
Common settlement rules applicable to all intended exchanges of energy as a result of the reserve replacement process, the frequency restoration process with manual and automatic activation and the imbalance netting process in accordance with Article 50(1) of the Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing

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Whereas

- (1) This document provides the common settlement rules applicable by Transmission System Operators (hereafter referred to as “TSOs”) to all intended exchanges of energy as the result of the reserve replacement process, the frequency restoration process with manual and automatic activation and the imbalance netting process (hereafter referred to as the “TSOs settlement methodology”) in accordance with Article 50(1) of the Commission Regulation (EU) 2017/2195 establishing a guideline on electricity balancing (hereafter referred to as the “EB Regulation”).
- (2) The TSOs settlement methodology takes into account the general principles and goals set in the EB Regulation, the Commission Regulation (EU) 2017/1485 establishing a guideline on electricity transmission system operation (hereafter referred to as the “SO Regulation”), the Commission Regulation (EU) 2015/1222 establishing a guideline on capacity allocation and congestion management (hereafter referred to as the “CACM Regulation”) as well as the Regulation (EU) 2019/943 of the European Parliament and of the Council on the internal market for electricity (hereafter referred to as the “Electricity Regulation”).
- (3) The goal of the EB Regulation is the integration of balancing markets while contributing to operational security. To facilitate this goal, it is necessary to develop implementation frameworks for European platforms for the exchange of balancing energy from frequency restoration reserves with manual and automatic activation, replacement reserves and the imbalance netting process pursuant to Articles 19 to 22 of the EB Regulation. Additionally, Article 30 of the EB Regulation formulates the requirements regarding the pricing of balancing energy and cross-zonal capacity used for the exchange of balancing energy.
- (4) Pursuant to the requirements of Articles 50(6) and 50(7) of the EB Regulation, this TSOs settlement methodology takes into account the methodology developed in accordance with Article 30 regarding the pricing of balancing energy and cross-zonal capacity used for the exchange of balancing energy, by using the cross-border marginal prices, calculated by the activation optimisation function of the respective European platform, as basis for the settlement of the intended exchanges of energy among TSOs in the scope of Article 50(1) of the EB Regulation. Moreover, pursuant to the requirement of Article 50(5)(c) of the EB Regulation the settlement among TSOs is also based on the integral over the respective settlement period of the power interchange, as calculated by the activation optimisation function of the respective European platform.
- (5) This TSOs settlement methodology includes provisions related to the calculation, collection and sharing of the congestion income as a result of the exchange of balancing energy between areas with different cross-border marginal prices. The sharing of this congestion income is aligned with the respective methodology developed under the CACM Regulation, following the coordinated net transmission capacity approach. However, in case the methodology pursuant to Article 37(3) of the EB Regulation is developed following the flow-based approach, this TSOs settlement methodology should be amended accordingly.
- (6) This TSOs settlement methodology fulfils the objectives stated in Article 3 of the EB Regulation as follows:
 - (a) This TSOs settlement methodology contributes to the objective for fostering non-discrimination and transparency in balancing markets as stated in Article 3(1)(a) of the EB Regulation, by setting the same rules for settlement for all TSOs, based on the outputs of the activation optimisation function.

- (b) This TSOs settlement methodology enhances efficiency of balancing by linking the cash-flows among TSOs with the power interchange calculated by the activation optimisation functions and with the balancing energy pricing set for the provision of balancing energy by the balancing service providers, in accordance with the objective stated in Article 3(1)(b) of the EB Regulation.
- (c) This TSOs settlement methodology contributes to the objective stated in Article 3(1)(c) of the EB Regulation for integrating balancing markets and promoting the possibilities for exchanges of balancing services, by setting the rules for settling the exchanges of balancing energy among the TSOs.
- (d) This TSOs settlement methodology contributes to the objective of consistent functioning of day-ahead, intraday and balancing markets as stated in Article 3(1)(d) of the EB Regulation, since it is consistent with the day-ahead congestion income distribution methodology.
- (e) This TSOs settlement methodology contributes to the objectives stated in Article 3(1)(e) of the EB Regulation since the settlement methodology is non-discriminatory towards balancing service providers as it does not favour a specific technology to provide balancing energy. The TSOs settlement methodology is non-discriminatory towards TSOs as the same settlement rules apply for each TSO participating in a platform. Moreover, this TSOs settlement methodology is transparent, since the settlement is based on the outputs of the activation optimisation function of the European platforms.
- (f) This TSOs settlement methodology contributes to the objectives stated in Article 3(1)(f) of the EB Regulation and Article 3(1)(g) of the EB Regulation, since it facilitates the integration of the balancing energy market by enabling the settlement of the energy exchanges among TSOs, which in turn facilitates the participation of demand response, energy storage and renewable energy sources.

Article 1

Subject Matter and Scope

1. The TSOs settlement methodology provides the common settlement rules of all TSOs in accordance with Article 50(1) of the EB Regulation. All TSOs participating in any of the European balancing platforms pursuant to Articles 19, 20, 21 and 22 of the EB Regulation shall implement the TSOs settlement methodology. For the avoidance of doubt, when a TSO is not required by the EB Regulation to implement and make operational any of the European balancing platforms pursuant to Articles 19, 20, 21 and 22 of the EB Regulation, but it becomes a participating TSO of any European balancing platform, this TSO shall also implement the TSOs settlement methodology. Where an LFC area consists of more than one monitoring area, only the TSO appointed in the LFC area operational agreement as responsible for the implementation and operation of the frequency restoration process in accordance with Article 143(4) of the SO Regulation shall implement the TSOs settlement methodology.
2. The TSOs settlement methodology defines the methodology to determine the settlement amounts of all intended exchanges of energy as a result of the reserve replacement process pursuant to Article 144(1) of the SO Regulation (hereafter referred to as “RRP”), of the imbalance netting process pursuant to Article 146(1) of the SO Regulation (hereafter referred to as “INP”), of the automatic frequency restoration process (hereafter referred to as “aFRP”) and the manual frequency restoration process (hereafter referred to as “mFRP”) pursuant to Article 145(1) of the SO Regulation.
3. The TSOs settlement methodology defines, additionally, how the settlement amounts determined are settled among TSOs and how the balancing congestion income is calculated and distributed among TSOs.

Article 2

Definitions and interpretation

1. For the purposes of the TSOs settlement methodology, the terms used shall have the meaning given to them in Article 2 of the Electricity Regulation, Article 2 of the EB Regulation, Article 3 of the SO Regulation and Article 2 of the CACM Regulation.
2. In addition, in the TSOs settlement methodology the following terms shall apply:
 - (a) ‘aFRR-Platform’ means the European platform for the exchange of balancing energy from frequency restoration reserves with automatic activation (hereafter referred to as “aFRR”) pursuant to Article 21(1) of the EB Regulation;
 - (b) ‘aFRR balancing border’ means a set of physical transmission lines linking adjacent LFC areas of participating TSOs;
 - (c) ‘balancing border’ means an RR, mFRR or aFRR balancing border;
 - (d) ‘balancing congestion income’ means the revenues received as a result of the exchange of balancing energy between uncongested areas with different CBMPs;
 - (e) ‘cross-border marginal price’ (hereafter referred to as “CBMP”) means the balancing energy price calculated in accordance with the methodology pursuant to Article 30(1) of the EB Regulation;
 - (f) ‘demand’ means an individual TSO’s demand for balancing energy representing the activation request for balancing energy and can be price inelastic or elastic;
 - (g) ‘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 of time;
 - (h) ‘European balancing platform’ means a European platform for the exchange of balancing energy from replacement reserves, from frequency restoration reserves with manual activation, from frequency

restoration reserves with automatic activation or for the INP in accordance with Articles 19, 20, 21 or 22 of the EB Regulation respectively;

- (i) ‘financial settlement period’ means the time interval for which settlement prices, volumes and amounts are calculated for exchanges of energy by the TSO-TSO function;
 - (j) ‘IN-Platform’ means the European platform for the INP as referred to in Article 22(1) of the EB Regulation;
 - (k) ‘IN balancing border’ means a set of physical transmission lines linking adjacent LFC areas of TSOs participating in the IN-Platform;
 - (l) ‘mFRR-Platform’ means the European platform for the exchange of balancing energy from frequency restoration reserves with manual activation (hereafter referred to as “mFRR”) pursuant to Article 20(1) of the EB Regulation;
 - (m) ‘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;
 - (n) ‘non-intuitive balancing energy flows’ means an exchange of balancing energy resulting from the operation of the European balancing platforms from a bidding zone with a higher CBMP to another bidding zone with a lower CBMP;
 - (o) ‘participating TSO’ means any TSO which is member of one or more of the European balancing platforms and uses any of them to exchange RR, mFRR, aFRR and/or to operate the INP. For avoidance of doubt, where an LFC area consists of more than one monitoring area, only the TSO appointed in the LFC area operational agreement as responsible for the implementation and operation of the respective frequency restoration process according to Article 143(4) of the SO Regulation shall become participating TSO;
 - (p) ‘RR-Platform’ means the European platform for the exchange of balancing energy from replacement reserves (hereafter referred to as “RR”) pursuant to Article 19(1) of the EB Regulation;
 - (q) ‘RR balancing border’ means a set of physical transmission lines linking adjacent bidding zones of TSOs participating in the RR-Platform;
 - (r) ‘standard aFRR balancing energy product’ means the standard product for balancing energy from aFRR, pursuant to Article 25(1) of the EB Regulation;
 - (s) ‘standard mFRR balancing energy product’ means the standard product for balancing energy from mFRR, pursuant to Article 25(1) of the EB Regulation;
 - (t) ‘standard RR balancing energy product’ means the standard product for balancing energy from RR, pursuant to Article 25(1) of the EB Regulation;
 - (u) ‘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 the TSOs settlement 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 the TSOs settlement methodology;
 - (c) 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;

- (d) any reference to an Article without an indication of the document shall mean a reference to the TSOs settlement methodology.

Article 3

Settlement amounts due to the exchange of balancing energy

1. The settlement amount of each participating TSO resulting from the exchange of balancing energy from RR, mFRR, aFRR and INP is equal to the sum of the following components:
 - (a) the product of (a) the exchanged volumes determined in accordance with Article 4 as the result of the exchange of balancing energy from RR, mFRR with scheduled activation, mFRR with direct activation and aFRR, and (b) the settlement prices determined in accordance with Article 5 and;
 - (b) the congestion income determined in accordance with Article 7;
 - (c) the product of (a) the exchanged volumes as the result of the exchange of energy from the INP pursuant to Article 4(6), and (b) the settlement prices determined in accordance with Article 8.

Article 4

Volumes of exchanges of balancing energy

1. For the settlement of exchanges of energy between TSOs as a result of the aFRP, mFRP or RRP, the financial settlement period shall be equal to the market time unit used in each European balancing platform.
2. The TSO-TSO settlement function of the RR-Platform shall calculate, per direction, the exchange of balancing energy from RRP for each financial settlement period and for each RR balancing border as the product of the replacement power interchange, calculated by the activation optimisation function of the RR-Platform, and the respective financial settlement period.
3. The TSO-TSO settlement function of the mFRR-Platform shall calculate, per direction, the exchange of balancing energy from mFRP with scheduled activation type for each financial settlement period and for each mFRR balancing border as the product of the manual frequency restoration power interchange from scheduled mFRR, calculated by the activation optimisation function of the mFRR-Platform, and the respective financial settlement period.
4. The TSO-TSO settlement function of the mFRR-Platform shall calculate, per direction, the exchange of balancing energy from mFRR with direct activation type for each financial settlement period and for each mFRR balancing border. The balancing energy volume of a direct activation to be settled between TSOs, in accordance with the specified standard exchange profile defined in accordance with the methodology developed pursuant to Article 20(1) of the EB Regulation, is distributed over two financial settlement periods. For the subsequent financial settlement period, the assigned amount equals 15 minutes multiplied by the manual frequency restoration power interchange value. The remaining volume is attributed to the first financial settlement period.
5. The TSO-TSO settlement function of the aFRR-Platform shall calculate, per direction, the exchange of balancing energy from aFRP for each financial settlement period and for each aFRR balancing border as the product of the automatic frequency restoration power interchange, calculated by the activation optimisation function of the aFRR-Platform, and the respective financial settlement period.
6. The TSO-TSO settlement function of the IN-Platform shall calculate, per direction, the intended exchange of energy from INP for each financial settlement period and for each IN balancing border as the integral of the imbalance netting power interchange, calculated by the imbalance netting process function of the IN-Platform, for this financial settlement period.

Article 5

Settlement prices of exchanges of balancing energy

1. The settlement price for the intended exchanges of energy between TSOs as result of the RRP, mFRP with scheduled activation and direct activation and aFRP including implicit netting for each participating TSO and for each financial settlement period shall be equal to the CBMP of the corresponding standard balancing energy product, direction and corresponding bidding zone.
2. The settlement price for the exchanges of energy between TSOs as a result of the INP for each participating TSO and for each financial settlement period shall be calculated in accordance with Articles 10(3) and 10(4).

Article 6

Process and calculation of balancing congestion income

1. Each platform shall calculate and collect for each optimisation run of the activation optimisation function of each European platform the total balancing congestion income for all participating TSOs generated by the exchange of balancing energy product bids from RR, mFRR and aFRR respectively in accordance with paragraph (2). In the distribution of the balancing congestion income to the relevant TSOs or entities appointed by TSOs, the rules set forth in Article 7 shall be respected.
2. For each financial settlement period, the total balancing congestion income of all participating TSOs generated for each direction of the commercial balancing energy flow and for each platform, shall be equal to the sum of differences between:
 - (a) the balancing energy volume imported on the balancing border multiplied with the CBMP determined for the importing area, and
 - (b) the balancing energy volume exported on the balancing border multiplied with the CBMP determined for the exporting area.

Article 7

Sharing keys for balancing congestion income distribution on the balancing border

1. The balancing congestion income shall be attributed to the balancing borders, in accordance with the difference in CBMP and the balancing energy volume exchanged on that border, except for the negative congestion income related to non-intuitive flows due to the adjustment of cross-zonal capacity, which shall be paid by the TSO(s) who requested the adjustment of the cross-zonal capacity.
2. For the balancing borders where balancing congestion income was allocated in accordance with paragraph (1), the TSOs on each side of the balancing border shall receive their share of balancing congestion income based on a 50%-50% sharing key.
3. In cases where the ownership shares or the shares of investments costs of TSOs on both sides of specific interconnectors on the concerned bidding zone border are different from a 50%-50% split, the concerned TSOs may also use a sharing key due to the different ownership shares, different shares of investments costs, exemption decisions¹ or decisions on cross-border cost allocation² by competent regulatory authorities or the Agency. The sharing keys for these specific cases shall be published in a common document by ENTSO-E on its web page for information purposes only. This document shall list all these

¹ Exemption decision granted to these entities by relevant competent Authorities in accordance with Article 17 of Regulation (EC) 714/2009.

² Decisions on cross-border cost allocation granted to these entities by relevant competent Authorities or the Agency in accordance with Article 12(4) or 12(6) of Regulation (EC) 347/2013.

specific cases with the name of the interconnector, the bidding zone border, the involved TSOs/Parties, the specific sharing key applied and the motivation / reasons for the deviation from the 50%-50% sharing key. The document shall be updated and published promptly as soon as any changes occur. Each publication shall be announced in an ENTSO-E newsletter.

4. In case specific interconnectors are owned by entities other than TSOs or entities other than TSOs have a share in the investment costs of an interconnector, the reference to TSOs in this Article shall be understood as referring to those entities. Where applicable, the sharing keys are calculated according to the exemption decision granted to these entities by relevant competent regulatory authorities in accordance with Article 17 of Regulation (EC) 714/2009.

Article 8

Settlement of the intended energy exchanges as the result of the INP

1. This Article applies only to the intended exchanges of energy as a result of explicit imbalance netting in the framework of the IN-Platform established in accordance with Article 22 of the EB Regulation.
2. For the settlement of exchanges of energy between TSOs as a result of the INP, the financial settlement period shall be 15 minutes starting at 00:00 market time. When all TSOs that are required to make the aFRR-Platform and the IN-Platform operational become participating TSOs of the aFRR-Platform, and no later than 1st January 2024, the financial settlement period shall be equal to the market time unit of the aFRR-Platform.
3. The IN settlement price shall be determined for each participating TSO, per MWh of energy volumes netted through the INP and per financial settlement period.
4. The IN settlement prices for each financial settlement period shall be calculated according to the following principles:
 - (a) The values of avoided upward and downward aFRR activations reflect the prices of the balancing energy from aFRR which would have been activated by each participating TSO without the INP. The prices for balancing energy from aFRR are considered as reliable proxy for the value of avoided aFRR activation. The value of avoided aFRR activation shall be calculated ex-post by each participating TSO for import and export directions separately.
 - (b) The initial IN settlement price is the weighted average of all values (both upward and downward) of avoided aFRR activation of all participating TSOs, weighted with the imported and exported intended energy exchanges as the result of the INP. The initial IN settlement price is used to determine an initial settlement amount of each participating TSO.
5. The initial settlement amount of each participating TSO is defined as the initial IN settlement price multiplied by the difference between the amounts of imported and exported volumes of the respective participating TSO. The initial settlement amount of each participating TSO shall be used to determine an initial financial rent of each participating TSO.
6. The initial rent of each participating TSO for each financial settlement period shall be calculated according to the following principles:
 - (a) The opportunity costs of one participating TSO are defined for one settlement period as the import value of avoided upward aFRR activation multiplied by the imported volume minus the export value of avoided downward aFRR activation multiplied by exported volume of the respective participating TSO and respective settlement period.
 - (b) The initial rent of each participating TSO is defined as a difference between:

- i) the opportunity cost of each participating TSO, and
 - ii) the initial settlement amount of each participating TSO.
7. In case of a negative initial rent of at least one participating TSO and the sum of all initial rents being positive in one settlement period, the initial IN settlement prices are subject to an adjustment. The negative initial rent(s) of the participating TSO(s) is shifted to zero. Meanwhile, positive initial rents are reduced proportionally while preserving the IN overall rent. The adjustment results in the following adjustment process in the relevant financial settlement periods for participating TSOs:
 - (a) The final IN settlement price of participating TSO(s) with a negative initial rent is calculated by dividing its opportunity cost by the difference between import and export netting energy volumes of the respective participating TSO(s) and the financial settlement period.
 - (b) The share of positive initial rent is equal to the initial rent of each a participating TSO with a positive initial rent divided by the sum of all positive initial rents of each relevant financial settlement period.
 - (c) The final settlement amount of participating TSOs with a positive initial rent is the initial settlement amount minus the sum of all negative initial rents times the share of positive initial rent of the respective participating TSO.
 - (d) The final IN settlement price of participating TSOs with a positive initial rent is the final settlement amount divided by the difference between import and export netting energy volumes of the respective participating TSO.
8. In case of a positive initial rent of at least one participating TSO and the sum of all initial rents being negative in one financial settlement period, the initial IN settlement prices are subject to an adjustment. Positive rents of the participating TSOs are shifted to zero. Meanwhile, negative rents are reduced proportionally while preserving the IN overall rent. The adjustment results in the following adjustment process in the relevant financial settlement periods for participating TSOs:
 - (a) The final IN settlement price of participating TSO(s) with a positive initial rent are calculated by dividing its opportunity cost by the difference between import and export netting energy volumes of the respective participating TSO(s) and the financial settlement period.
 - (b) The share of negative initial rent is equal to the initial rent of each a participating TSO with a negative initial rent divided by the sum of all negative initial rents of each relevant financial settlement period.
 - (c) The final settlement amount of participating TSOs with a negative initial rent is the initial settlement amount plus the sum of all positive initial rents times the share of negative initial rent of the respective participating TSO.
 - (d) The final IN settlement price of participating TSOs with a negative initial rent is the final settlement amount divided by the difference between import and export netting energy volumes of the respective participating TSO.
9. In case the sum of all initial rents equals zero in one financial settlement period, all individual rents of the participating TSOs are shifted to zero. The final IN settlement price of each participating TSO is calculated by dividing its opportunity cost by the difference between import and export netting energy volumes of the respective participating TSO and the financial settlement period.
10. Participating TSOs with equal import and export netting energy volumes in a given settlement period are excluded from the calculations described in (6), (7) and (8). The final IN settlement price of participating TSOs excluded from the calculations described in (6), (7) and (8) of this Article is equal to the initial IN settlement price.

11. Where participating TSOs of the IN-Platform form an optimisation region for aFRR, the settlement amounts resulting from exchanges of energy between the TSOs of this optimisation region for aFRR as a result of the INP shall be distributed based on the aFRR demand and the balancing energy exchange resulting from the aFRP.

Article 9

Implementation timeline

1. Each TSO shall implement this TSOs settlement methodology when implementing the European balancing platforms for the exchange of balancing energy or the operation of the INP, in accordance with the Articles 20, 21 or 22 of the EB Regulation. Each TSO shall apply the relevant provisions of this TSOs settlement methodology once the TSO becomes participating TSO of the respective European balancing platform.
2. The TSOs participating in the RR-Platform in accordance with Article 19 of the EB Regulation shall implement and apply this TSOs settlement methodology for the balancing energy from RRP by 1st July 2022.

Article 10

Publication of the TSOs settlement methodology

The TSOs shall publish the TSOs settlement methodology without undue delay after a decision has been taken by the European Union Agency for the Cooperation of Energy Regulators in accordance with Article 6(2) of the EB Regulation.

Article 11

Language

The reference language for the TSOs settlement methodology shall be English. For the avoidance of doubt, where TSOs need to translate the TSOs settlement methodology into their national language(s), in the event of inconsistencies between the English version published by TSOs in accordance with Article 50 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 the TSOs settlement methodology to their relevant national regulatory authorities.