Stakeholder Webinar |High Prices Mitigation Measures

23 October 2023

entsoe

Reliable Sustainable Connected

Outline

1. High Prices Mitigation Measures – Public consultation
2. Publication of quarterly pricing reports
3. Timeline for the implementation of measures
4. Appendix

1. HPMM – Public consultation

1. HPMM – Public consultation

Ongoing Consultation on All TSOs' Proposals for Amendments LINK

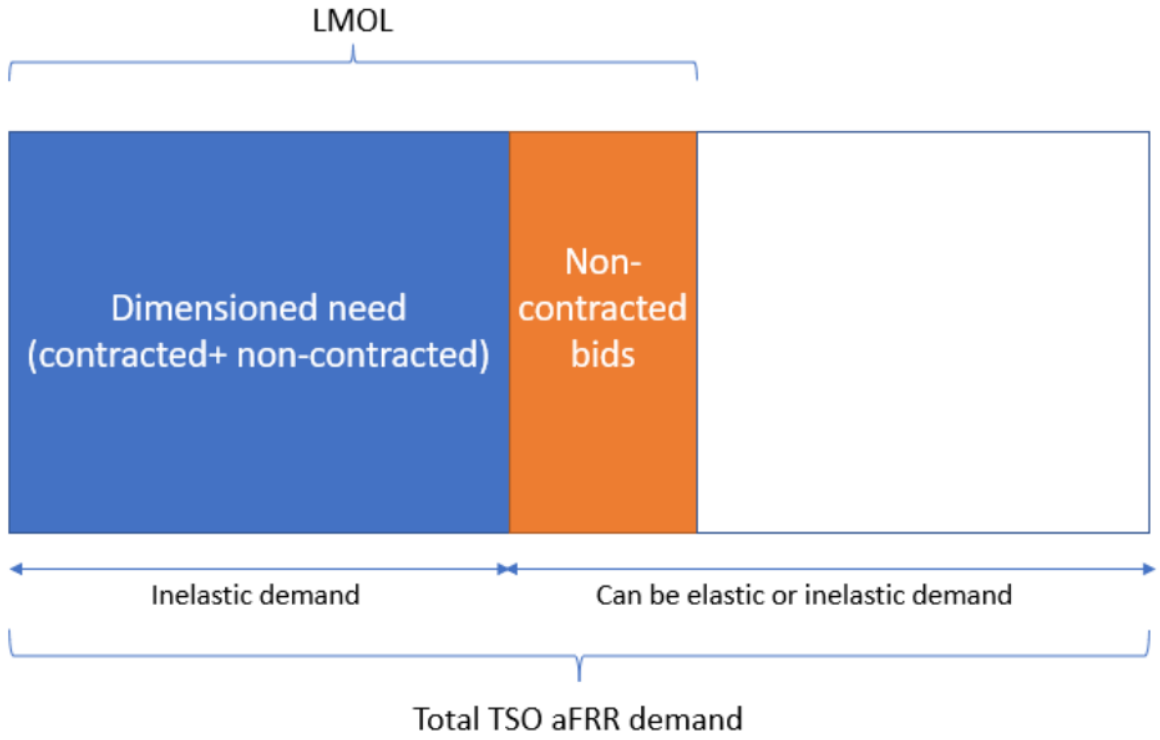
- Consultation concerns the proposed by All TSOs amendments regarding two documents:
  1. **aFRR IF** - *Implementation framework for the European platform for the exchange of balancing energy from frequency restoration reserves with automatic activation in accordance with Article 21 of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing*; and
  2. **Pricing Methodology** - *Methodology for pricing balancing energy and cross-zonal capacity used for the exchange of balancing energy or operating the imbalance netting process in accordance with Article 30(1) of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing.*
- Main contents consulted are:
  1. Voluntary elastic aFRR demand for aFRR demands larger than the dimensioned aFRR in a LFC block.
  2. Determination of the aFRR CBMP based on LFC input and LFC output signals (so far only based on LFC input).
  3. Harmonised maximum and minimum standard balancing energy prices (temporarily in the amount of 10,000 EUR/MWh until 07/2026 afterwards permanent in the amount of 15.000 EUR/MWh).

- Consultation closes on 12 December 2023.
- Implementation timelines are to be determined for the final submission of the proposed amendments.
  - Currently TSOs plan to have these proposals implemented as soon as possible after the approval by ACER.

1.1. HPMM – Public consultation – voluntary elastic aFRR demand

1.1. HPMM – Public consultation – Voluntary elastic aFRR demand

- The application of elastic aFRR demand as proposed represents a possibility (if approved by NRA) and is not mandatory to all TSOs.
- Principle: A participating TSO may define a price for parts of its aFRR demand that it is willing to pay or receive for the activation of aFRR.
  - Only for the part of aFRR demand that is greater than dimensioned aFRR.
  - aFRR demand in the range of dimensioned aFRR must be satisfied regardless of the price (No alternatives to aFRR activation for short-term imbalances (<15 min), TSOs dimensioned amount of aFRR determined to respect the FRCE target parameters).
  - A TSO should not use elastic aFRR demand to cover long-lasting (>15min) system imbalances.
- Need for transparency obligations.
  - Rules for FRR dimensioning, including definition of aFRR and mFRR ratio.
  - Rules for defining the volume and price(s) for this elastic aFRR demand.



1.1. HPMM – Public consultation – voluntary elastic aFRR demand

Analysis on possible effect of limiting full access to aFRR CMOL by submitted MOL volume

Economic Analysis showed that

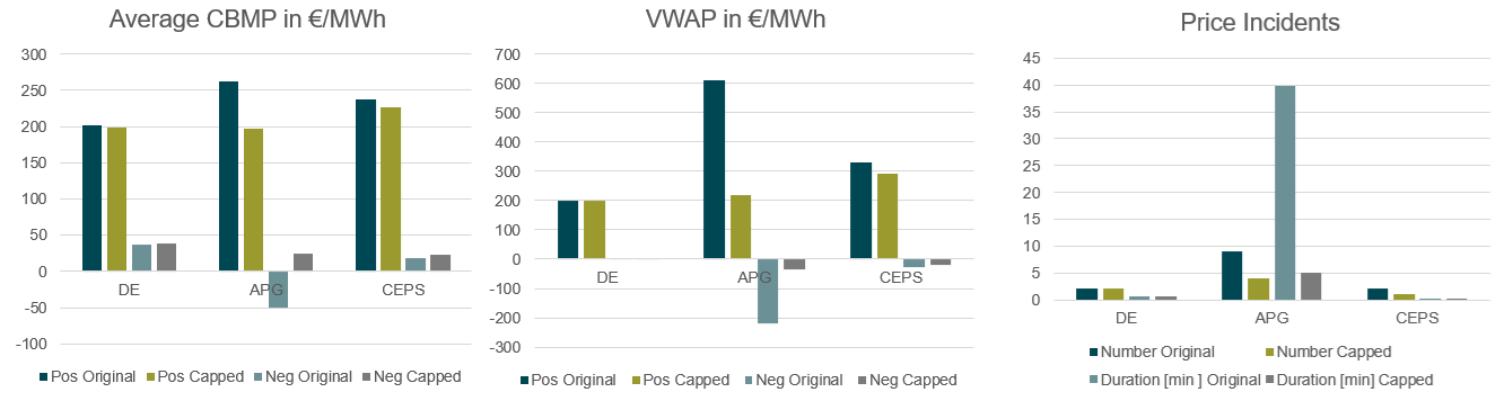
1. Mitigation can be significant for small countries with hockey stick MOL, willing to use this measure.
2. other countries (here DE) are not benefiting from cutting of exceeding aFRR demands.

➢ Measure should stay voluntary.

3. Number of price incidents in small LFC blocks decrease

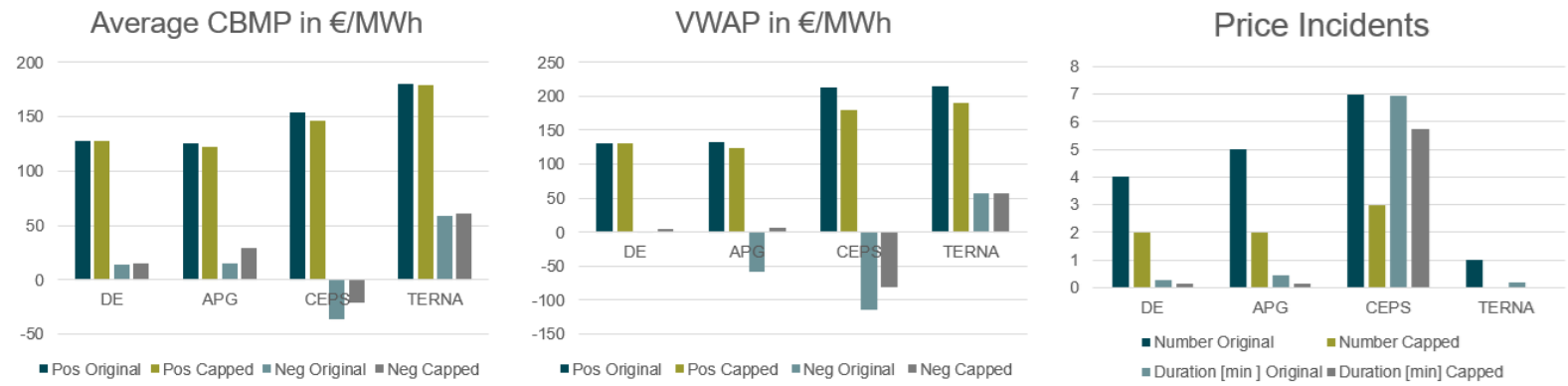
Simulation results

MARCH 6TH TO MARCH 11TH - PRICES



Simulation results

JULY 24TH TO JULY 30TH - PRICES



1.1. HPMM – Public consultation – voluntary elastic aFRR demand

Efficient system operation:

- IFs for aFRR and mFRR allow each TSO to access all bids in the CMOL, subject to sufficient CZC on the borders.
  - Legislation does not impose that TSOs would keep improving at any cost their FRCE above the agreed threshold.
  - Design may lead to the activation of extremely expensive bids, also in situations where such activation is not needed to ensure an acceptable frequency quality, resulting (directly or indirectly) in unnecessarily high costs for the consumer.

- Limiting exceeding aFRR demands increases FRCE and decreases frequency quality (if no activation of alternative (e.g., mFRR) takes place) when comparing it to a scenario with full access to CMOL, but it may provide an improvement compared to scenario without connection to PICASSO assuming stable dimensioning and secure system operation of TSOs.

1.1. HPMM – Public consultation – voluntary elastic aFRR demand

Additions in Article 3 of aFRR IF:

4. 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:
   a) use elastic aFRR demand if the aFRR demand is lower or equal to the required aFRR reserves sufficient to respect the FRCE target parameters, as dimensioned by the TSO in accordance with article 157 of the SO Regulation, such (part of the) demand having to be satisfied irrespective of the price (i.e., be inelastic demand);
   b) use elastic aFRR demand to cover a system imbalance that is expected to last for at least one full quarter-hour, such imbalance having to be covered by inelastic aFRR demand or by the activation of alternative balancing energy products;
   c) use the elastic aFRR demand in such a way that it imposes a cap on balancing energy prices for any~~all~~ LFC area.
   d) 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.
5. 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, if not sufficiently described in the publication in accordance to paragraph 4(b).

Additional Definitions:

(j) 'elastic aFRR demand' is a TSO demand for activation of standard aFRR balancing energy product bid of which the satisfaction depends on the price of standard aFRR balancing energy product bids;

~~(i)~~(k) 'expert group' means a body composed of nominated experts of all member TSOs and established by the steering committee;

~~(j)~~(l) 'FRCE adjustment' means a correction of the automatic frequency restoration power interchange for the determination of operational security indicators in accordance with Article 15 of the SO Regulation, the evaluation of the fulfilment of the FRCE quality target parameters in accordance with Article 128 of the SO Regulation and for operational monitoring purposes in order to reflect in the FRCE of the receiving TSO a compliant delivery of aFRR in the LFC area of the connecting TSO;

~~(k)~~(m) 'granularity' means the smallest increment in volume of a standard aFRR balancing energy product bid;

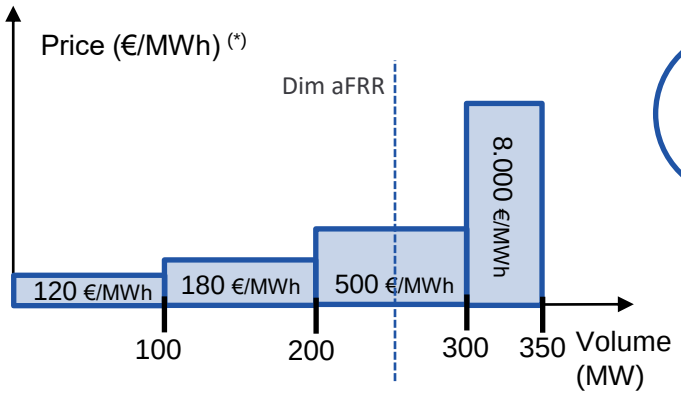
(n) 'inelastic aFRR demand' is a TSO demand for activation of standard aFRR balancing energy product bid that needs to be satisfied irrespective of the price of the activation of standard aFRR balancing energy product;

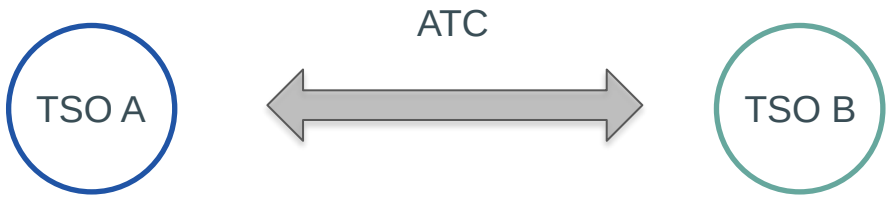
Additions in Article 13 of aFRR IF:

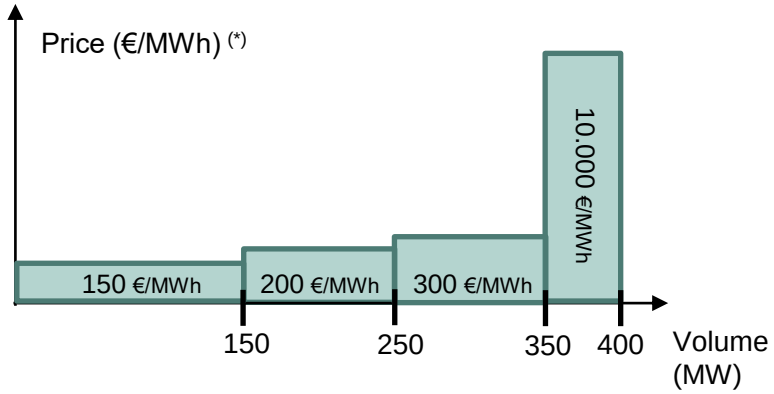
1. All member TSOs shall monitor, evaluate and report the following aspects of implementation and operation of the aFRR-Platform at least on a yearly basis. The common report shall be published by ENTSO-E on its website and reported to regulatory authorities:
   (a) the implementation progress and roadmap in accordance with Article 5;
   (b) the usage of elastic aFRR demand pursuant to Article 3(4), including situations where elastic aFRR demand was satisfied and to which degree the elastic aFRR demand was fulfilled and the influence of satisfying elastic aFRR demand on the cross-border marginal price;

1.1. HPMM – Public consultation – voluntary elastic aFRR demand

Examples - assumptions





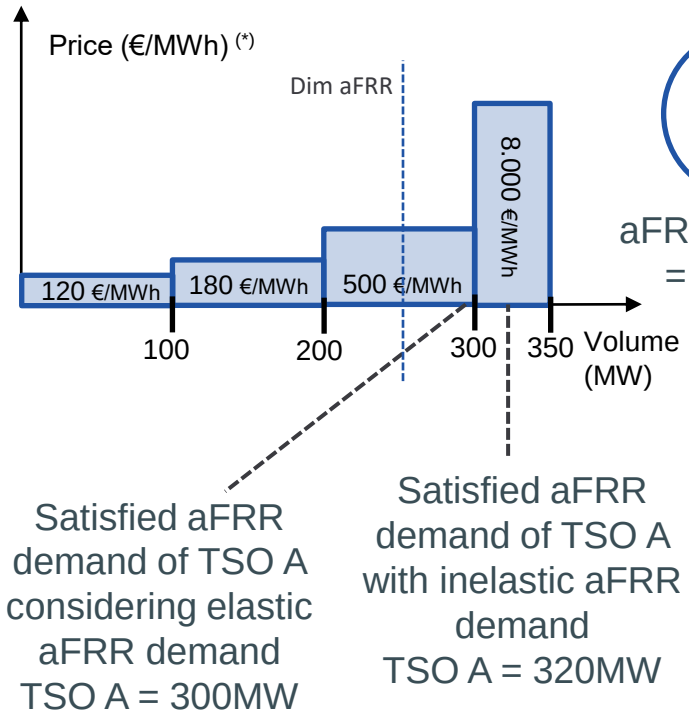


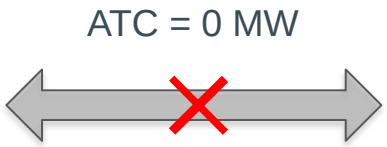
- Examples assume upward demands from TSO A and TSO B and the LMOLs illustrated above
- TSO A has a dimensioned need of 250 MW
- TSO A defines an elastic demand with following parameters
  - ✓ The demand is elastic beyond the dimensioned need
  - ✓ The price threshold is 600€/MWh
- TSO B only has inelastic demand

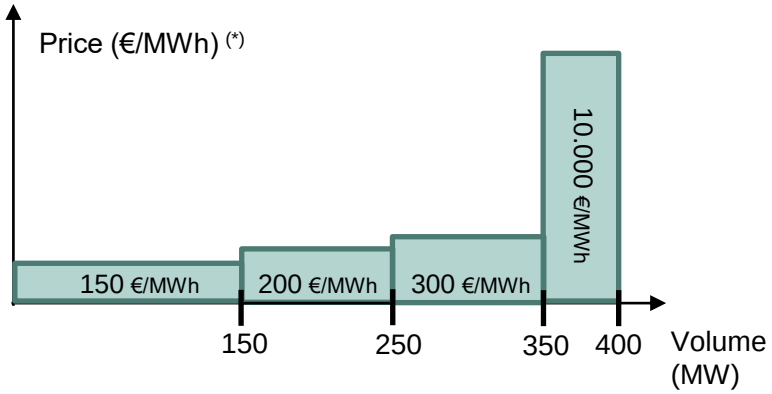
(*) Prices are not on scale

1.1. HPMM – Public consultation – voluntary elastic aFRR demand

Example 1 : TSO A isolated







<u>Without elastic aFRR demand from TSO A</u>

- CBMP from TSO A = 8.000 €/MWh
- The aFRR demand from TSO A will be fully satisfied

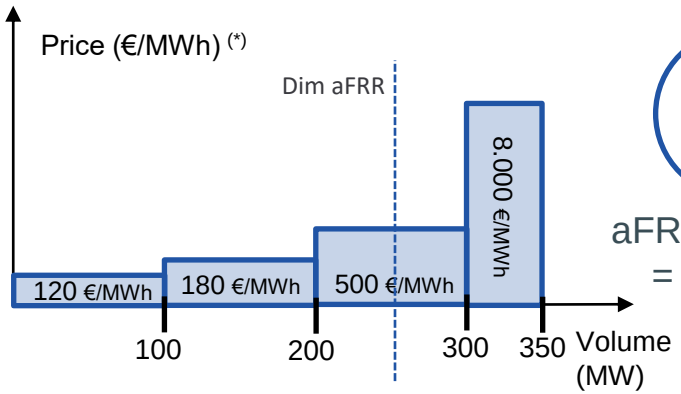
<u>With elastic aFRR demand from TSO A</u>

- CBMP from TSO A = 500 €/MWh
- TSO A will limit the output of the controller to aFRR energy bids ≤ CBMP in order to prevent automatic activation of the bid at 8.000 €/MWh, which is not selected by the aFRR-Platform
- TSO A has an unsatisfied aFRR demand of 20 MW
- TSO B is not impacted (no ATCs with TSO A)

(*) Prices are not on scale

1.1. HPMM – Public consultation – voluntary elastic aFRR demand

Example 2: high demand from TSO A



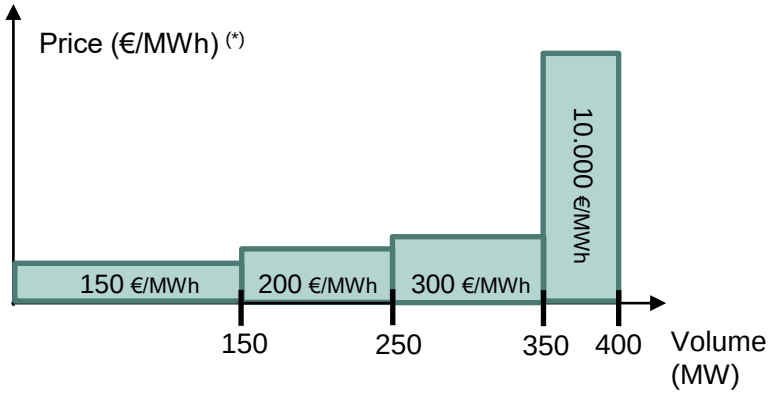
TSO A

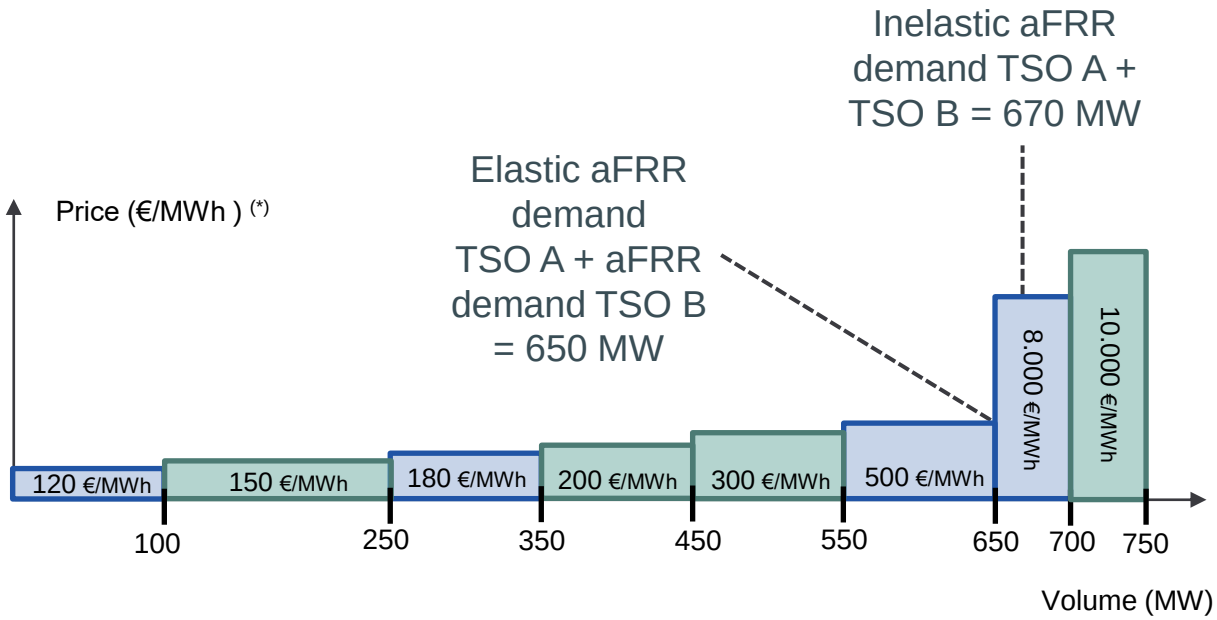
aFRR demand = 520 MW

No ATC restriction

TSO B

aFRR demand = 150 MW





Without elastic demand from TSO A

- CBMP = 8.000 €/MWh
- Both aFRR demands are fully satisfied

With elastic demand from TSO A

- CBMP = 500 €/MWh
- TSO A has an unsatisfied aFRR demand of 20 MW

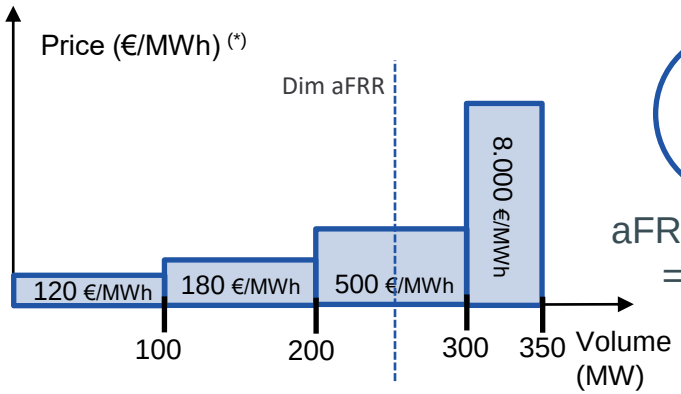
➔ 500MW satisfied at a price < the threshold

➔ TSO A benefits from the liquidity of its LMOL and of the aFRR Platform, but not at any price beyond its dimensioned volume

(*) Prices are not on scale

1.1. HPMM – Public consultation – voluntary elastic aFRR demand

Example 3: low demand TSO A & high demand TSO B



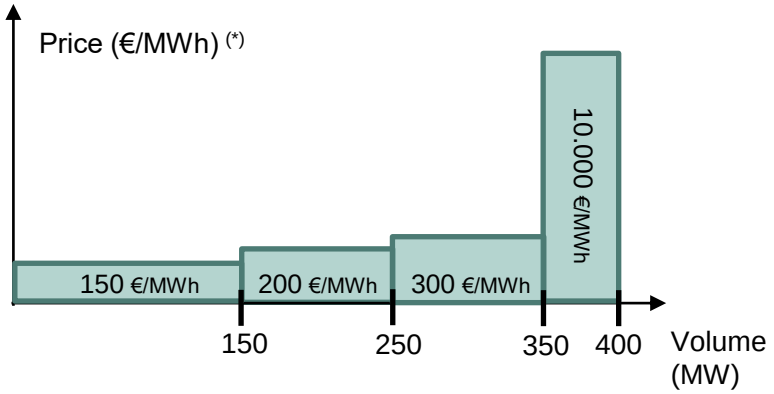
TSO A

aFRR demand = 70 MW

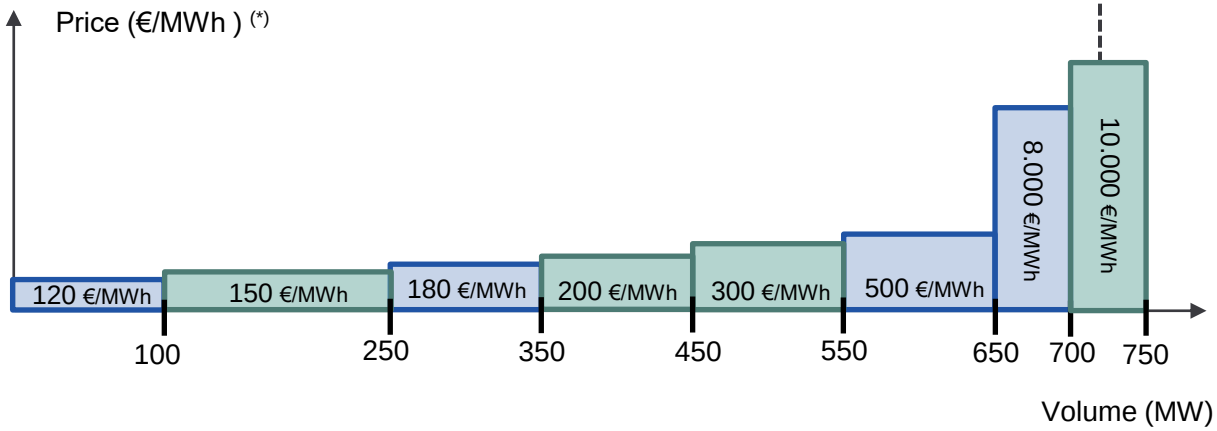
No ATC restriction

TSO B

aFRR demand = 650 MW



aFRR demand TSO A + TSO B = 720 MW



- As TSO B only has inelastic demand, the aFRR-Platform selects all bids up to 720MW

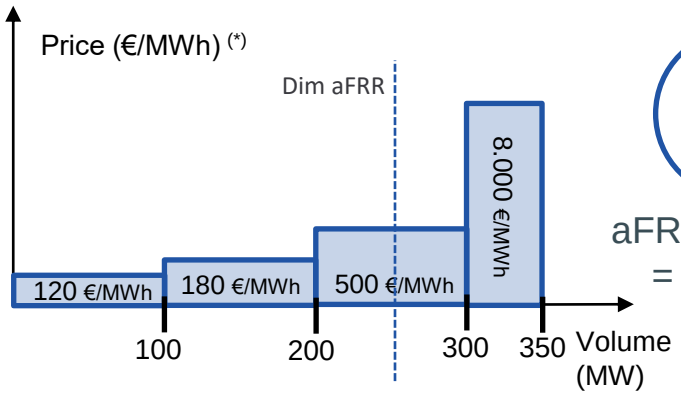
➔ CBMP of 10.000 €/MWh and activation of the bids at the end of the LMOL of TSO A (even though this TSO has defined an elastic demand)

- In this case, elastic demand of TSO A has no impact

(*) Prices are not on scale

1.1. HPMM – Public consultation – voluntary elastic aFRR demand

Example 4: high demands TSO A & TSO B



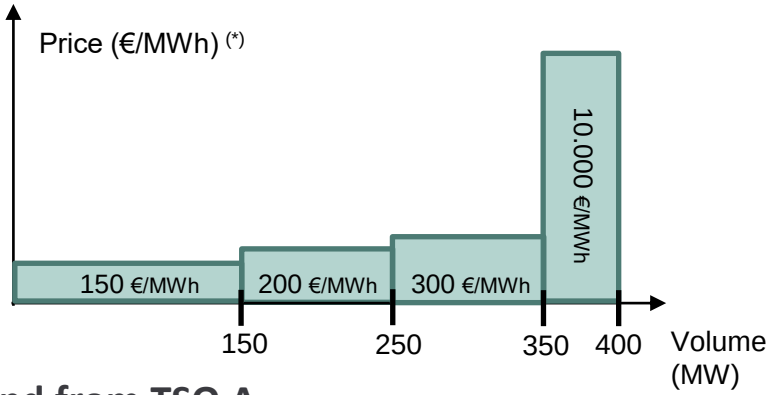
TSO A

aFRR demand = 550 MW

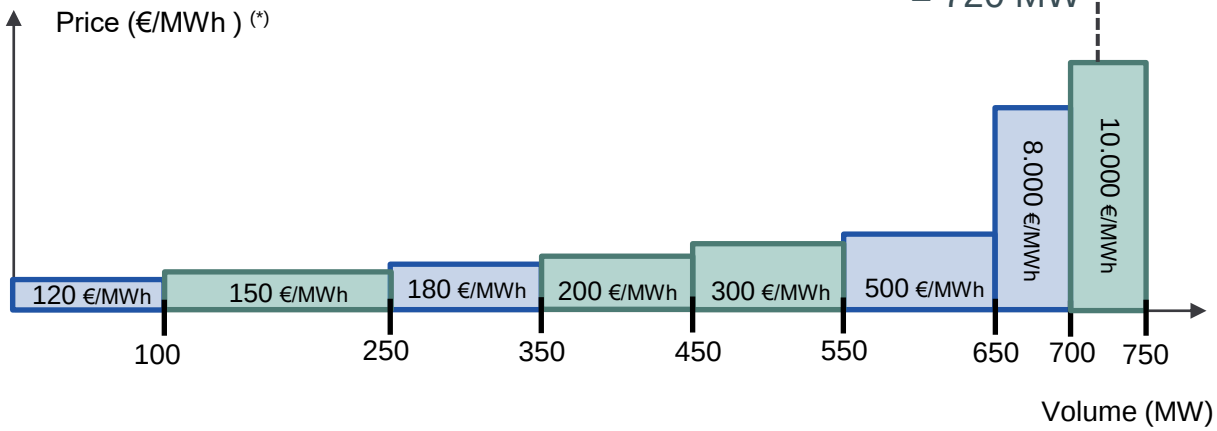
No ATC restriction

TSO B

aFRR demand = 470 MW



Elastic aFRR demand TSO A + aFRR demand TSO B = 720 MW



Without elastic demand from TSO A

- CBMP = 10.000 €/MWh
- The unsatisfied demand (270 MW) will be distributed to TSO A (200MW) and TSO B (70MW)

With elastic demand from TSO A

- CBMP = 10.000 €/MWh
- TSO A will have a satisfied demand of 250 MW
  - ➔ Unsatisfied demand of 300 MW
  - ➔ Price is not impacted, but regulated volume is
- TSO B will have its 470 MW demand satisfied

(*) Prices are not on scale

1.2. HPMM – Public consultation – Determination of aFRR CBMP

1.2. HPMM – Public consultation – Determination of aFRR CBMP

Motivation

- Short-term imbalances do not lead to local aFRR activations, due to the proportional-integral behaviour of local load frequency controllers (‘LFCs’).
- The current CBMP is determined by aFRR platform selected bids, but the platform does not consider the integral behaviour of local LFCs.
- Therefore, the aFRR CBMP can be determined by a bid that is not even considered for activation by a local LFC.
- This gives a misrepresentation of scarcity/actual aFRR need and exaggerates the true value of real aFRR activation.
- Thus it is proposed to determine the CBMP not only on the input for local LFCs (AOF selected bids) but also the output of local LFCs.

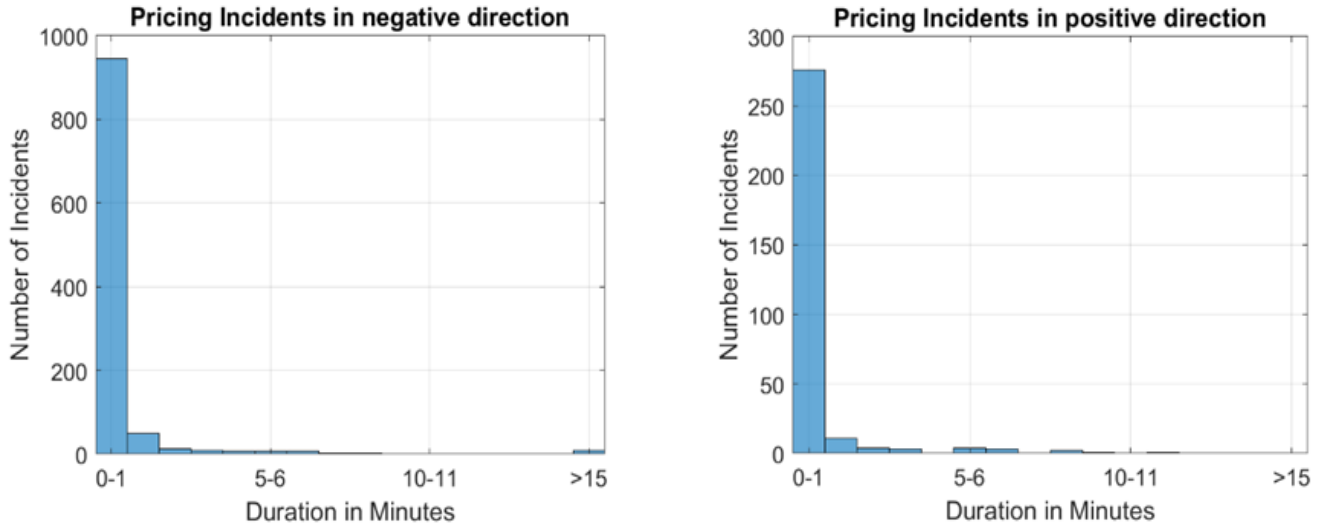


Figure: Number of aFRR price incidents per direction (01.01.2023-27.08.2023)

1.2. HPMM – Public consultation – Determination of aFRR CBMP

Proposed alternative determination of aFRR CBMP:

The CBMP in an uncongested area is the minimum of:

1) Maximum local marginal price
   - Intersection of LMOL and local aFRR setpoint (LFC output) determined by PICASSO platform and
2) aFRR-CBMP determined according to current procedure.
   - Intersection of CMOL and sum of aFRR requirements (LFC input) determined by PICASSO platform.

The second part mitigates that differences in local LFC settings (proportional-integral behavior) impacts the CBMP determination.

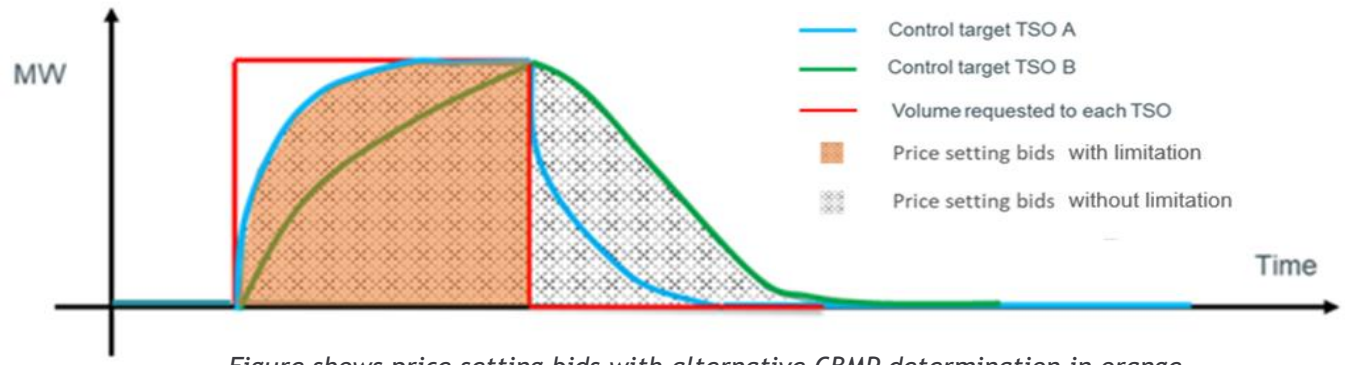
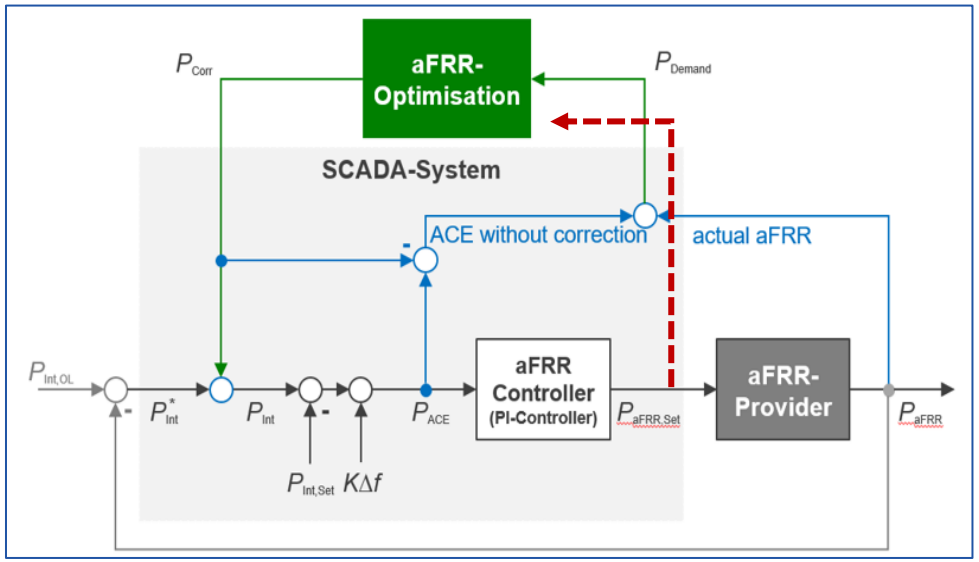


Figure shows price setting bids with alternative CBMP determination in orange



1.2. HPMM – Public consultation – Determination of aFRR CBMP

The proposed alternative CBMP determination with local LFC outputs better reflects local aFRR activation.

This is expected to reduce price incidents and supports an efficient, transparent and better incentivized balancing market:

- CBMP closer to marginal cost of balancing the system, ensuring that BSPs are compensated more appropriately for their contributions and avoiding that grid users need to pay for non-activated bids.
- Increased accuracy of prices encourage BSPs to submit bids that reflect their true willingness to contribute and more efficient resource allocation.
- Increased accuracy of price reduces the market distortion that is currently coming from including bid prices in CBMP that do not lead to local activations.

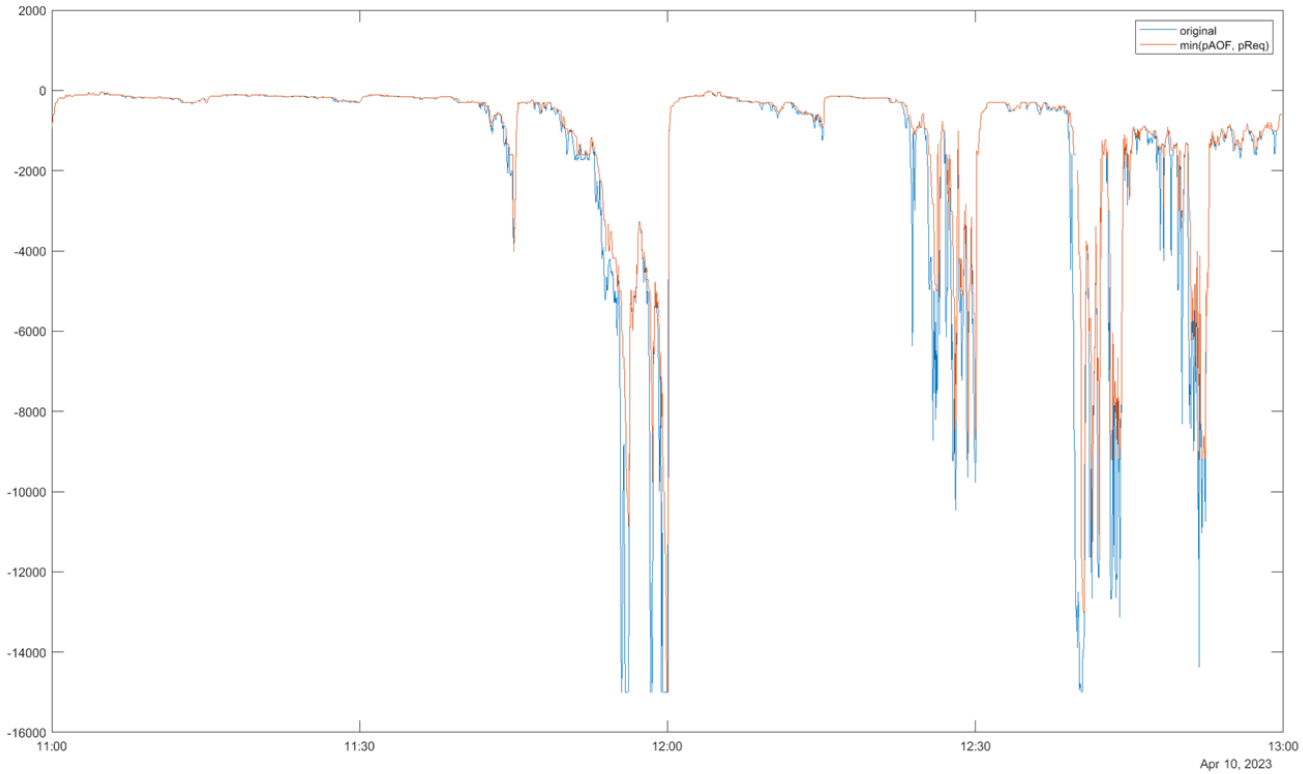


Figure shows simulation of current CBMP (blue) and alternative CBMP determination (orange)

1.2. HPMM – Public consultation – Determination of aFRR CBMP

Proposed amendments of Pricing Methodology (ACER decision 03-2022):

Article 7 on the determination of the CBMP

Article 7

Additional provisions for the pricing of standard aFRR balancing energy product bids

1. The MTU for standard aFRR balancing energy product bids (hereafter referred to as "aFRR MTU") is equal to the optimisation cycle of the AOF of the aFRR-Platform. The first aFRR MTU of each day shall begin right at 00:00 market time. The aFRR MTUs shall be consecutive and not overlapping.
2. For each aFRR MTU a single CBMP shall be determined in each uncongested area. This shall either be a CBMP for positive balancing energy in accordance with paragraph 3 of this article, or a CBMP for negative balancing energy in accordance with paragraph 4 of this article, or a CBMP determined for the case with no selected bids in the direction of the LFC outputs of the uncongested area in accordance with paragraph 5 of this article.
3. The CBMP for positive standard aFRR balancing energy product bids in an uncongested area shall be determined if the AOF selects bids in the positive direction in this uncongested area. The CBMP for ~~selected~~ positive standard aFRR balancing energy product bids in an uncongested area shall be equal to the highest price of all ~~selected~~ positive standard aFRR balancing energy product bids determined on the basis of the LFC outputs in the same uncongested area, limited by the highest price of all positive standard aFRR balancing energy product bids selected by the AOF in the same uncongested area.
4. The CBMP for negative standard aFRR balancing energy product bids in an uncongested area shall be determined if the AOF selects bids in the negative direction in this uncongested area. The CBMP for ~~selected~~ negative standard aFRR balancing energy product bids in an uncongested area shall be equal to the lowest price of all ~~selected~~ negative standard aFRR balancing energy product bids determined on the basis of the LFC outputs in the same uncongested area, limited by the lowest price of all negative standard aFRR balancing energy product bids selected by the AOF in the same uncongested area.
5. Where there are no selected positive or negative aFRR balancing energy product bids in an uncongested area, or when the standard aFRR balancing energy product bids determined on the basis of the LFC outputs in the uncongested area are all in the opposite direction of the standard aFRR balancing energy product bids selected by the AOF in that uncongested area, the CBMP shall be equal to the middle point between the lowest positive and highest negative available standard aFRR balancing energy product bids.

1.3. HPMM – Public consultation – Max/min prices for BE

1.3. HPMM – Public consultation – Max/min prices for BE

Motivation

- With Decision No 03/2022 of 25 February 2022 ACER has approved the amendment to the Pricing Methodology, by which transitional harmonised maximum and minimum balancing energy prices of ±15.000€/MWh for balancing energy bids with a validity period until July 2026 were introduced, Article 9(3)(a) of Pricing Methodology.
  - ±99,999 EUR/MWh to be applied afterwards.

- Based on the **experience gained within the operation of the European Balancing Platforms together with characteristics of balancing energy markets in EU,** allTSOs see the need to propose an additional amendment to the Pricing Methodology to **establish permanently valid harmonised maximum and minimum balancing energy prices of ±15.000€/MWh to ensure efficient functioning of the balancing energy market**.
  - A maximum price for balancing energy of ±99,999 EUR/MWh is not considered to ensure an efficient functioning of the market.

1.3. HPMM – Public consultation – Max/min prices for BE

Pay-as-cleared pricing

- EB Regulation + Electricity Regulation establish marginal pricing to be applied for balancing energy in EU.

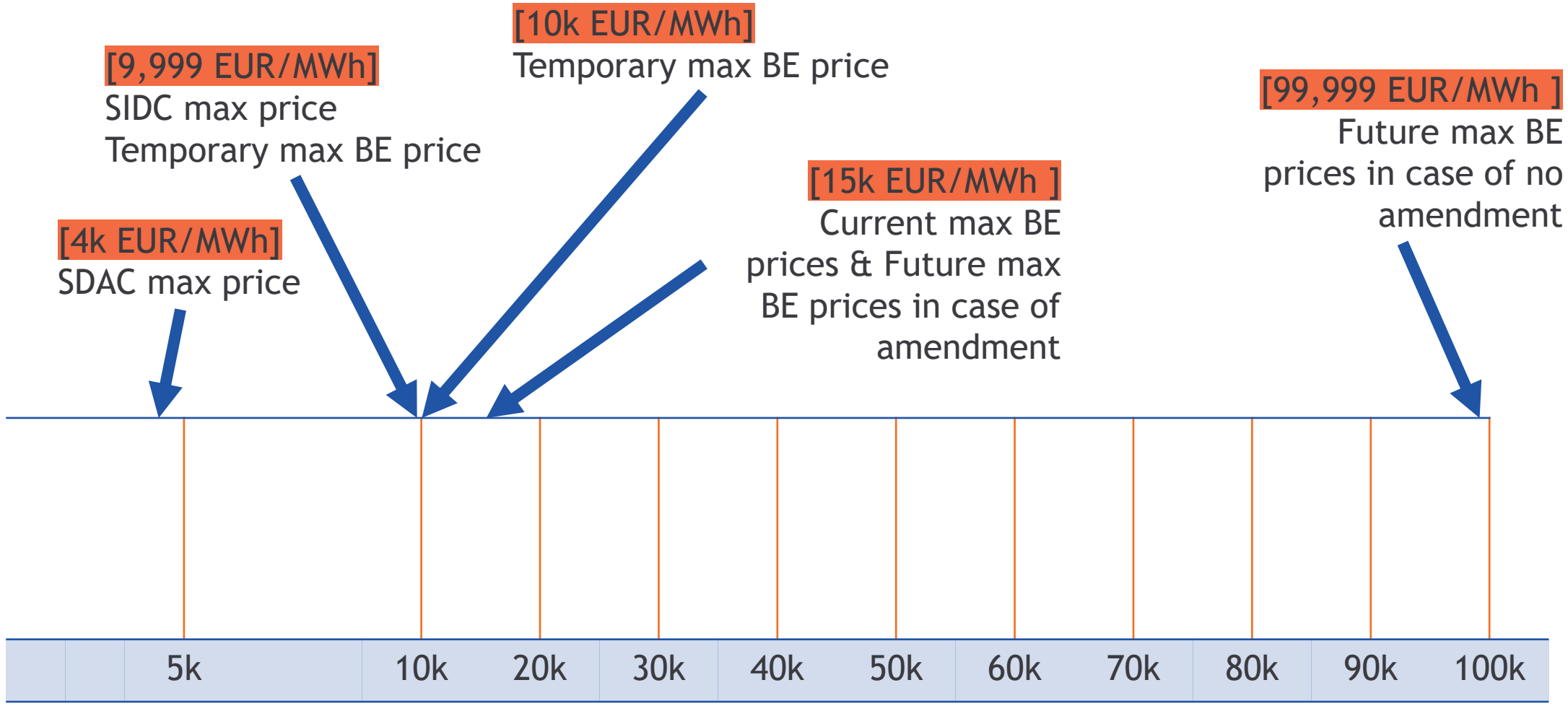
- For marginal (pay-as-cleared) pricing to lead to a welfare-maximising market outcome, several conditions need to hold:
  1. Homogeneous goods
  2. Perfect competition
  3. All-round price flexibility
  4. Single-unit-supply bidder.
  5. Rational behaviour
  6. Profit maximisation
  7. Auction is a one-shot game

- The Balancing Energy market according to EB Regulation hardly fulfils any of the conditions.

  ➢ **Measures are necessary to avoid market distortions and to ensure efficient functioning of the balancing energy market.**

1.3. HPMM – Public consultation – Max/min prices for BE

Interval of possible max/min BE prices



1.3. HPMM – Public consultation – max/min prices for BE

Considerations on price formation in balancing energy markets

- The supply side of the balancing energy market can be considered as oligopolistic.
- Moment when sufficient competition will emerge is unknown, and mitigation measures are necessary in the meantime to limit the potential damages caused by a lack of competition.
- The necessity of harmonised maximum and minimum balancing energy prices also results from the fact that the balancing energy market is not subject to the same free price formation as is the case in the day-ahead and intraday market.

- All TSOs' proposal aims at bringing balancing energy prices close(r) to real underlying costs.
- As VoLL in EU is << 99,999 EUR/MWh, a maximum price for balancing energy of 99,999 EUR/MWh is not considered to ensure an efficient functioning of the balancing energy market.
  - In ENTSO-E `21 ERAA, an EU VoLL of 15,000 EUR/MWh is assumed.
- VoLL assumed as upper bound of interval in which the proposed max/min prices for balancing energy should be chosen from.
- 10,000 €/MWh is the lowest value (i.e., the highest risk mitigation for BRPs and system costs) that guarantees sufficient volumes to satisfy TSOs' needs while being above harmonised maximum and minimum prices for SIDC.

1.3. HPMM – Public consultation – max/min prices for BE

Need for coordinated measures

Market Surveillance and Transparency:

- Measures that can be taken pursuant to the REMIT Regulation are not an equally suitable means of preventing market manipulation and thus the efficient formation of prices.
- All TSOs' proposal can be considered as a risk mitigation measure that increases the efficiency of the market ensuring that market participants compete fairly, without distorting the market dynamics.

Distinction from other measures proposed:

- The measures proposed are designed to jointly address the challenges identified during the operation of European balancing energy markets as each of them is only able to address one of the identified drawbacks.
- The need for adapted maximum and minimum balancing energy prices results also from the fact that neither of the other measures proposed can sufficiently limit exaggerated bids for balancing energy.

1.3. HPMM – Public consultation – max/min prices for BE

Proposed amendments of Pricing Methodology:

3. The maximum technical price limit shall be ~~99,999~~15,000 €/MWh. The minimum technical price limit shall be -~~99,999~~15,000 €/MWh. If the harmonised maximum clearing price for the single intraday coupling in accordance with Article 54(1) of Commission Regulation (EU) 2015/1222 increases above 9,999 €/MWh, the maximum technical price limit shall automatically increase by the same amount. In this case, the lower minimum technical price limit shall automatically decrease by the same absolute value.

Article 9

Implementation timeline

1. All TSOs shall implement this methodology when implementing the European balancing platforms for the exchange of balancing energy or the operation of the INP, in accordance with the Articles 19, 20, 21 and 22 of the EB Regulation. Each TSO shall apply the relevant provisions of this pricing methodology for standard and specific balancing energy product bids as well as the provisions for calculating the price for cross-zonal capacity in accordance with Article 8(1) to Article 8(5) once the TSO becomes participating TSO of the respective European balancing platform.

~~2. The TSOs participating in the RR Platform shall implement and apply this methodology for the pricing of balancing energy from standard RR balancing energy product bids by 1st July 2022.~~

~~3.~~2. Once the European balancing platforms are implemented in a Member State, and for a transitional period of up to 48 months from the implementation deadline pursuant to paragraph (1):

(a) The transitional upper price limit shall be 105,000 €/MWh and the transitional lower price limit shall be -105,000 €/MWh;

(b) If the harmonised maximum clearing price for the single intraday coupling in accordance with Article 54(1) of Commission Regulation (EU) 2015/1222 increases above 9,999 €/MWh, the transitional upper price limit in accordance with subparagraph (a) shall automatically increase by the same amount. In this case, the transitional lower price limit shall be decreased to the same absolute value.'

~~Points (a) and (b) shall apply for the TSOs participating in the RR Platform from 1st July 2022.~~ Following the transitional period, the technical price limits from Article 3(3) shall apply.

2. Publication of quarterly pricing reports

2. Publication of quarterly pricing reports

To increase transparency and as an additional measure identified during discussions on high price mitigation measures, all TSOs will publish the quarterly pricing reports following pricing methodology on the ENTSO-E website effective from Q3 2023 report.

3. Timeline for the implementation of measures

3. Timeline for the implementation of measures

Voluntary elastic aFRR demand

- Most complex mitigation measure
- Requires algorithmic changes at level of aFRR platform and participating TSOs'

Determination of aFRR CBMP

- Requires algorithmic changes at level of aFRR platform

Max/min prices for BE

- Requires parameterisation at level of aFRR platform and TSOs operating national BE markets

Current Timeline Foreseen

- Consultation running until 12 December 2023.
- Submission of final documents afterwards, aiming at an approval by ACER latest until mid-July 2024.
  - All TSOs' aim at putting mitigation measures in place before derogation deadline expires.

➢ Tough timing of process requires transparency and trust in implementation of mitigation measures of all parties involved.

Appendix

1.3. HPMM – Public consultation – max/min prices for BE

Legal Background

- Pursuant to Article 3(1)(b), EB Regulation aims at enhancing efficiency of balancing as well as efficiency of European and national balancing energy markets.
- Pursuant to Article 3(1)(d), EB Regulation aims at contributing to the efficient long-term operation and development of the electricity transmission system and electricity sector in the Union while facilitating the efficient and consistent functioning of day-ahead, intraday, and balancing energy markets.
- Pursuant to Article 3(1)(e), EB Regulation aims at ensuring that the procurement of balancing services is fair, objective, transparent and market-based, and that it avoids undue barriers to entry for new entrants, fosters the liquidity of balancing energy markets while preventing undue distortions within the internal market in electricity.
- Pursuant to Article 3(a) of the Electricity Regulation, market rules shall ensure that prices shall be formed based on demand and supply.
- Pursuant to Article 3(b) of the Electricity Regulation, market rules shall encourage free price formation and shall avoid actions which prevent price formation based on demand and supply.

1.2. HPMM – Public consultation – Determination of aFRR CBMP

Synchronous Area Framework Agreement for Regional Group Continental Europe

B-6-2-2-1-1 LOAD-FREQUENCY CONTROLLER

The load-frequency controller shall have proportional-integral behaviour. The controller parameter shall reflect the dynamic properties of the aFRR. The typical values for the load-frequency controller parameters are:

- 0 % to 50 % for the proportional term;
- 50 s to 200 s for the integral term; and
- 1 s to 5 s for the controller cycle time.

All TSOs shall provide the load-frequency controller parameters to the Synchronous Area Monitor on a yearly basis or if the parameters significantly change.