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

Consolidated version of 5 July 2024
Article 1
Subject matter and scope

1. This pricing methodology is developed in accordance with Articles 30(1) and 30(3) of the EB Regulation.
2. This pricing methodology determines the prices of balancing energy resulting from the activation of balancing energy product bids for frequency restoration process with automatic activation (hereafter referred to as “aFRR”) and the frequency restoration process with manual activation (hereafter referred to as “mFRR”) pursuant to articles 143 and 147 of the SO Regulation and the replacement reserves process (hereafter referred to as “RRP”) pursuant to articles 144 and 148 of the SO Regulation. This methodology applies to all balancing energy product bids, except when a TSO defines a different pricing methodology in accordance with Article 30(4) of the EB Regulation for locally activated specific products not-converted into standard products in accordance with Article 26(3)(b) of the EB Regulation. For the application of the methodology to balancing energy product bids for locally activated specific products not-converted into standard products, all the references in this pricing methodology to standard balancing energy product bids shall equally apply to specific balancing energy product bids.
3. This pricing methodology also defines the pricing of cross-zonal capacity used for the exchange of balancing energy and for operating the INP.
4. This pricing methodology is without prejudice to the introduction of a shortage pricing function for balancing energy as referred in Article 20(3) of the Regulation (EU) 2019/943, within the national terms and conditions related to balancing pursuant to article 18 of the EB Regulation.

Article 2
Definitions and interpretation

1. For the purposes of this pricing methodology, the terms used shall have the meaning given to them in Article 2 of the Electricity Regulation, Article 2 of the EB Regulation and Article 3 of the SO Regulation.
2. In addition, in this pricing methodology the following terms shall apply:

(a) ‘accepted bid volume’ means the balancing energy volume from a balancing energy product bid to be settled in accordance with national terms and conditions related to balancing pursuant to Article 18(5)(h) of the EB Regulation, which requires the development of the rules for the determination of the volume of balancing energy to be settled with the balancing service provider pursuant to Article 45 of the EB Regulation;

(b) ‘aFRR balancing border’ means a set of physical transmission lines linking adjacent Load Frequency Control (LFC) areas of TSOs participating in the aFRR-Platform;

(c) ‘aFRR-Platform’ means the European platform for the exchange of balancing energy from frequency restoration reserves with automatic activation as referred to in Article 21(1) of the EB Regulation;

(d) ‘demand’ means an individual TSO’s demand for balancing energy representing the activation request for balancing energy and can be price inelastic or elastic;

(e) ‘direct activation’ means an mFRR-Platform process for bid activation in the context of Article 145(5) of SO Regulation that can occur at any point in time;
(f) ‘IN-Platform’ means the European platform for the INP as referred to in Article 22(1) of the EB Regulation;

(g) ‘mFRR balancing border’ means a set of physical transmission lines linking adjacent LFC areas of TSOs participating in the mFRR-Platform. In case an LFC area consists of more than one bidding zone, the mFRR balancing border means a set of physical transmission lines linking adjacent bidding zones;

(h) ‘mFRR-Platform’ means the European platform for the exchange of balancing energy from mFRR as referred to in Article 20(1) of the EB Regulation;

(i) ‘point of scheduled activation’ means the point in time from which full activation time is measured for the scheduled activation of standard mFRR balancing energy product bids;

(j) ‘RR-Platform’ means the European platform for the exchange of balancing energy from RR pursuant to Article 19(1) of the EB Regulation;

(k) ‘RR balancing border’ means a set of physical transmission lines linking adjacent bidding zones, of TSOs participating in the RR-Platform;

(l) ‘scheduled activation’ means an mFRR-Platform process for bid activation in the context of Article 145(5) of SO Regulation that takes place at the point of scheduled activation relative to the validity period of the respective balancing energy bid;

(m) ‘standard aFRR balancing energy product’ means the standard product for balancing energy from aFRR, pursuant to Article 25(1) of the EB Regulation;

(n) ‘standard mFRR balancing energy product’ means the standard product for balancing energy from mFRR, pursuant to Article 25(1) of the EB Regulation;

(o) ‘standard RR balancing energy product’ means the standard product for balancing energy from RR, pursuant to Article 25(1) of the EB Regulation;

(p) ‘selected bid’ means a bid that the AOF selects and requests its activation from the participating TSO;

(q) ‘uncongested area’ means the widest area, constituted by bidding zones, where the exchange of balancing energy and the netting of demands is not restricted by the cross-zonal capacities or by the allocation constraints, during a specific market time unit.

3. In this pricing methodology, unless the context requires otherwise:
   a) the singular indicates the plural and vice versa;
   b) headings are inserted for convenience only and do not affect the interpretation of this pricing methodology;
   c) any reference to cross-zonal capacities shall include also the reference to allocation constraints as defined in the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (‘CACM Regulation’);
   d) any reference to legislation, regulations, directives, orders, instruments, codes or any other enactment shall include any modification, extension or re-enactment of it when in force; and
any reference to an Article without an indication of the document shall mean a reference to this pricing methodology.

Article 3
General principles

1. The CBMP shall be calculated by the activation optimisation functions as follows:

(a) the AOF of the RR-Platform shall calculate one CBMP for standard RR balancing energy product bids selected for the balancing purpose for both activation directions, for each market time unit for standard RR balancing energy product bids (hereafter referred to as “RR MTU”) and for each uncongested area;

(b) the AOF of the mFRR-Platform shall calculate one CBMP for standard mFRR balancing energy product bids with scheduled activation type selected for the balancing purpose for both activation directions, for each market time unit for standard mFRR balancing energy product bids (hereafter referred to as “mFRR MTU”) and for each uncongested area;

(c) the AOF of the mFRR-Platform shall calculate one CBMP for standard mFRR balancing energy product bids with direct activation type selected for the balancing purpose for each activation direction, for each mFRR MTU, and for each uncongested area;

(d) the AOF of the aFRR-Platform shall calculate one CBMP for standard aFRR balancing energy product bids selected for the balancing purpose for either activation direction, for each market time unit for standard aFRR balancing energy product bids (hereafter referred to as “aFRR MTU”) and for each uncongested area.

2. Different applicable CBMPs for different bidding zones in one uncongested area may occur only in case of the RR-Platform if bidding zones are linked by an interconnector with a loss factor greater than zero or having a scheduling step greater than MTU.

3. Each TSO shall determine the accepted bid volume of each selected bid for each MTU.

4. The CBMP as defined in paragraph 1 of this Article shall reflect the equilibrium that clears the market per MTU, per uncongested area and where applicable per direction, as revealed by applying the uniform price auction principle.

5. The calculation of the CBMP as defined in this article shall take into account equally all standard balancing energy product bids selected by the AOF of the respective balancing platform, independently of their activation purpose, as long as they are activated by respecting the merit order.

6. All TSOs shall jointly monitor and annually report on the balancing energy volumes and prices, per product, settled in accordance with national terms and conditions related to balancing pursuant to Article 18(5)(i) of the EB Regulation. The report shall include individually for each TSO the proportion of the accepted bid volumes per standard product remunerated with bid prices higher than the CBMP for positive balancing energy product bids or lower than the CBMP for negative balancing energy product bids. The report shall be part of the European report pursuant to Article 59(1) of the EB Regulation, and the abovementioned proportion shall be part of the performance indicator described in Article 59(4)(e) of the EB Regulation.
Article 4

Additional provisions for the pricing of balancing energy from standard RR balancing energy product bids

1. The RR MTU shall be 15 minutes. The first RR MTU of each day shall begin at 00:00 market time. The RR MTUs shall be consecutive and not overlapping.
2. The CBMP for balancing energy from standard RR product bids in each uncongested area shall be equal to the price calculated by the AOF based on the principle of marginal pricing (pay-as-cleared). All TSOs performing the reserve replacement process pursuant to Part IV of Regulation (EU) 2017/1483 shall publish the detailed mathematical calculation of the CBMP together with the detailed description of the optimisation algorithm one month before the deadline for the implementation of the mFRR platform, pursuant to Article 12(3)(k) of the EB Regulation.

Article 5

Additional provisions for the pricing of standard mFRR balancing energy product bids with scheduled activation type

1. The “mFRR MTU shall be 15 minutes. The first mFRR MTU of each day shall begin at 00:00 market time. The mFRR MTUs shall be consecutive and not overlapping.
2. The CBMP for standard mFRR balancing energy product bids with scheduled activation type in each uncongested area shall be equal to the price calculated by the AOF based on the principle of marginal pricing (pay-as-cleared). All TSOs shall publish the detailed mathematical calculation of the CBMP together with the detailed description of the optimisation algorithm one month before the deadline for the implementation of the mFRR platform, pursuant to Article 12(3)(k) of the EB Regulation.

Article 6

Additional provisions for the pricing of standard mFRR balancing energy product bids with direct activation type

1. The CBMP for the standard mFRR balancing energy product bids with direct activation type in each uncongested area shall be determined as follows:
   (a) First step: The AOF of the mFRR-Platform selects positive and negative standard mFRR balancing energy product bids with direct activation type. All standard mFRR balancing energy product bids with direct activation type selected after the point of scheduled activation of the mFRR MTU and no later than the point of scheduled activation of the next mFRR MTU shall be the input for the second step.
   (b) Second step:
      (i) The CBMP for positive standard mFRR balancing energy product bids with direct activation type shall be the highest price of all positive standard mFRR balancing energy
product bids with direct activation type selected in accordance with paragraph 1(a) in the same uncongested area.

(ii) The CBMP for negative standard mFRR balancing energy product bids with direct activation type shall be the lowest price of all negative standard mFRR balancing energy product bids with direct activation type selected in accordance with paragraph 1(a) in the same uncongested area.

(c) Third step: For each mFRR MTU:

(i) the CBMP for the positive standard mFRR balancing energy product bids with direct activation type shall be the maximum of the CBMP determined in accordance with paragraph 1(b)(i) of this article and the CBMP for standard mFRR balancing energy product bids with scheduled activation type for the respective mFRR MTU; and

(ii) the CBMP for the negative standard mFRR balancing energy product bids with direct activation type shall be the minimum of the CBMP determined in accordance with paragraph 1(b)(ii) of this Article and the CBMP for standard mFRR balancing energy product bids with scheduled activation type for the respective mFRR MTU.

2. For each mFRR MTU, each participating TSO shall determine the accepted bid volume of bids selected in accordance with paragraph 1(a) which shall be attributed to the same mFRR MTU and to the subsequent mFRR MTU for the respective direction.

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 bids selected by the AOF in the direction of any of the LFC area setpoints for automatic FRR activation within the uncongested area in accordance with paragraph 5 of this article.

3. Where the aFRR AOF selects positive aFRR balancing energy product bids in an uncongested area and there is at least one LFC area setpoint for automatic FRR activation in the positive direction within the uncongested area, the CBMP for positive standard aFRR balancing energy product bids in this uncongested area shall be determined as the maximum on all LFC areas of the uncongested area of the minimum per LFC area between:

i) The price of the bid corresponding to the setpoint for automatic FRR activation of positive standard aFRR balancing energy product bids of the considered LFC area in the respective local merit order list for positive aFRR; and
ii) The price of the bid corresponding to the volume of positive standard aFRR balancing energy product bids selected by the aFRR AOF within the considered LFC area in the respective local merit order list for positive aFRR.

4. Where the aFRR AOF selects negative aFRR balancing energy product bids in an uncongested area and there is at least one LFC area setpoint for automatic FRR activation in the negative direction within the uncongested area, the CBMP for negative standard aFRR balancing energy product bids in this uncongested area shall be determined as the minimum on all LFC areas of the uncongested area of the maximum per LFC area between:
   i) The price of the bid corresponding to the setpoint for automatic FRR activation of negative standard aFRR balancing energy product bids of the considered LFC area in the respective local merit order list for negative aFRR; and
   ii) The price of the bid corresponding to the volume of negative standard aFRR balancing energy product bids selected by the aFRR AOF in the considered LFC area with the respective local merit order list for negative aFRR.

5. The CBMP in an uncongested area shall be equal to the middle point between the lowest positive and highest negative available standard aFRR balancing energy product bids in the following cases:
   a) the aFRR AOF selects no positive or negative aFRR balancing energy product bids in an uncongested area;
   b) the aFRR AOF selects positive aFRR balancing energy product bids in an uncongested area while there are no LFC area setpoints for automatic FRR activation within the uncongested area in the positive direction;
   c) the aFRR AOF selects negative aFRR balancing energy product bids in an uncongested area while there are no LFC area setpoints for automatic FRR activation within the uncongested area in the negative direction;

6. Each participating TSO shall ensure in accordance with national terms and conditions related to balancing pursuant to article 18(5)(i) of the EB Regulation that each accepted bid volume for positive balancing energy from a standard aFRR balancing energy product bid for each aFRR MTU is remunerated with the maximum of the CBMP determined in accordance with paragraph 2 and the respective bid price.

7. Each participating TSO shall ensure in accordance with national terms and conditions related to balancing pursuant to article 18(5)(i) of the EB Regulation that each accepted bid volume for negative balancing energy from a standard aFRR balancing energy product bid for each aFRR MTU is remunerated with the minimum of the CBMP determined in accordance with paragraph 2 and the respective bid price.

8. For the application of paragraphs 6 and 7 when a standard aFRR balancing energy product bid has no valid bid price for the respective validity period, the latest bid price from the previous validity period(s) shall be used.
Article 8
Pricing of cross-zonal capacity

1. All TSOs shall determine the price for the use of the cross-zonal capacity for the exchange of balancing energy resulting from the:
   (a) activation of standard RR balancing energy product bids for each RR balancing border;
   (b) activation of standard mFRR balancing energy product bids for each mFRR balancing border that corresponds to a bidding zone border; and
   (c) activation of standard aFRR balancing energy product bids for each aFRR balancing border that corresponds to a bidding zone border.

and for operating the INP for each relevant aFRR balancing border.

2. The cross-zonal capacity price for the balancing energy exchange resulting from the activation of standard balancing energy product bids as referred to in paragraph 1(a), (b) and (c), shall be equal to the difference between the CBMPs of the respective uncongested areas on the balancing borders separating two uncongested areas, calculated pursuant to Articles 4, 5, 6 and 7 of this pricing methodology.

3. Within an uncongested area, the cross-zonal capacity price for the balancing energy exchange resulting from the activation of standard energy product bids shall be 0 €/MWh.

4. The price for the cross-zonal capacity used for:
   (a) the INP performed implicitly by the AOF of the aFRR-Platform; and
   (b) the netting of demands in the RR-Platform and the mFRR-Platform

shall be 0 €/MWh within an uncongested area and shall correspond to the difference between the CBMPs of the respective uncongested areas on the balancing borders separating two uncongested areas, calculated pursuant to Articles 4, 5, 6 and 7 of this pricing methodology.

5. The price for the cross-zonal capacity used for operating the INP performed by the AOF of the IN-Platform shall be 0 €/MWh.

Article 9
Technical price limits

1. The price for all balancing energy product bids as well as the value of the cross-border marginal price shall not be higher than the technical price limits in the positive direction according to Paragraphs (2) to (3) and shall not be lower than the technical price limits in the negative direction according to Paragraphs (4) to (5).

2. The technical price limits in the positive direction are:
   a. the absolute maximum price of 99,999 €/MWh, which is an absolute limit;
b. the harmonised maximum balancing energy price, which is an adjustable limit, in accordance with Paragraph (3).

3. The initial value of the harmonised maximum balancing energy price shall be set at the reference harmonised maximum balancing energy price. The reference harmonised maximum balancing energy price shall be the maximum between +15,000 €/MWh and the value of the transitional upper price limit at the end of the period defined in Article 11(2). Following that period, the harmonised maximum balancing energy price shall be adjusted in accordance with Article 10.

4. The technical price limits in the negative direction are:
   a. the absolute minimum price of −99,999 €/MWh, which is an absolute limit;
   b. the harmonised minimum balancing energy price, which is an adjustable limit, in accordance with Paragraph (5).

5. The initial value of the harmonised minimum balancing energy price shall be set at the reference harmonised minimum balancing energy price. The reference harmonised minimum balancing energy price shall be the minimum between −15,000 €/MWh and the value of the transitional lower price limit at the end of the period defined in Article 11(2). Following that period, the harmonised minimum balancing energy prices shall be adjusted in accordance with Article 10.

Article 10
Criteria and process for adjusting the harmonised maximum and minimum balancing energy prices

1. The harmonised maximum balancing energy price shall be adjusted according to the following rules:
   a) the harmonised maximum balancing energy price shall be increased by 500 €/MWh in the event that, in at least one bidding zone, the three triggering conditions for the positive direction defined in paragraph (2) are met; for at least 2 imbalance settlement periods in at least 2 different days where the second day is within 30 rolling days from the first day;
   b) after the last of the events referred to in subparagraph (a) occurred, a transition period of 28 days shall start;
   c) during the transition period mentioned in subparagraph (b), the harmonised maximum balancing energy price shall be kept at the value of the harmonised maximum balancing energy price before the adjustment and all events referred to in paragraph (a) occurred during the transition period shall be ignored;

2. The triggering conditions for the positive direction for a given imbalance settlement period for a given bidding zone shall be:
   a) the mFRR CBMP, from the mFRR-Platform, in the market time unit corresponding to the considered imbalance settlement period exceeds a value of 70 percent of the
harmonised maximum balancing energy price;
b) the volume weighted average of the aFRR cross-border marginal prices, from the aFRR-Platform, of all the market time units which are part of the considered imbalance settlement period exceeds a value of 70 percent of the harmonised maximum balancing energy price; and
c) the sum of the balancing border capacity limits on import to that bidding zone in the mFRR-Platform is at least equal to the sum of the volume of bids offered in the mFRR-Platform and aFRR-Platform in that bidding zone by its largest BSP in the positive direction;

3. The harmonised minimum balancing energy price shall be adjusted according to the following rules:
   a) the harmonised minimum balancing energy price shall be decreased by 100 €/MWh in the event that, in at least one bidding zone, the three triggering conditions for the negative direction defined in paragraph (4) are met; for at least 2 imbalance settlement periods in at least 2 different days where the second day is within 30 rolling days from the first day;
   b) after the last of the events referred to in subparagraph (a) occurred, a transition period of 28 days shall start;
   c) during the transition period mentioned in subparagraph (b), the harmonised minimum balancing energy price shall be kept at the value of the harmonised minimum balancing energy price before the adjustment and all events referred to in paragraph (a) occurred during the transition period shall be ignored;

4. The triggering conditions for the negative direction for a given imbalance settlement period for a given bidding zone shall be:
   a) the mFRR CBMP, from the mFRR-Platform, in the market time unit corresponding to the considered imbalance settlement period falls below a value of 70 percent of the harmonised minimum balancing energy price;
   b) the volume weighted average of the aFRR cross-border marginal prices, from the aFRR-Platform, of all the market time units which are part of the considered imbalance settlement period falls below a value of 70 percent of the harmonised minimum balancing energy price; and
   c) the sum of the balancing border capacity limits on export from that bidding zone in the mFRR-Platform is at least equal to the sum of the volume of bids offered in the mFRR-Platform and aFRR-Platform in that bidding zone by its largest BSP in the negative direction;

5. In the event that the harmonised maximum clearing price for the single intraday coupling in accordance with Article 54(1) of Commission Regulation (EU) 2015/1222 increases, the harmonised maximum balancing energy price shall automatically increase by the same amount.
6. In the event that the harmonised minimum clearing price for the single intraday coupling in accordance with Article 54(1) of Commission Regulation (EU) 2015/1222 decreases, the harmonised minimum balancing energy price shall automatically decrease by the same amount.

7. The TSOs shall transparently announce and publish the adjusted harmonised maximum and/or minimum balancing energy price at least 21 days before their implementation and application in the balancing platforms.

8. Following the period defined in Article 11(2), the TSOs shall, at least every two years, reassess the harmonised maximum and minimum balancing energy prices, publish this assessment and consult it in relevant stakeholder forums organised in accordance with Article 9 of the EB Regulation. A reassessment may also follow any adjustment in accordance with paragraph (1) or (3), if TSOs deem it appropriate.

**Article 11**

**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. 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 15,000 €/MWh and the transitional lower price limit shall be -15,000 €/MWh;
   (b) In the event that the harmonised maximum clearing price for the single intraday coupling in accordance with Article 54(1) of Commission Regulation (EU) 2015/1222 increases, the transitional upper price limit shall automatically increase by the same amount.
   (c) In the event that the harmonised minimum clearing price for the single intraday coupling in accordance with Article 54(1) of Commission Regulation (EU) 2015/1222 decreases, the transitional lower price limit shall automatically decrease by the same amount.

   Following the period defined in Article 11(2), the technical price limits from Articles 9 and 10 shall apply.

3. All TSOs shall report to ACER and to regulatory authorities on quarterly basis on the following aspects of the balancing energy price formation - referred to in paragraph (2):
   (a) monthly average values of used and available cross-zonal capacity for the exchange of balancing energy per each bidding zone border and direction;
(b) average percentage of both submitted and activated standard balancing energy bids per product and per direction with prices higher (and lower) than 50%, 75%, 90%, 95% and 99% of the transitional upper (and lower) price limit; and

(c) volume weighted average price of the last (most expensive) 5% of the volume of submitted standard balancing energy bids for each European balancing platform per direction and per participating TSO;

4. If the cross-border marginal price during the period pursuant to paragraph (2) reaches at least 50% of the upper or lower transitional price limit, all TSOs shall prepare a joint report and submit it to ACER and all the regulatory authorities within a month following this event. This report shall include an analysis of the event and the indicators of the balancing energy market concentration level including at least Residual Supply Index (RSI), Herfindahl - Hirschman Index (HHI) and the market shares of 5 largest BSPs from the BSPs for which the participating TSOs have forwarded balancing energy bids.

5. All TSOs shall perform an assessment of the functioning of the balancing market 36 months after the implementation deadline of the European balancing platforms pursuant to paragraph (1) in order to investigate whether different technical price limits are needed for efficient functioning of the market.

6. During the period pursuant to paragraph (2), TSOs shall simulate the evolution of the harmonised maximum and minimum balancing energy prices, as if these prices were already implemented. The results of the simulation shall be published by the TSOs on a quarterly basis.

7. During the period defined in paragraph (2), TSOs shall assess the results of the simulation described in paragraph (6). This assessment shall be shared with all regulatory authorities and ACER. If necessary to ensure an efficient functioning of the market, TSOs shall propose an amendment of the pricing methodology in accordance with Article 6(3) of the EB Regulation. This is without prejudice of the TSOs’ right to propose any other amendments to ACER according to Article 6(3) of the EB Regulation.

**Article 12**

**Publication of the pricing methodology**

1. The TSOs shall publish this pricing methodology without undue delay pursuant to Article 7 of EB Regulation after a decision has been taken by the Agency for the Cooperation of Energy Regulators in accordance with Articles 5(7), 6(1) and 6(2) of the EB Regulation.

**Article 13**

**Language**

1. The reference language for this pricing methodology shall be English.

2. For the avoidance of doubt, where TSOs need to translate this pricing methodology into their national language(s), in the event of inconsistencies between the English version published by TSOs in accordance with Article 7 of the EB Regulation and any version in another language, the relevant TSOs shall be obliged to dispel any inconsistencies by providing a revised translation of this pricing methodology to their relevant national regulatory authorities.