



Core CCR TSOs' methodology for an allocation process of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves based on economic efficiency analysis in accordance with article 42 of the Commission Regulation on (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing

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Core Transmission System Operators taking into account the following:

Whereas

1. The methodology for an allocation process based on economic efficiency analysis generally contributes to achieving the objectives stated in article 3 of the EB Regulation. In particular, this methodology for an allocation process based on economic efficiency analysis serves the following objectives of the EB Regulation:
 - a) The methodology for an allocation process based on economic efficiency analysis serves the objective of fostering effective competition, non-discrimination and transparency in balancing markets as stated in article 3(1)(a) and enhancing efficiency of balancing as well as efficiency of European and national balancing markets as started in article 3(1)(b) of the EB Regulation by defining the required principles necessary for the application of the methodology for an allocation process based on economic efficiency analysis as detailed in article 3 of this methodology for an allocation process based on economic efficiency analysis including additional requirements for harmonisation, and foster transparency by means of the notification process as specified in article 4;
 - b) The methodology for an allocation process based on economic efficiency analysis facilitates the objective for the integration of the balancing markets and for promoting the possibilities for the exchanges of balancing services while using market-based mechanisms and contributing to operational security as stated in article 3(1)(c) and article 3(2)(d) of the EB Regulation by means of a clear harmonised process description for the procurement of balancing capacity across border as detailed in article 5 of this methodology for an allocation process based on economic efficiency analysis, make explicit rules on respecting day-ahead markets as detailed in articles 6, 7, 8 and 9 of this methodology for an allocation process based on economic efficiency analysis;
 - c) The methodology for an allocation process based on economic efficiency analysis ensures that the procurement of balancing services is fair, objective, transparent and market-based in accordance with article 3(2)(e) of the EB Regulation. The rules on procurement of balancing capacity are required to be harmonised for each application of the methodology for an allocation process based on economic efficiency analysis according to articles 3 and 5 of this methodology for an allocation process based on economic efficiency analysis. For avoidance of undue barriers to participate for new entrants and to foster liquidity, exact timings are still to be decided for each application of the methodology for an allocation process based on economic efficiency analysis for the procurement of balancing capacity and for additional market design principles. Furthermore, common rules are stated in articles 7 to 9 how the market value and volume as well as the offered volumes and prices shall be determined;
 - d) The methodology for an allocation process based on economic efficiency analysis takes into account the facilitation of demand response including aggregation and energy storage and participation of renewables by enabling short gate closure times of balancing capacity procurement and complex bidding in accordance with article 3(2)(f) and article 3(2)(g) of the EB Regulation as defined in articles 5 and 3 of this methodology for an allocation process based on economic efficiency analysis, respectively;
 - e) This methodology for an allocation process based on economic efficiency analysis may, if relevant, be applied before the go-live of the balancing energy platforms according to articles 19, 20 and 21 of the EB Regulation;
 - f) In case the day-ahead flow-based market coupling is implemented in the CCR Core, the flow-based domain shall be considered for the forecasting of market value of cross-zonal capacity according to article 7 of this methodology;

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In conclusion, the methodology for an allocation process based on economic efficiency analysis meets the objectives of the EB Regulation.

Abbreviations

The list of abbreviations used in this methodology for an allocation process based on economic efficiency analysis is the following:

- aFRR: frequency restoration reserve with automatic activation
- BSP: balancing service provider
- BZB: bidding zone border
- CACM Regulation: Commission Regulation (EU) 2015/1222 establishing a guideline on capacity allocation and congestion management
- CCR: capacity calculation region
- EB Regulation: Commission Regulation (EU) 2017/2195 establishing a guideline on electricity balancing
- ENTSO-E: European Network of Transmission System Operators for Electricity
- GCT: gate closure time
- mFRR: frequency restoration reserve with manual activation
- MTU: market time unit
- RR: replacement reserve
- SDAC: single day-ahead coupling
- SO Regulation: Commission Regulation (EU) 2017/1485 establishing a guideline on electricity transmission system operation
- TSO: transmission system operator

Article 1

Subject Matter and Scope

1. This methodology for an allocation process based on economic efficiency analysis specifies the process of the allocation of cross-zonal capacity based on economic efficiency analysis for the exchange of balancing capacity or sharing of reserves for the CCR Core; the process based on economic efficiency analysis is based on the forecasted market values of cross-zonal capacity for the exchange of energy and the forecasted market values for the exchange of balancing capacity or sharing of reserves.
2. The application of the methodology for an allocation process based on economic efficiency analysis is subject to a proposal for application, which may be developed by two or more TSOs at their own initiative or at the request of their relevant regulatory authorities in accordance with article 38(1) of the EB Regulation and subject to approval by the relevant regulatory authorities.
3. The methodology for the application of the allocation process based on economic efficiency analysis shall include the BZBs, the market timeframe, the duration of application and the detailed description of a methodology to be applied in accordance with article 38(2)(a) of the EB Regulation.
4. Two or more Core TSOs exchanging balancing capacity by applying the methodology for an allocation process based on economic efficiency analysis shall use a common and harmonised set of rules and processes for the exchange and procurement of balancing capacity in accordance with article 33 of the EB Regulation, and respecting the requirements set out in article 32 of the EB Regulation.
5. The list of standard products for balancing capacity for aFRR, mFRR and for RR is subject to the methodology pursuant to article 25(2) of the EB Regulation and out of the scope of this methodology for an allocation process based on economic efficiency analysis.

Article 2

Definitions and Interpretation

1. For the purposes of this methodology for an allocation process based on economic efficiency analysis, the terms used shall have the definition given to them in article 2 of the Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity, article 2 of the Transparency Regulation, article 2 of the CACM Regulation, article 3 of the SO Regulation and article 2 of the EB Regulation.
2. The following additional definitions shall also apply:
 - a) 'Adjustment factor' means a correction to the calculated market price differences associated with the reference period(s) to calculate the forecasted market value of cross-zonal capacity for the exchange of energy and for the forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves, with the objective to increase the accuracy of the forecasting.
 - b) 'Contracting of balancing capacity' means a process at a certain point in time where BSPs' bids in a balancing capacity auction are selected after the GCT and the BSPs are informed about their selected bids.
 - c) 'Cross-zonal capacity allocation optimisation function' means the algorithm applied for the allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves

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- of each application of the methodology for an allocation process based on economic efficiency analysis.
- d) 'Economic surplus for the exchange of balancing capacity or sharing of reserves' means the sum for the relevant time period of (i) the buyer surplus calculated as the difference between the TSOs' maximum willingness to pay and the TSO-BSP settlement price(s) multiplied by the accepted volumes, (ii) the seller surplus calculated as the difference between the bid prices and the TSO-BSP settlement price(s) multiplied by the accepted volumes, and (iii) the TSOs' congestion income calculated based on the difference between market clearing prices multiplied with the allocated cross-zonal capacity.
 - e) 'Economic surplus for the exchange of energy' means the sum for the relevant time period of (i) the consumer surplus calculated as the difference between the bid prices for which the consumers are willing to buy and the market clearing price multiplied by the accepted volumes, (ii) the producer surplus calculated as the difference between the bid prices for which the producers are willing to sell and the market clearing price multiplied by the accepted volumes, and (iii) the congestion income calculated as the difference between market clearing prices multiplied with the allocated cross-zonal capacity for the exchange of energy.
 - f) 'Mark-up' means the addition to the forecasted market value of cross-zonal capacity for the exchange of energy calculated in order to take into account the uncertainty in the forecasted market value of cross-zonal capacity for the exchange of energy and the forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves during application in the capacity procurement optimization function.
 - g) 'Reference period(s)' means the period(s) which is used to define the forecasted value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves and the forecasted value of cross-zonal capacity for the exchange of energy.
 - h) 'Market price difference' means the price difference between the maximum prices settled at each side of the relevant bidding zone border in a certain direction per market time unit.
3. In this methodology for an allocation process based on economic efficiency analysis, unless the context requires otherwise:
- a) the singular indicates the plural and vice versa;
 - b) the table of contents and headings are inserted for convenience only and do not affect the interpretation of this methodology for an allocation process based on economic efficiency analysis;
 - 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; and
 - d) any reference to an article without an indication of the document shall mean a reference to this methodology for an allocation process based on economic efficiency analysis.

Article 3

Principles for Applying Cross-Zonal Capacity Allocation based on Economic Efficiency Analysis

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1. In the context of this methodology for an allocation process based on economic efficiency analysis, an application of the methodology for an allocation based on economic efficiency analysis consists of two or more Core TSOs that apply the exchange of balancing capacity or sharing of reserves in a geographical area sharing (a) common BZB(s).
2. The settlement of standard balancing capacity bids for each application of the methodology for an allocation process based on economic efficiency analysis between TSOs and BSPs shall be based on cross-zonal marginal pricing (pay-as-cleared).

Until the proposal to harmonize the methodology for the allocation process of cross-zonal capacity for the exchange of balancing capacity according to article 38(3) EB Regulation is applicable, a settlement of standard balancing capacity bids between TSOs and BSPs may be based on pay-as-bid.

3. Each application of this methodology for an allocation process based on economic efficiency analysis shall decide on the complexity of bids, i.e linking possibilities between balancing capacity bids in time and between products and divisibility.
4. For each application of this methodology for an allocation process based on economic efficiency analysis of the CCR Core applying this methodology for an allocation process based on economic efficiency analysis, the contracting period of standard balancing capacity bids shall be a multiple of the day-ahead MTU and shall be more than one (1) day. The maximum contracting period shall be one (1) year and contracting shall not be done more than one (1) year in advance of the actual provision of the balancing capacity. The contracting period is the period for which a BSP can submit one (1) or more balancing capacity bids during the procurement process of balancing capacity.
5. For each application of the methodology for an allocation process based on economic efficiency analysis, the validity period of standard balancing capacity bids shall be equal or a multiple of the day-ahead MTU. The maximum validity period shall not exceed the contracting period of the procurement of balancing capacity. The validity period of standard balancing capacity bids is the period for which the single standard product for balancing capacity bid is offered, i.e each submitted capacity volume has one single bid price.
6. For each application of the methodology for an allocation process based on economic efficiency analysis, the TSO-BSP settlement rules shall be harmonised. In case of a Core TSO applying a central dispatching model and applying this methodology for an allocation process based on economic efficiency analysis, the TSO-BSP settlement rules of standard balancing capacity products procured within an application of the methodology for an allocation process based on economic efficiency analysis are defined by the Core TSO in the national terms and conditions related to BSPs and shall include conversion rules of integrated scheduling process bids into standard balancing capacity products defined pursuant to article 27 of the EB Regulation.
7. The Core TSOs shall assess regularly, but at least annually whether the cross-zonal capacity allocated for the exchange of balancing capacity or sharing of reserves is still needed for that purpose. If subsequent assessments show that cross-zonal capacity allocated for the exchange of balancing capacity or sharing of reserves is no longer needed for that purpose, it shall be returned in subsequent capacity allocation timeframes.

Article 4

Notification Process for the Use of the Allocation Process based on Economic Efficiency Analysis

1. Core TSOs intending to apply the methodology for an allocation process based on economic efficiency analysis, shall notify all Core TSOs six (6) months before the application in accordance with article 150 of the SO Regulation and inform all stakeholders and all TSOs through an announcement on the ENTSO-E website at least six (6) months prior to entering into operation. The announcement on the ENTSO-E website shall include:
 - a) a detailed description of the specifications in accordance with article 38(2) of the EB Regulation;
 - b) the type of standard balancing capacity product which will be exchanged or shared;
 - c) the planned date of entry into operation;
 - d) the forecasting technique consisting of the use of reference periods, mark-ups and adjustment factors to determine the forecasted market value of cross-zonal capacity for the exchange of energy; and
 - e) the forecasting technique consisting of the use of reference periods and adjustment factors to determine the forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves.

Core TSOs and market participants may provide remarks regarding the forecasting techniques announced in accordance to paragraphs 1(d) and 1(e) not later than two (2) months ahead of the application. Core TSOs applying the methodology for an allocation process based on economic efficiency analysis shall take the remarks by all Core TSOs properly into account.

2. Core TSOs applying the methodology for an allocation process based on economic efficiency analysis shall share the applied cross-zonal capacity allocation optimisation function with all Core TSOs.

Article 5

Timeframe of Economic Efficiency Allocation

1. The allocation process based on economic efficiency analysis to allocate cross-zonal capacity for the exchange of balancing capacity and/or sharing of reserves shall include the following consecutive timings for each application of the methodology for allocation process based on economic efficiency analysis in CCR Core. In the following, "(each) application" refers to "(each) application of the methodology for an allocation process based on economic efficiency analysis in CCR Core".
 - a. The publication of the expected volume of cross-zonal capacity for the exchange of balancing capacity based on the actual economic efficiency analysis at least two (2) days before the GOT for BSPs to submit standard balancing capacity bids to TSOs.
 - b. The GCT for BSPs to submit to Core TSOs (TSO-BSP GCT) the standard balancing capacity bids shall be the same for each BSP within each application of the methodology for an allocation process based on economic efficiency analysis (per standard product and per direction) and shall be organised in between maximum one (1) year in advance of the provision of the balancing capacity and in accordance with the article 42(1) of the EB Regulation at least more than one (1) week in advance of the provision of the balancing capacity. The TSO-BSP GCT shall be specified in the proposal for the establishment of common and harmonised rules

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- and processes for the exchange and procurement of balancing capacity pursuant to article 33(1) of the EB Regulation.
- c. For Core TSOs applying central dispatching model and applying this methodology for an allocation process based on economic efficiency analysis, the TSO-BSP GCT for the submission of the integrated scheduling process bids that are converted to the standard balancing capacity bids shall be defined in the national terms and conditions pursuant to articles 24(5) and 24(6) of the EB Regulation.
 - d. Each Core TSO applying the methodology for an allocation process based on economic efficiency analysis shall notify the respective balancing energy platforms, pursuant to articles 19, 20 and 21 of the EB Regulation, about the allocated cross-zonal capacity volumes of each BZB for each standard balancing capacity product in each direction within one (1) hour after the results of cross-zonal capacity optimisation are known.
 - e. Core TSOs applying this methodology for an allocation process based on economic efficiency analysis shall notify all BSPs in the scheduling areas of the application about the volume of allocated cross-zonal capacity no later than one (1) day after the allocation of the CZC for the exchange of balancing capacity or sharing of reserves, and at least one (1) day before the GCT of the standard upward balancing capacity bids and/or downward balancing capacity bids
 - f. Notification to all market participants of allocated cross-zonal capacity for the exchange of balancing capacity and/or sharing of reserves shall be done at the same point in time as described in paragraph d.
2. The allocation process based on economic efficiency analysis to allocate cross-zonal capacity for the exchange of balancing capacity and for sharing of reserves shall include the following steps:
- a. Core TSOs applying the methodology for an allocation process based on economic efficiency analysis shall calculate the forecasted market value of cross-zonal capacity for the exchange of balancing capacity and/or sharing of reserves and shall calculate the forecasted market value of cross-zonal capacity for the exchange of energy.
 - b. Core TSOs of each application of the methodology for an allocation process based on economic efficiency analysis shall perform the cross-zonal capacity allocation optimisation function and determine the allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves.
 - c. Core TSOs of each application of the methodology for an allocation process based on economic efficiency analysis performing the cross-zonal capacity allocation optimisation function shall send the allocated cross-zonal capacity values for the exchange of balancing capacity or sharing of reserves to all Core TSOs and BSPs of the application of the methodology for an allocation process based on economic efficiency analysis.
 - d. After the allocation of cross-zonal capacity to the exchange of balancing capacity or sharing of reserves, the BSPs submit standard upward and/or standard downward balancing capacity bids to the respective connecting TSO.

For TSOs of each application of the methodology for an allocation process based on economic efficiency analysis who are applying a central dispatching model, BSPs may submit only integrated scheduling process bids (instead of standard balancing capacity bids), which may be converted where possible into standard upward and/or standard downward balancing capacity bids by the connecting TSO in accordance with article 27 of the EB Regulation.

Article 6

Process to Define the Maximum Volume of Allocated cross-zonal capacity for the Exchange of Balancing Capacity or Sharing of Reserves

1. The process to define the maximum volume of allocated cross-zonal capacity for the exchange of balancing capacity and/or sharing of reserves shall comply with article 42(2) of the EB Regulation to respect the volume limitations for the allocation of cross-zonal capacity.
2. The maximum volume limitations of allocated cross-zonal capacity for the exchange of balancing capacity and/or sharing of reserves for this methodology for an allocation process based on economic efficiency analysis shall be applicable per BZB and includes the cumulative allocation of all balancing capacity products on a certain BZB.
3. The maximum of 5% limit of cross-zonal capacity allocation based on economic efficiency analysis on a Core BZB (in accordance with article 42(2) of the EB Regulation) is determined as 5% of the average of calculated cross-zonal capacities for SDAC fallback procedure in accordance with article 44 of the CACM Regulation based on article 23 of the day-ahead capacity calculation methodology in accordance with article 20(ff) of the CACM Regulation. The respective resulting cross-zonal capacity shall be published by Core TSOs.
4. For new interconnectors, 10% of the installed capacity means 10% of the active power capacity of the interconnector's capability to transfer continuously within the determined safe security margins of the interconnector.
5. The maximum volume of allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves shall respect the requirements and limits for exchange of aFRR, mFRR and of RR within a synchronous area in accordance with articles 167 and 169 of the SO Regulation.
6. In case flow-based is applied, the volume of cumulative allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves on a certain BZB for all balancing capacity products and per direction shall not exceed the available cross-zonal capacity volume based on ATC extraction of the particular BZB.
7. Core TSOs applying the methodology for an allocation process based on economic efficiency analysis may apply additional lower limits besides the limitations of article 42(2) of the EB Regulation for the maximum volume of allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves within their own application. The previous stated may also be initiated at the request of the relevant regulatory authorities. The use of additional lower limits by each application for the maximum volume of allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves shall be set out in the proposal according to article 33(1) of the EB Regulation.

Article 7

Determination of the Forecasted Market Value of cross-zonal capacity for the Exchange of Energy

1. The forecasted market value of cross-zonal capacity for the exchange of energy shall be based on the use of a forecasting methodology and shall be calculated for each day-ahead MTU, where the cross-zonal capacity is calculated in accordance with the Capacity Calculation Methodology for CCR Core, following article 20(2) of the CACM Regulation.

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2. The initial forecasted market value of cross-zonal capacity for the exchange of energy, defined for each direction, each BZB and for each day-ahead MTU, per MW, shall be:
 - a. Equal to the average value of the market price difference for each day-ahead MTU of the reference period for the direction of the positive market price difference; and
 - b. Equal to zero (0) for the opposite direction or in case of zero market price difference.
3. The forecasting methodology using price differences:
 - a. shall include mark-ups for the determination of the forecasted market value of cross-zonal capacity for the exchange of energy to reduce the allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves;
 - b. may include adjustment factors for the determination of the forecasted market value of cross-zonal capacity for the exchange of energy to improve the accuracy of the forecasting of the forecasted market value of cross-zonal capacity for the exchange of energy.
4. A mark-up will be added to the initial forecasted market value of cross-zonal capacity for the exchange of energy calculated in accordance with paragraph 2, in order to take into account the uncertainty of the forecasted market value of cross-zonal capacity for both the exchange of energy and the exchange of balancing capacity or sharing of reserves. This default mark-up is defined for each direction as follows:
 - a. If there is a negative or zero (0) market price difference for the initial forecasted market value of cross-zonal capacity in accordance with paragraph 2, the mark-up will be 0.1 EUR/MWh; and
 - b. If there is a positive market price difference, for the initial forecasted market value of cross-zonal capacity in accordance with paragraph 2, the mark-up will be 1 EUR/MWh.
5. If the average positive forecast error over the previous three (3) contracting periods, per BZB and per direction, excluding the 5% hours with the highest positive forecast errors, is 1 EUR/MWh higher or lower than the mark-up applied the reference period before, the TSOs of this BZB shall respectively increase or decrease the mark-up pursuant to paragraph 4(b) with 1 EUR/MWh for the respective direction. The mark-up for a positive market price difference, can never be lower than the default value pursuant to paragraph 4(b) and never higher than 5 EUR/MWh. The updated mark-ups shall be published pursuant to Article 13(4).
6. The forecasted market value for the exchange of energy for each direction shall be equal to the sum of the initial forecasted market value pursuant to paragraph 2, if relevant adjusted by the adjustment factors pursuant to paragraph 3(b), and the mark-up pursuant to paragraph 4.
7. By default, the reference period is the previous contracting period for which the clearing prices for each day-ahead market timeframe are available for each bidding zone.

In case the analysis of the efficiency pursuant to Article 7(9) of the forecasting shows that different reference period is more suitable on a specific border, the application of the methodology for an allocation process based on economic efficiency analysis shall choose the more accurate contracting period, or a combination of them.
8. The concept and computation of adjustment factors and mark-ups to the forecasted market value of cross-zonal capacity for the exchange of energy between bidding zones shall be included and justified in the methodology for the establishment of common and harmonised rules and processes for the exchange and procurement of balancing capacity according to article 33(1) of the EB Regulation.
9. The TSOs of each application of the methodology for an allocation process based on economic efficiency analysis shall monitor, demonstrate and publish on the ENTSO-E website the efficiency of the forecasting and the appropriateness of the choice of reference period, and application of mark-ups and if relevant, application of adjustment factors for the determination of the forecasted market value

of cross-zonal capacity for the exchange of energy at least on a yearly basis, including a comparison of the forecasted and actual market values of the cross-zonal capacity for the exchange of energy and take appropriate actions in cooperation with the Core TSOs and respective regulatory authorities, where needed.

10. The rules of this methodology for an allocation process based on economic efficiency analysis for calculating the forecasted market value of cross-zonal capacity for the exchange of energy between bidding zones shall take into account the effects that the potential reduction of cross-zonal capacity from SDAC may have on the critical network element associated with a contingency used in capacity calculation of the CCR in the context of the flow-based capacity calculation.

Article 8

Determination of the Forecasted Market Value of cross-zonal capacity for the Exchange of Balancing Capacity or Sharing of Reserves

1. The forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves between bidding zones where the economic efficiency allocation is applied shall be:
 - a. the change of economic surplus from the forecasted exchange of balancing capacity or sharing of reserves;
 - b. defined per day-ahead MTU;
 - c. calculated per product, per validity period and per direction, separately; and
 - d. calculated in accordance with article 39(5) of the EB Regulation.
2. The forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves between bidding zones shall be based on submitted bids of selected reference period(s) with the option to include adjustment factors.
3. The reference period(s) shall be chosen according to the validity period of the standard balancing capacity bids which are subject to procurement. By default the reference period to be applied shall be the latest period with available information.
4. Adjustment factors for the determination of the forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves may be applied in an application of the methodology for an allocation process based on economic efficiency analysis to improve the forecasted value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves between bidding zones. If adjustment factors for the determination of the forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves are applied, this shall be included and justified in the methodology for the establishment of common and harmonized rules and processes for the exchange and procurement of balancing capacity according to article 33(1) of the EB Regulation.
5. If the adjustment factors for the determination of the forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves are used, they shall be used in a transparent way to incorporate improved forecasting and not to give preference to the exchange of balancing capacity or sharing of reserves on the expense of cross-zonal capacity allocated to the exchange of energy.

6. Core TSOs applying the methodology for an allocation process based on economic efficiency analysis shall monitor, demonstrate and publish on the ENTSO-E website the efficiency of the forecasting methodology and the appropriateness of the choice of reference period(s) and adjustment factors for the determination of the forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves at least on a yearly basis, including a comparison of the forecasted and actual market values of the cross-zonal capacity for the exchange of balancing capacity or sharing of reserves and take appropriate actions in cooperation with the Core TSOs and respective regulatory authorities, where needed.

Article 9

Determination of the Allocated Volume of cross-zonal capacity for the Exchange of Balancing Capacity or Sharing of Reserves

1. The determination of the allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves shall be based on a comparison of the forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves and the forecasted market value of cross-zonal capacity for the exchange of energy.
2. The allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves is determined at least three (3) days before the selection of standard balancing capacity bids by the capacity procurement optimisation function.
3. The objective of the allocation of cross-zonal capacity between SDAC and the exchange of balancing capacity or sharing of reserves shall be the maximisation of the sum of the expected economic surplus for the exchange of energy and the expected economic surplus from the exchange of balancing capacity or sharing of reserves.
4. The optimisation resolution of the allocation of cross-zonal capacity for the exchange of balancing capacity and sharing of reserves equals the optimisation resolution of the optimisation function of the SDAC. Standard upward balancing capacity bids and downward balancing capacity bids with a granularity larger than the day-ahead MTU are considered as block bids in the optimisation.
5. Each marginal volume of cross-zonal capacity shall be allocated to the exchange of balancing capacity in case the forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves is higher than the forecasted market value of cross-zonal capacity for the exchange of energy within the limitations of article 6 of this methodology for an allocation process based on economic efficiency analysis.
6. In case balancing capacity bids can be linked or are indivisible, the economic surplus is maximised over all day-ahead MTUs belonging to an entire day.
7. Netting of cross-zonal capacity allocated to the exchange of balancing capacity or sharing of reserves is not possible between:
 - a) standard upward and downward balancing capacity bids;
 - b) standard balancing capacity bids of different balancing capacity products;
 - c) standard balancing capacity bids and exchange of energy bids.
8. Core TSOs or Core regulatory authorities of each application of the methodology for an allocation process based on economic efficiency analysis may apply additional thresholds and/or margins to

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reduce cross-zonal capacity allocation for the exchange of balancing capacity or sharing of reserves between bidding zones for gradual implementation of new applications of the market-based methodology and in case of cost-optimised procurement between different balancing capacity products. The application of thresholds and/or margins shall be specified in the proposal for the application of the methodology for market-based allocation pursuant to article 38(1) of the EB Regulation and any use of thresholds and/or margins shall be published before the start of application. The efficiency of the application of thresholds and/or margins shall be published in the efficiency assessment pursuant to article 7(6).

9. Competition on the allocation of cross-zonal capacity between different applications of the methodology for an allocation process based on economic efficiency analysis for a certain BZB shall be approached based on a first-come first-serve principle. The efficiency of such an approach may be evaluated by Core TSOs. Appropriate measures shall be taken to optimise the total allocation of cross-zonal capacity within the CCR Core between different applications of the methodology for an allocation process based on economic efficiency analysis.
10. Competition on the allocation of cross-zonal capacity within an application of the methodology for an allocation process based on economic efficiency analysis of the CCR Core between different products for a certain BZB shall be based by default on a first-come first-serve principle. Each application of the methodology for an allocation process based on economic efficiency analysis may deviate from this approach using the thresholds and margins proposed in article 9(8).

Article 10 **Pricing of CZC**

1. Core TSOs applying the methodology for an allocation process based on economic efficiency analysis shall calculate the cross-zonal capacity price for the volume of cross-zonal capacity that is allocated for the exchange of balancing capacity or sharing of reserves.
2. The price of cross-zonal capacity allocated for the exchange of balancing capacity or sharing of reserves shall be calculated for each day-ahead MTU, BZB and balancing capacity product, i.e. separately for upward and downward standard balancing capacity products.
3. The cross-zonal capacity price, resulting from the allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves applying the allocation process based on economic efficiency analysis shall correspond for each direction to the difference between the marginal prices of the standard product balancing capacity in each direction on each side of the BZB, with pay-as-cleared (marginal pricing) for the TSO-BSP settlement.
4. In case a settlement between TSOs and BSPs based on pay-as-bid is applied pursuant to article 3(2), the cross-zonal price shall correspond for each direction to the difference between the highest prices of the accepted balancing capacity bids on each side of the BZB in each direction.

Article 11 **Firmness Regime of CZC**

1. The allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves shall be firm after the selection of standard upward balancing capacity bids or standard downward balancing capacity bids by the capacity procurement optimisation function pursuant to article 33(3) of the EB Regulation.

2. According to Article 38(4) of the EB Regulation, cross-zonal capacity allocated for the exchange of balancing capacity or sharing of reserves shall be used exclusively for the product where it was allocated for, being being aFRR, mFRR or RR. In accordance with Article 38(9) of the EB Regulation, if the cross-zonal capacity allocated for the exchange of balancing capacity or sharing of reserves has not been used for the associated exchange of balancing energy, it shall be released to all TSOs for the exchange of balancing energy with shorter activation times or for operating the imbalance netting process. Each application of the methodology for an allocation process based on economic efficiency analysis shall at any time inform all Core TSOs, on who is the TSO for which cross-zonal capacity has been allocated for balancing capacity. The reliability margin calculated pursuant to CACM Regulation shall be used only for operating and exchanging frequency containment reserves, except on direct current interconnectors for which cross-zonal capacity for operating and exchanging frequency containment reserves may also be allocated in accordance with article 38(1) of the EB Regulation.
3. For each application of the methodology for an allocation process based on economic efficiency analysis the relevant Core TSOs shall determine fallback procedures and curtailment procedures on firmness regime of cross-zonal capacity according to article 38 of the EB Regulation.
4. In the event of force majeure or emergency situations, curtailment of cross-zonal capacities which were allocated shall be proportionally distributed between the affected cross-zonal capacity allocated for the exchange of energy and for the exchange of balancing capacity or sharing of reserves in accordance with article 42(3) of the EB Regulation. Core TSOs can deviate from this principle by proposing a more cost efficient, non-discriminatory solution in the proposal pursuant to article 33(1) of the EB Regulation.
5. Costs of ensuring firmness of cross-zonal capacity allocated for the exchange of balancing capacity or sharing of reserves shall include follow up costs or ensuring firmness of procured balancing capacity bids in accordance with paragraph 1, which are caused by the curtailment of firm cross-zonal capacity in the event of force majeure or emergency situations. These costs also include the additional costs from the procurement of balancing capacity due to the non-availability of the balancing capacity given the curtailment of cross-zonal capacity.
6. The costs of ensuring firmness shall be shared in accordance with the regional methodologies developed in accordance with article 74 of the CACM Regulation and article 76 of the SO Regulation for cases which are within the scope of these methodologies.
7. Any costs of ensuring firmness which are outside the scope of the methodologies referred to in paragraph 6 shall be borne by the Core TSO requesting the curtailment.
8. Core TSOs shall not increase the transmission reliability margin calculated pursuant to article 21 of the CACM Regulation due to the exchange of balancing capacity or sharing of reserves for aFRR, mFRR, and RR.

Article 12

Sharing of Congestion Income from cross-zonal capacity

1. The congestion income coming from the application of the methodology for an allocation process based on economic efficiency analysis will be considered as day-ahead congestion income and as such shall be shared according to the methodology of 73 of the CACM Regulation and according to article 42(4) of the EB Regulation.

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2. The amount of congestion income to be transferred to the SDAC is determined as the sum of the congestion income determined for each BZB of the application of the methodology for an allocation process based on economic efficiency analysis as set out in article 12(3).
3. For each day-ahead MTU and for each BZB of the application of the methodology for an allocation process based on economic efficiency analysis, the allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves shall be multiplied with the actual day-ahead market spread at the concerned BZB and the direction for the concerned day-ahead MTU resulting from the SDAC only in case the price difference is positive in the direction of the allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves per day-ahead MTU. Otherwise, the congestion income is 0 EUR/MWh.
4. If a surplus remains from the process described in article 12(3), it shall be assigned to the relevant BZBs of the application of the methodology for an allocation process based on economic efficiency analysis on a pro-rata basis according to the congestion income originally generated by the exchange of balancing capacity or sharing of reserves.
5. For the BZB where congestion income results from the exchange of balancing capacity or sharing of reserves, the Core TSOs on each side of the BZB shall receive their share of net border balancing income based on a 50%-50% sharing key.
6. In cases where the ownership shares or the shares of investments costs of Core TSOs on both sides of specific interconnectors on the concerned BZBs are different from a 50%-50% split, the concerned Core 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 website for information purposes only. This document shall list all these specific cases with the name of the interconnector, the BZB, 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 via the ENTSO-E website.
7. In case the BZB consists of several interconnectors with different sharing keys, on which are owned by different Core TSOs, the net border balancing capacity congestion income shall be assigned first to the respective interconnectors on that BZB based on each interconnector's contribution to the allocated cross-zonal capacity. The parameters defining the contribution of each interconnector will be agreed by the Core TSOs on the BZB. They shall be published in a common document by ENTSO-E on its website for information purposes only. The document shall be updated and published promptly as soon as any changes occur.
8. In case specific interconnectors are owned by entities other than Core TSOs, the reference to TSOs in this article shall be understood as referring to those entities.
9. In case physical transmission rights are applied at a certain BZB, the rules on sharing of congestion income from cross-zonal capacity allocated for the exchange of balancing capacity or sharing of reserves on this certain BZB shall be defined in article 38(1)(a) of the EB Regulation of the TSOs applying this methodology.

¹ Exemption decision granted to these entities by relevant competent Authorities in accordance with article 63 and with article 6(9) of Regulation (EU) 2019/943.

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 and article 63 of Regulation (EU) 2019/943.

Article 13

Publication

1. Core TSOs shall publish this methodology for an allocation process based on economic efficiency analysis without undue delay on the ENTSO-E website after all regulatory authorities of the CCR Core have approved this methodology for an allocation process based on economic efficiency analysis.
2. Each Core TSO applying the methodology for an allocation process based on economic efficiency analysis shall publish information for BSPs on the expected volume of cross-zonal capacity as defined in article 5(1)(a) of this methodology for an allocation process based on economic efficiency analysis.
3. Each Core TSO applying the methodology for an allocation process based on economic efficiency analysis shall publish information on offered volumes as well as offered prices of procured balancing capacity, anonymised where necessary, as soon as possible but no later than one (1) hour after the results of the procurement have been notified to the bidders, pursuant to article 12(3)(f) of the EB Regulation.
4. Each Core TSO applying the methodology for an allocation process based on economic efficiency analysis shall publish information in accordance with article 12(3)(h) of the EB Regulation on the allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves pursuant to article 38(1)(a) of the EB Regulation as soon as possible but at latest one (1) day after the allocation:
 - a) date and time when the decision on allocation was made;
 - b) period of the allocation;
 - c) volumes allocated;
 - d) market values used as a basis for the allocation process in accordance with article 39 of the EB Regulation.
5. Each Core TSO applying the methodology for an allocation process based on economic efficiency analysis shall inform on the use of allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves pursuant to article 38 of the EB Regulation at the latest one (1) week after the use of allocated CZC, pursuant to article 12(3)(i) of the EB Regulation.
6. Subject to approval pursuant to article 18 of the EB Regulation, a Core TSO participating in an application of the methodology for an allocation process based on economic efficiency analysis may withhold the publication of information on offered prices and volumes of balancing capacity or balancing energy bids if justified for reasons of market abuse concerns and if not detrimental to the effective functioning of the electricity markets. A Core TSO applying the methodology for an allocation process based on economic efficiency analysis shall report such withholdings at least once a year to the relevant regulatory authority in accordance with article 59 of Directive (EU) 2009/944 and pursuant to article 12(5) of the EB Regulation.
7. Core TSOs applying the methodology for an allocation process based on economic efficiency analysis applying the methodology for an allocation process based on economic efficiency analysis shall publish the efficiency of the forecasted market value for the exchange of balancing capacity or sharing of reserves and the efficiency of the forecasted market value for the exchange of energy to their respective regulatory authorities and market participants to analyse the forecast efficiency.

Article 14

Implementation Timeline

1. By four (4) months after approval of this methodology for an allocation process based on economic efficiency analysis, all Core TSOs shall publish on the ENTSO-E website an implementation impact assessment and notify all Core regulatory authorities and ACER. The progress and content of the implementation impact assessment shall be monthly reported to the Core regulatory authorities.
2. The implementation impact assessment shall address:
 - a) flow-based compatibility;
 - b) further detailing the calculation of the market price difference including adjustment factors and mark-ups;
 - c) further detailing the calculation of the forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves; and
 - d) applicability of the chosen congestion income calculation for the exchange of balancing capacity or sharing of reserves, including impact on long term transmission rights.
3. By six (6) months after approval of this methodology for an allocation process based on economic efficiency analysis, all Core TSOs shall submit an amendment of this methodology for an allocation process based on economic efficiency analysis to the Core regulatory authorities subject to the findings of the implementation impact assessment pursuant to paragraph 2.
4. After Core regulatory authorities' approval of the amendments pursuant to paragraph 3 , this methodology for an allocation process based on economic efficiency analysis shall be considered implemented in accordance with article 5(3) of Regulation (EU) 2019/942 of the European Parliament and of the Council of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy regulators (hereinafter – ACER Regulation).

Article 15

Language

1. The reference language for this Core TSOs' methodology for an allocation process based on economic efficiency analysis shall be English. For the avoidance of doubt, where Core TSOs need to translate this Core TSOs' methodology for an allocation process based on economic efficiency analysis into their national language(s), in the event of inconsistencies between the English version published by Core TSOs in accordance with article 7 of the EB Regulation and any version in another language, the relevant Core TSOs shall be obliged to dispel any inconsistencies by providing a revised translation of this Core TSOs' methodology for an allocation process based on economic efficiency analysis to their relevant Core regulatory authorities.