussion with the CREG, Elia proposes to define a local price cap on the Contracted aFRR Energy Bids
- The price cap would have a temporary character. The need to maintain a price cap would have to be periodically re-justified, based on evolution of connected TSOs, ATCs, prices observed in Belgium and in other countries, development of free bids, the implementation of mitigation measures at European level,...
- The price cap would be set at the current value of +/-1.000 €/MWh
- Reminder: the BSP would still be remunerated to the CBMP, which can be above the price cap

Local mitigation measure

- The price cap would:
 - Secure at least the contracted (=dimensioned) volume
 - Mitigate the risk of inefficient dispatch where assets with low reservation costs and high activation costs are activated several times a day, without excluding those assets from the aFRR (energy) market
 - Provide a safeguard against strategic bidding (until the level of the contracted volume)
- As a result, it would strongly mitigate the risk of cost increase. High prices would remain in following situations:
 1. Import of high prices from other PICASSO TSOs. This risk was already present in 2022 and accepted as part of the compromise agreed on in the WG Balancing
 2. Non contracted bids beyond the price cap are submitted by BSPs and are activated by Elia
→ new risk compared to the compromise solution from the WG Balancing in 2022



Combination of local price cap on contracted bids and elastic demand

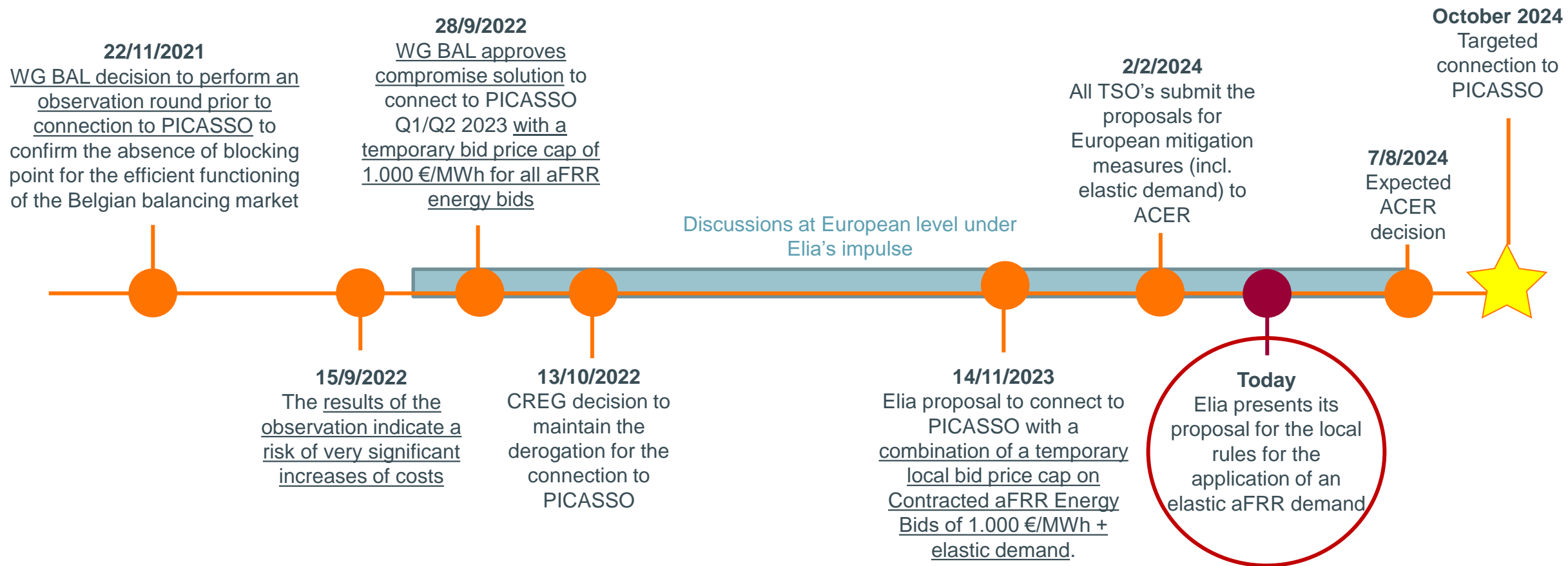


As Elia's contracted volume currently corresponds to the dimensioned need, sufficient aFRR energy bids at a price below the local price cap are available to cover the inelastic part of our demand

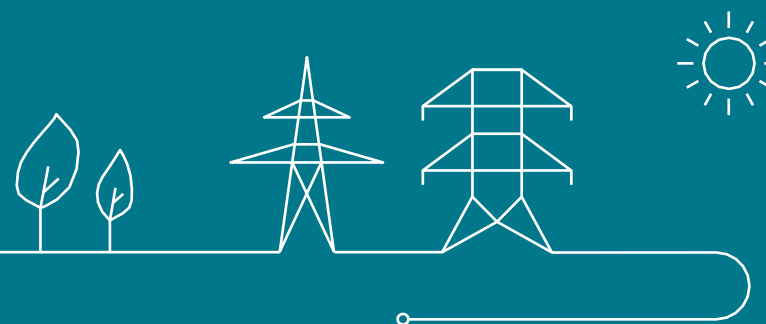
Free bids in Belgium can have a price above the local price cap, but in that case they will only be activated in case of high demands from other TSOs

- Very high prices limited to situations of high demands from other Participating TSOs
- Free bids > price cap are possible but would have a much low activation frequency than w/o elastic demand

A brief overview of a not so brief history



Proposal for the local rules for the application of the elastic aFRR demand



Regulatory framework – Proposed amendments to the aFRR IF

Art. 2

“‘elastic aFRR demand’ is a TSO demand for activation of a standard aFRR balancing energy product bid of which the satisfaction depends on the aFRR cross-border marginal price;”

“‘inelastic aFRR demand’ is a TSO demand for activation of a standard aFRR balancing energy product bid that needs to be satisfied irrespective of the aFRR cross-border marginal price;”

Art. 3

“A participating TSO **may** submit an elastic aFRR demand for positive or negative balancing energy within one MTU with the price it is willing to pay or receive for the activation of standard aFRR balancing energy product bid. A participating **TSO shall not:**

= dimensioned need

- a. **use elastic aFRR demand if the aFRR demand is lower or equal to the aFRR capacity requirement** resulting from the application of the ratio between aFRR and mFRR of the FRR capacity requirement determined for the relevant LFC block pursuant to the dimensioning rules as referred to in Article 157 of Regulation (EU) 2017/1485, such (part of the) demand having to be satisfied irrespective of the price (i.e., be inelastic demand);
- b. use the elastic aFRR demand in such a way that it imposes a cap on balancing energy prices for all LFC areas or bidding zones .
- c. use elastic aFRR demand, before the publication in English language of the:
 - i. rules of dimensioning FRR, including share of aFRR and mFRR; and,
 - ii. local rules to define the volume and price or prices of this elastic aFRR demand.**

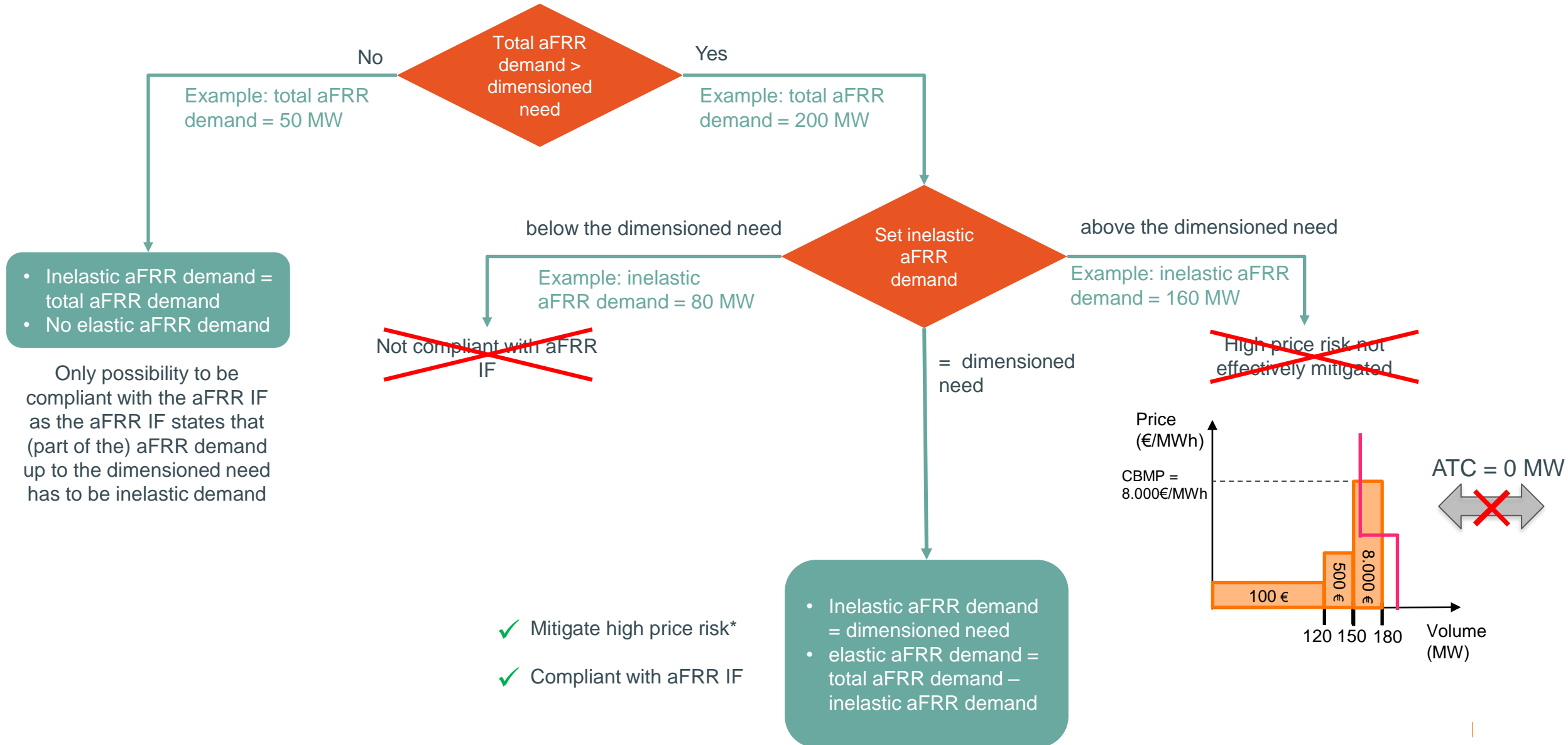
“To ensure transparency of using the elastic demand, each TSO using elastic demand shall publish the elastic demand curves as soon as possible after their application”

Focus of today's workshop

Note:

- these rules will be included in the Balancing Rules
- The implementation in the aFRR-Platform foresees 1 price and 1 volume threshold

Local rules to define the volume of the (in)elastic aFRR demand



* Related to the activation of high-priced bid in the Belgian merit to satisfy an aFRR demand of the Belgian LFC Area.

Elia's proposal to define the volume of the (in)elastic aFRR demand^{*,**}

$$\text{Inelastic aFRR demand} = \min \left\{ \begin{array}{l} \text{total aFRR demand} \\ \text{dimensioned aFRR need} \end{array} \right.$$

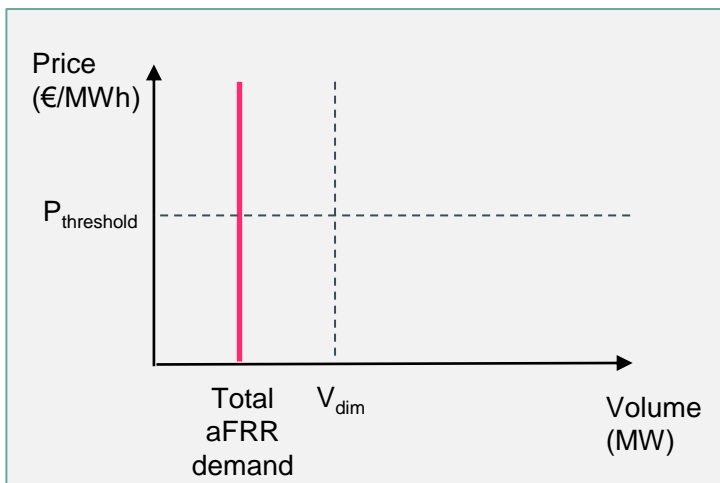
Note: with aFRR dynamic dimensioning, this volume could vary from day to day

$$\text{elastic aFRR demand} = \max \left\{ \begin{array}{l} 0 \\ \text{total aFRR demand} - \text{inelastic aFRR demand} \end{array} \right.$$

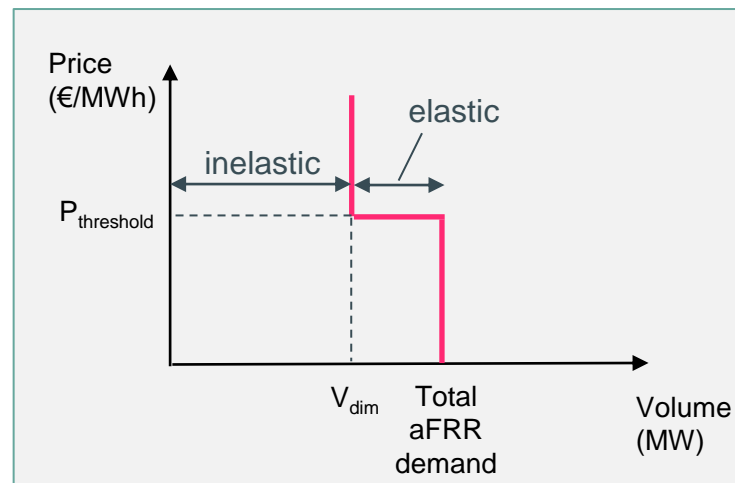
* Assuming a positive (upward) aFRR demand.

** In exceptional balancing circumstances and to ensure system security, Elia can set the total aFRR demand as inelastic aFRR demand

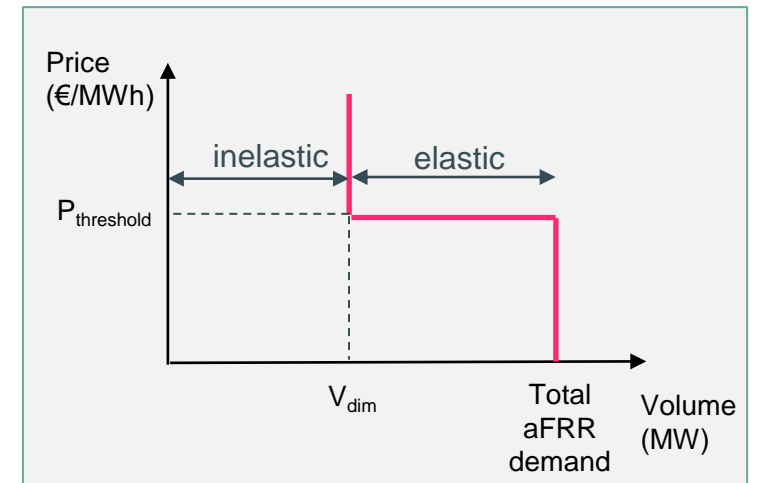
Total aFRR demand = 55 MW



Total aFRR demand = 160 MW



Total aFRR demand = 250 MW



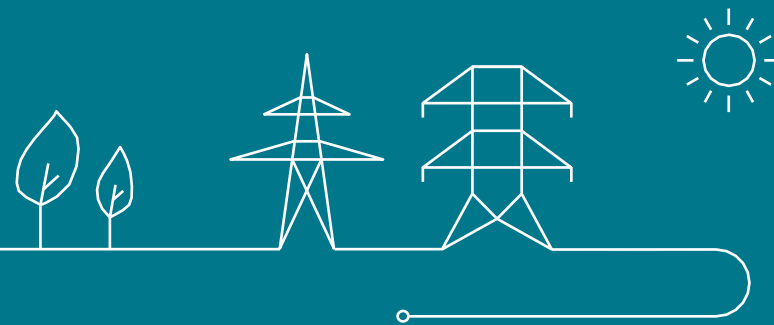
Elia's proposal to define the price threshold of the elastic demand

Elia proposes to set the price threshold for elastic demand to +/- 1.000 €/MWh

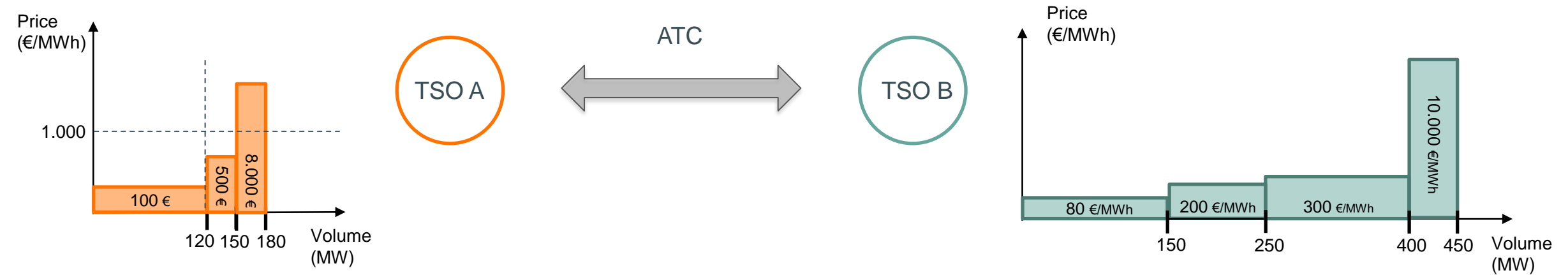
- ✓ Ensures consistency with the temporary bid price cap for contracted energy bids
- ✓ Mitigates the risk of high prices coherent with the 2022 Position of the WG BAL
 - It must be noted that the combination of a bid price cap for contracted energy bids and elastic demand leads to a (slightly) higher mitigation of the high price risk in comparison to the 2022 proposal to apply a price cap on all aFRR energy bids (see e.g. Illustration 2)
 - At the same time, the application of elastic demand poses less constraints on the market (i.e., non-contracted bids can participate at prices above (below) +/- 1.000 €/MWh)
- ✓ Avoids potential negative impacts on the dimensioned needs by limiting the volume of unsatisfied aFRR demands



Impact of the proposal for the application of elastic demand

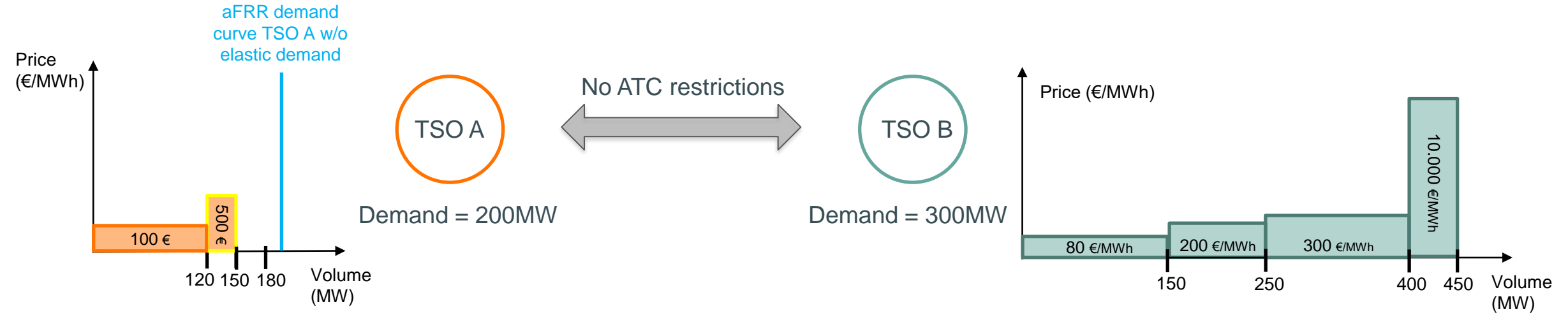


Elastic demand – illustrations



- Illustrations assume upward demands from TSO A and TSO B and the LMOLs illustrated above
- TSO A (Belgian LFC Block) has a dimensioned need of 120MW
- TSO A defines an elastic demand with following parameters
 - ✓ The demand is elastic beyond the dimensioned need
 - ✓ The price threshold is 1.000€/MWh
- TSO B only has inelastic demand

Illustration 0: benefits from the connection to PICASSO

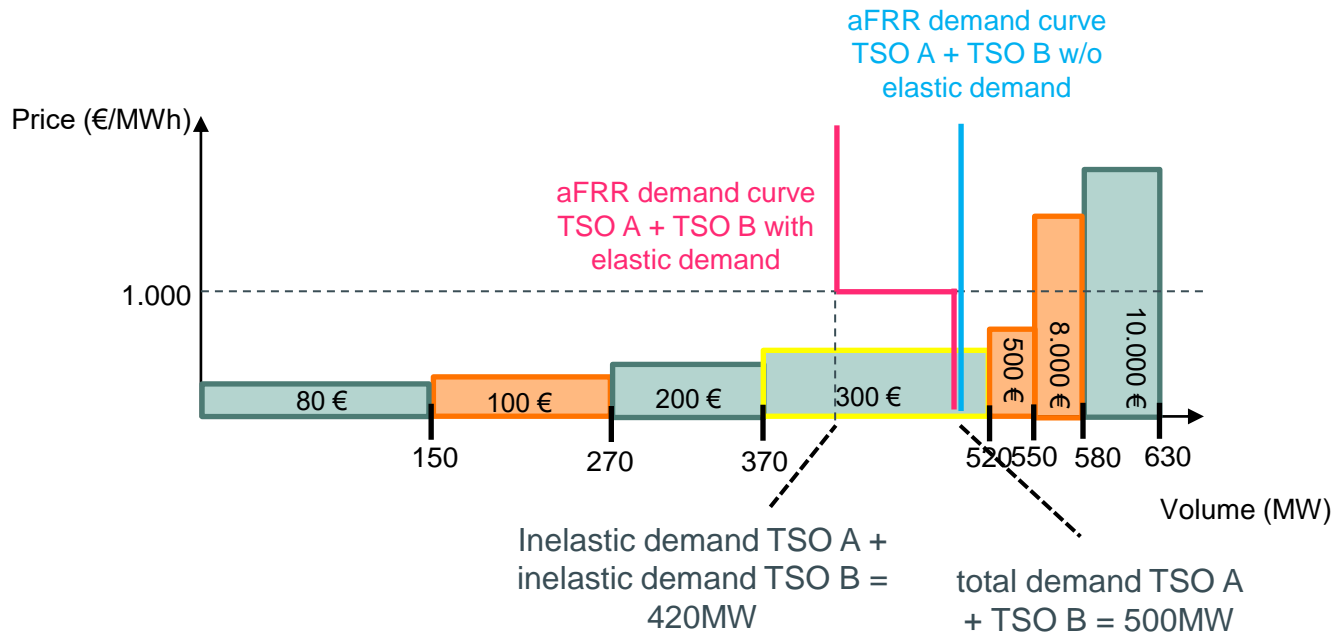
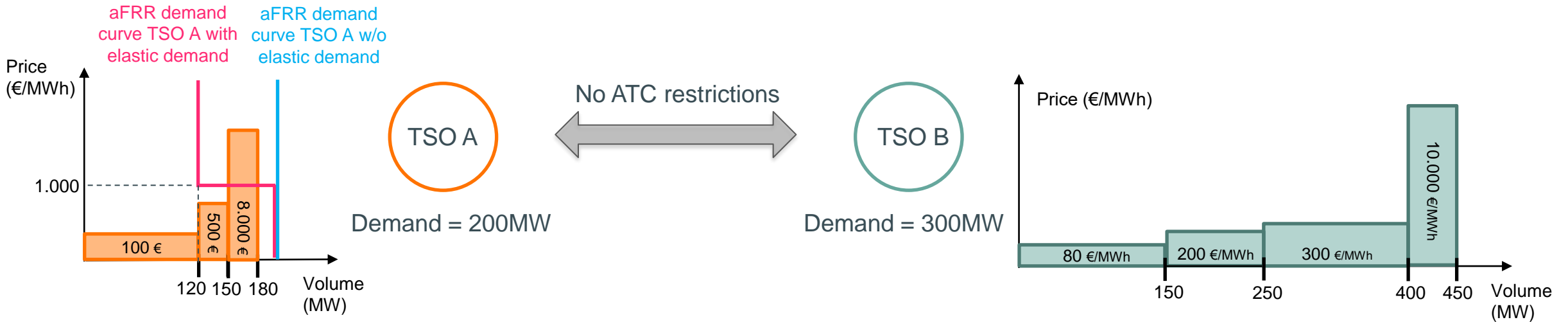


Without connection to PICASSO*

- The marginal price for TSO A would be 500 €/MWh
- TSO A would have an unsatisfied demand of 50 MW

* Assuming marginal pricing would be applied and that the bid price cap of 1.000 €/MWh for all aFRR energy bids would be maintained

Illustration 0: benefits from the connection to PICASSO



Without connection to PICASSO*

- The marginal price for TSO A would be 500 €/MWh
- TSO A would have an unsatisfied demand of 50 MW (it would not be possible to submit a bid at 8.000 €/MWh)

With connection to PICASSO (with or without elastic demand)

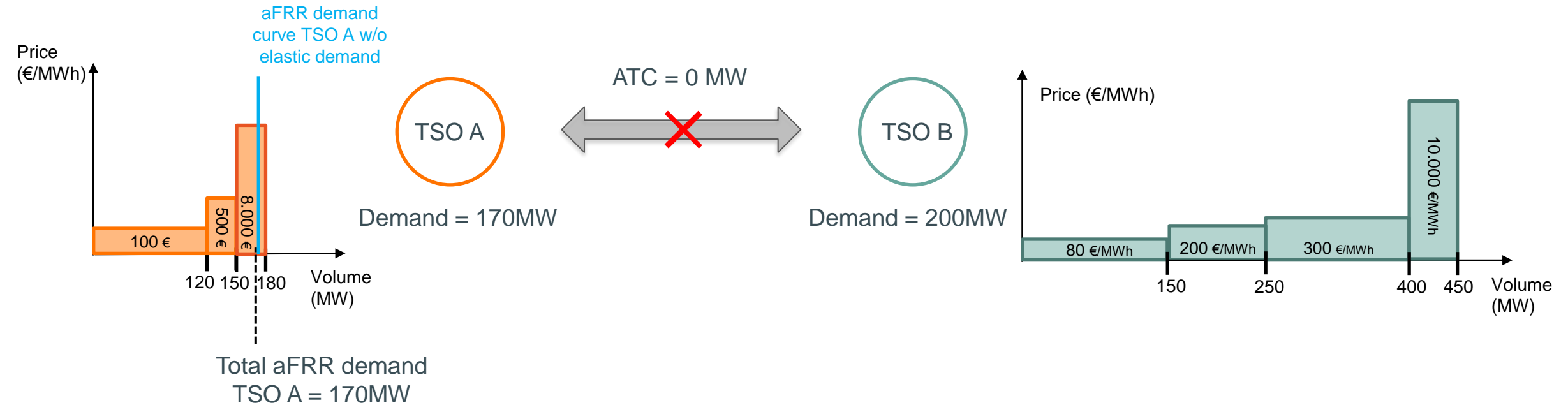
- The CBMP for TSO A would be 300 €/MWh
- The demand of TSO A would be fully satisfied

* Assuming marginal pricing would be applied and that the bid price cap of 1.000 €/MWh for all aFRR energy bids would be maintained

Key take-aways

- ① When ATC is available, the **connection to the aFRR Platform provides opportunities in terms of both costs and regulation quality**

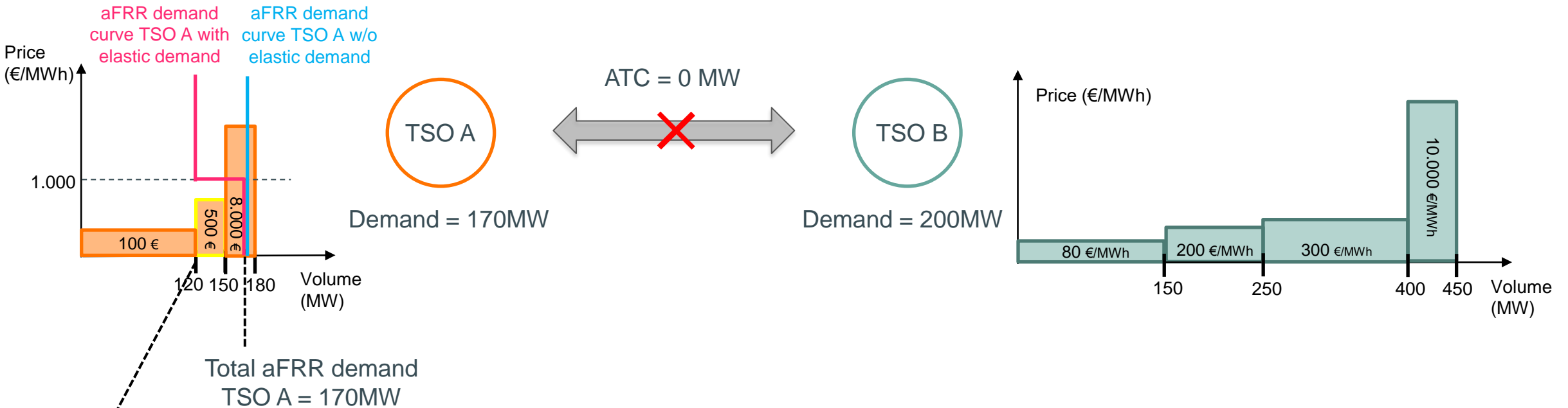
Illustration 1: high demand from TSO A while no ATC is available (= main risk identified in the observation round)



Without elastic demand from TSO A

- The CBMP for TSO A would be 8.000 €/MWh
- The demand for TSO A would be fully satisfied

Illustration 1: high demand from TSO A while no ATC is available (= main risk identified in the observation round)



Inelastic demand
TSO A = 120MW

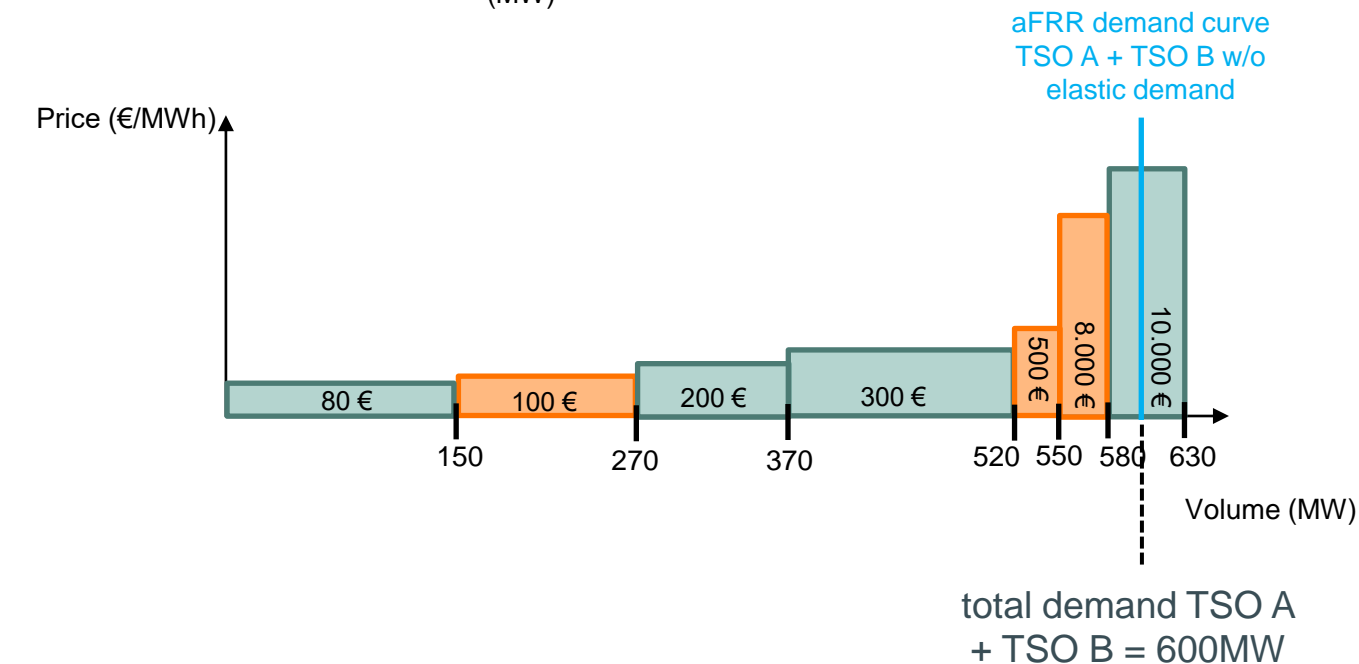
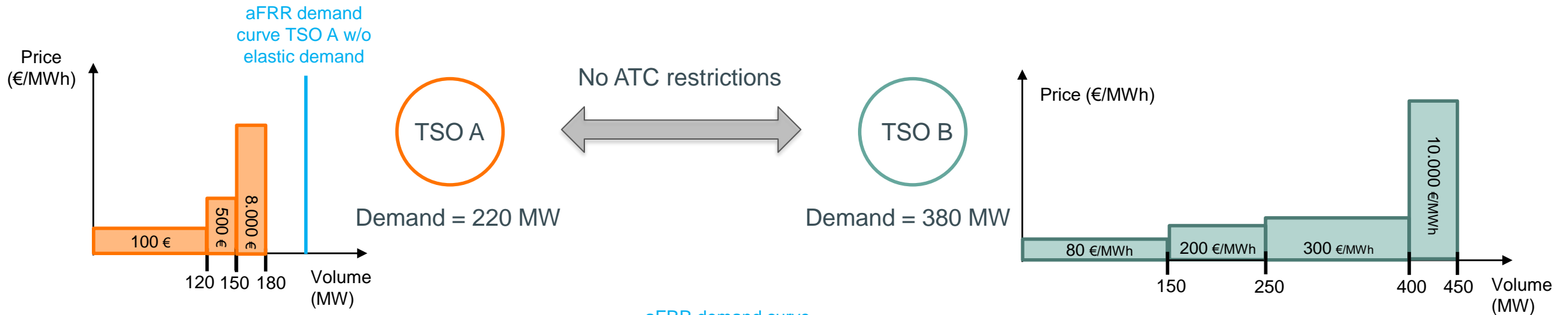
Without elastic demand from TSO A

- The CBMP for TSO A would be 8.000 €/MWh
- The demand for TSO A would be fully satisfied

With elastic demand from TSO A

- The CBMP for TSO A would be 500 €/MWh (selected bid with the highest price)
- TSO A would have an unsatisfied demand of 20 MW

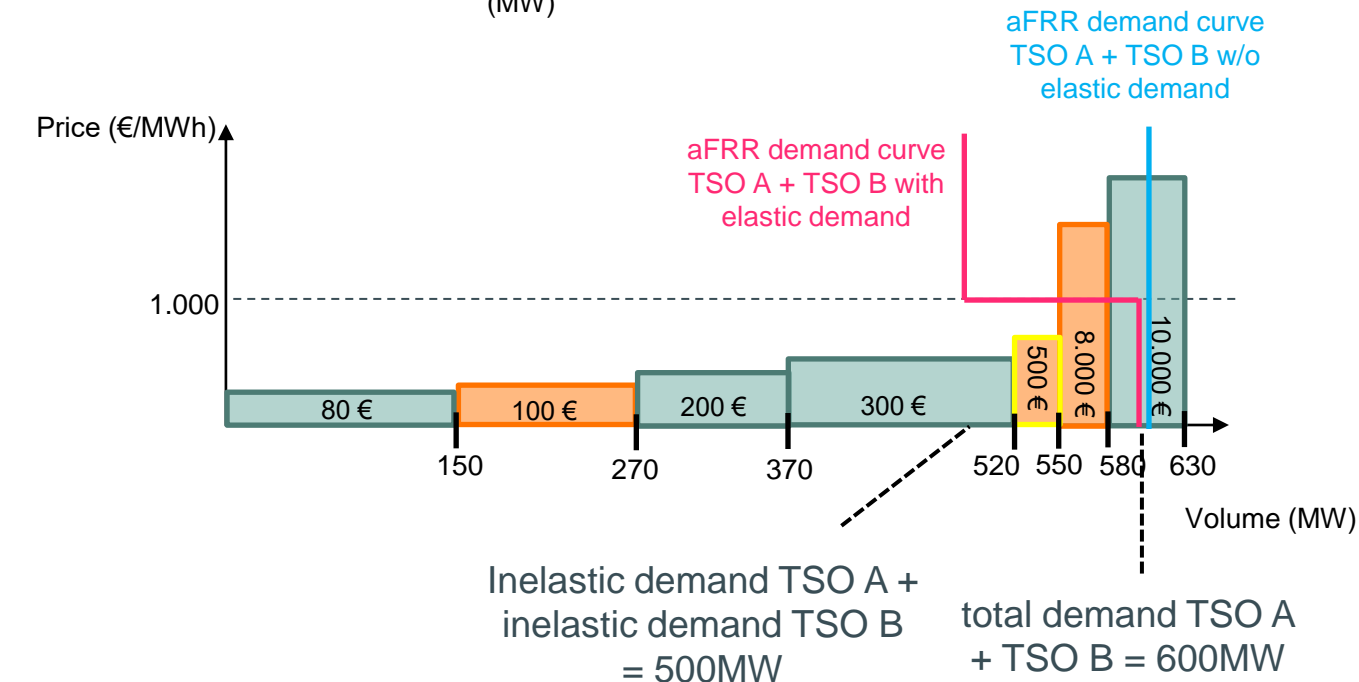
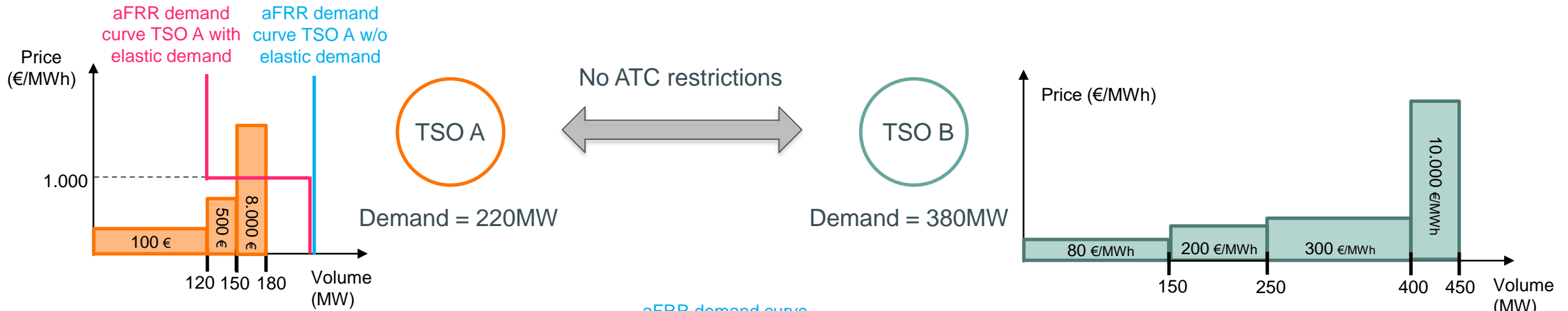
Illustration 2: high demand from TSO A & B while ATC is available



Without elastic demand from TSO A

- The CBMP would be 10.000 €/MWh
- aFRR demands from TSO A and TSO B would be fully satisfied

Illustration 2: high demand from TSO A & B while ATC is available



Without elastic demand from TSO A

- The CBMP would be 10.000 €/MWh
- aFRR demands from TSO A and TSO B would be fully satisfied

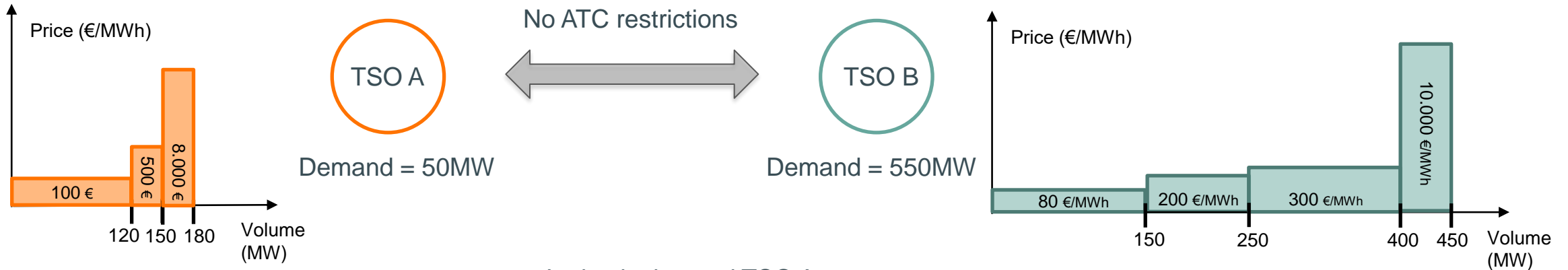
With elastic demand from TSO A

- The CBMP would be 500 €/MWh
- TSO A would have an unsatisfied demand of 50 MW
 → 170 MW would be satisfied at a price < threshold

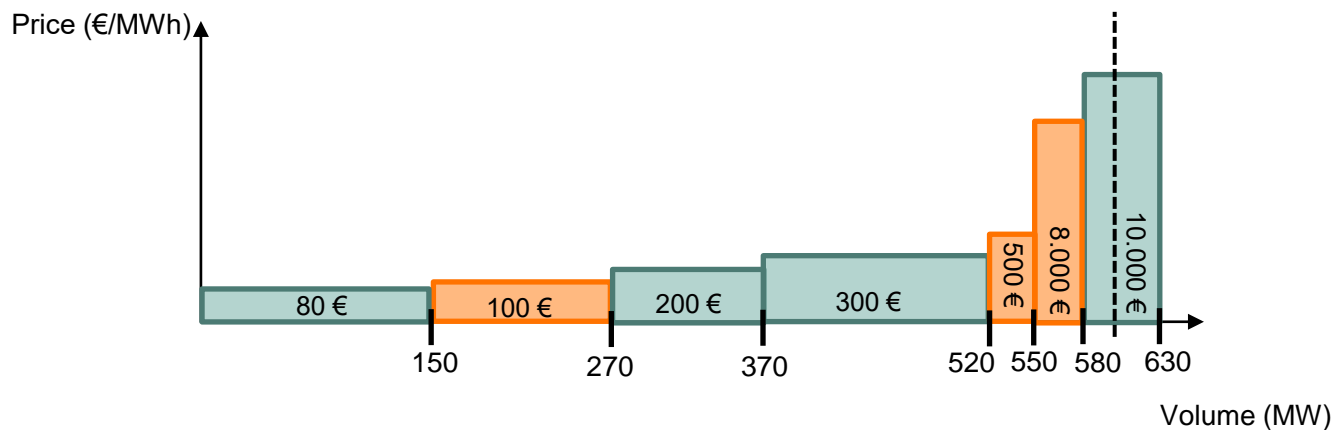
Key take-aways

- ① When ATC is available, the **connection to the aFRR Platform provides opportunities in terms of both costs and regulation quality**
- ② The **application of elastic demand as proposed by Elia** (in combination with the bid price cap for contracted energy bids) **is effective in mitigating the risk of high prices** following from the activation of aFRR energy bids to cover aFRR demands from the Belgian LFC Area, and this particularly:
 - in situations with limited/no ATC in the relevant direction (= main risk identified in the observation round)
 - In (some) moments with simultaneous high aFRR demands within the uncongested area (! better mitigation relative to the 2022 proposal to connect with a bid price cap for all aFRR Energy Bids)
- ③ The **application of elastic demand as proposed by Elia would** lead to moments with unsatisfied aFRR demands. However, these unsatisfied aFRR demands are expected to represent very limited volumes and hence would not lead to a substantial deterioration of the FRCE quality and therefore **not have a negative impact on the dimensioned aFRR needs via the FRCE feedback loop**.
 - It must be noted that the connection to PICASSO would generally come with an improvement of the regulation quality (FRCE)

Illustration 3: low demand from TSO A & high demand TSO B



Inelastic demand TSO A + TSO B (= total demand TSO 1 + TSO B) = 600MW



- As TSO A and TSO B only have inelastic demand, the aFRR-Platform selects all bids up to 600MW
 → CBMP of 10.000 €/MWh and activation of the bids at the end of the CMOL
- In this case
 - ✓ Elastic demand of TSO A has no impact (as there is no elastic demand in this moment)
 - ✓ TSO A exports aFRR

Illustration 4: high demand from TSO A & TSO B



Without elastic demand from TSO A

- The CBMP would be 10.000 €/MWh
- TSO A would have a satisfied demand of 180 MW and an unsatisfied demand of 220 MW.
- TSO B would have an unsatisfied demand of 50 MW

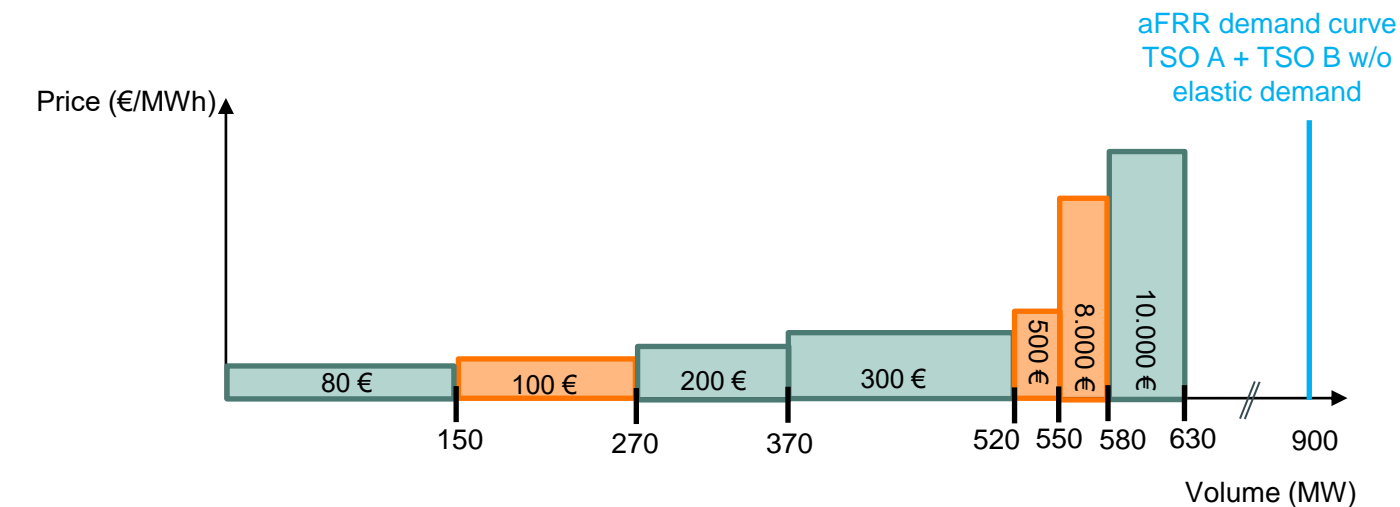
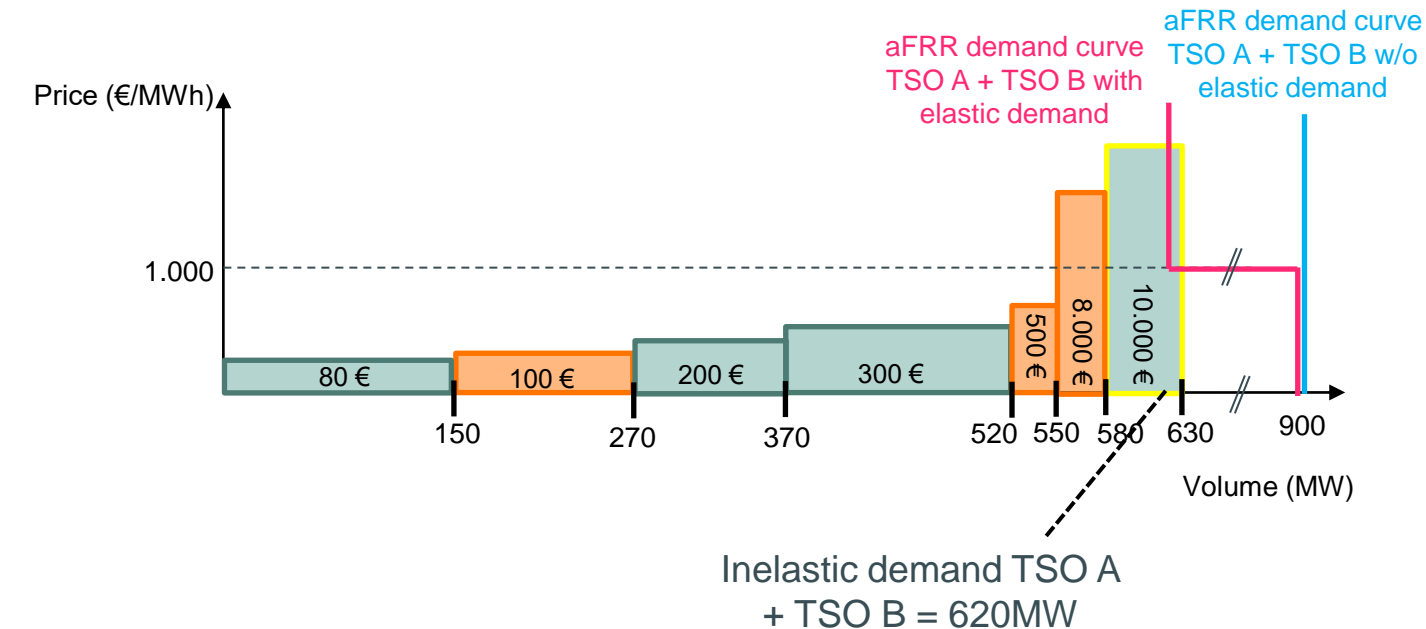


Illustration 4: very high demand from TSO A & TSO B



Without elastic demand from TSO A

- The CBMP would be 10.000 €/MWh
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- TSO B would have an unsatisfied demand of 50 MW

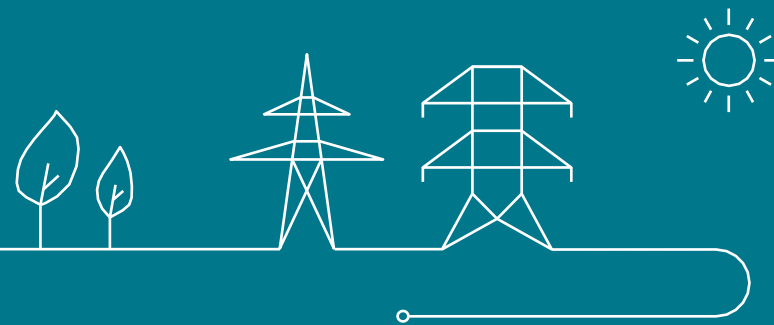
With elastic demand from TSO A

- The CBMP would be 10.000 €/MWh
- TSO A would have a satisfied demand of 120 MW and an unsatisfied demand of 280 MW
- TSO B would have its 500 MW demand satisfied
- TSO A would export 60MW to TSO B → impact on TSO-TSO settlement and FRCE calculation

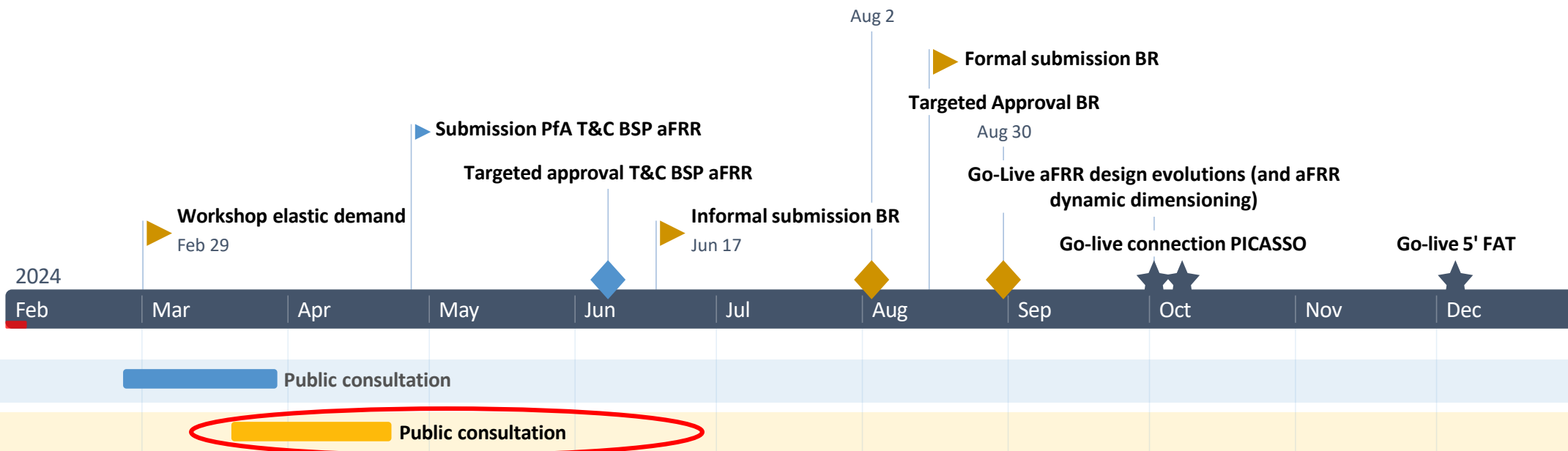
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 - in situations with limited/no ATC in the relevant direction (= main risk identified in the observation round)
 - In (some) moments with simultaneous high aFRR demands within the uncongested area (! Increasing mitigation relative to the 2022 proposal to connect with a bid price cap on all aFRR Energy Bids)
- ③ The **application of elastic demand as proposed by Elia would** lead to moments with unsatisfied aFRR demands. However, these unsatisfied aFRR demand are expected to represent very limited volumes and hence would not lead to a substantial deterioration of the FRCE quality and therefore **not have a negative impact on the dimensioned aFRR needs via the FRCE feedback loop**.
 - It must be noted that the connection to PICASSO would generally come with an improvement of the regulation quality (FRCE)
- ④ **Elastic demand cannot (fully) mitigate the risk of importing high prices** due to high aFRR demands from a neighboring TSO
 - Not all participating TSOs are expected to use the possibility of introducing an elastic demand
 - Recall: the risk of “importing” high prices in case of high demands of neighboring TSOs was also identified in the observation round but is expected to materialize infrequently considering the magnitude of the merit order of neighboring TSOs.

Planning & next steps



ACER Decision Elastic Demand (expected)



Next steps:

- Elia invites all stakeholders to provide their feedback to the presented proposal by 8 March (please contact your KAM Energy)
- The public consultation of the Balancing Rules is planned to start on around the last week of March