

CCR Core TSOs' Cooperation



**ACER Decision on the Core CCR TSOs' methodology for market-based
allocation: Annex I**

(text rectified by corrigendum of XX 27 January 2022)

**Methodology for the market-based allocation
process of cross-zonal capacity for the
exchange of balancing capacity for the Core
CCR**

in accordance with Article 41(1) of the Commission Regulation (EU)
2017/2195 of 23 November 2017 establishing a guideline on electricity
balancing

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Style Definition

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Whereas

(1) This document provides a methodology for a market-based allocation process of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves (hereafter referred to as the “methodology for market-based capacity allocation”) in accordance with article 41(1) of the Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing (hereafter referred to as the “EB Regulation”) for the geographic area covering the Core capacity calculation region (hereinafter referred to as the “Core CCR”) as defined in accordance with Article 15 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (hereafter referred to as the “CACM Regulation”).

04 December 2020

Purpose:	<input type="checkbox"/> methodology draft	<input type="checkbox"/> for public consultation
	<input checked="" type="checkbox"/> for NRA approval	<input type="checkbox"/> for final publication
Status:	<input type="checkbox"/> draft	<input checked="" type="checkbox"/> final
TSO approval:	<input type="checkbox"/> for approval	<input checked="" type="checkbox"/> approved
NRA approval:	<input checked="" type="checkbox"/> outstanding	<input type="checkbox"/> approved

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Contents

Whereas..... 3

Abbreviations..... 4

Article 1 Subject Matter and Scope 5

Article 2 Definitions and Interpretation..... 5

Article 3 Principles for Applying market-based Cross-zonal Capacity Allocation 6

Article 4 Notification Process for the Use of the Market-based Allocation Process..... 7

Article 5 Timeframe of Market-based Allocation 7

Article 6 Process to Define the Maximum Volume of Allocated cross-zonal capacity for the Exchange of Balancing Capacity or Sharing of Reserves..... 9

Article 7 Determination of the Forecasted Market Value of cross-zonal capacity for the Exchange of Energy..... 10

Article 8 Determination of the Actual Market Value of cross-zonal capacity for the Exchange of Balancing Capacity or Sharing of Reserves..... 11

Article 9 Determination of the Allocated Volume of cross-zonal capacity for the Exchange of Balancing Capacity or Sharing of Reserves..... 11

Article 10 Pricing of cross-zonal capacity 13

Article 11 Firmness Regime of cross-zonal capacity..... 13

Article 12 Sharing of Congestion Income from cross-zonal capacity 14

Article 13 Publication 15

Article 14 Implementation Timeline..... 16

Article 15 Language 17

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Core Transmission System Operators taking into account the following:

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- (2) The methodology for market-based capacity allocation takes into account the general principles and goals set out in the EB Regulation as well as Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as the “SO Regulation”), the CACM Regulation and Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (hereafter referred to as the “Electricity Regulation”).
- (3) The Transmission System Operators of the Core CCR (hereafter referred to as the “TSOs”) intend to exchange balancing capacity and plan for that reason to develop common and harmonised rules and processes for this exchange and procurement in accordance with Article 33 of the EB Regulation. To secure this exchange of balancing capacity, the TSOs intend to submit an application proposal in accordance with Article 38(1) of the EB Regulation to allocate cross-zonal capacity across timeframes using the market-based allocation process pursuant to Article 41 of the EB Regulation. This methodology shall define the details of a market-based cross-zonal capacity allocation process.
- (4) This methodology for market-based capacity allocation is based on an optimisation process that seeks to maximise the sum of actual economic surplus from the procurement of balancing capacity or sharing of reserves and the forecasted estimation of economic surplus for the single day-ahead coupling. Consistent with the EB Regulation's aims as stated in its Article 3, this optimisation process enhances the efficiency of balancing and of European and national balancing markets. The pricing method, the firmness regime and the sharing of congestion income for cross-zonal capacity that has been allocated for the exchange of balancing capacity ensures equal treatment with cross-zonal capacity allocated for the exchange of energy.
- (5) The optimisation process used to allocate cross-zonal capacity effectively trades off the use of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves with the use of cross-zonal capacity for the exchange of energy in the day-ahead market. The forecasted market value of cross-zonal capacity for the exchange of energy that is used in this process is calculated based on preliminary flow-based cross-zonal capacity results calculated in accordance with the day-ahead capacity calculation methodology pursuant to Article 20 of the CACM Regulation for the relevant trading day and a day-ahead order book from a reference day. The value of cross-zonal capacity for the exchange of balancing capacity is calculated within the optimisation process itself and formed by the actual balancing capacity bids submitted by the balancing service providers (“BSPs”). The TSOs will, as part of this allocation processes’ implementation, collect information on and review the accuracy and efficiency of the forecasting methodology used. This review will include a comparison of the forecasted and actual market values of cross-zonal capacity for the exchange of energy.
- (6) This methodology for market-based capacity allocation generally contributes to achieving the achievement of the objectives stated in article of Article 3 of the EB Regulation. In particular, this the methodology for market-based capacity allocation serves the following objectives of the EB Regulation:
- (a) The This methodology for market-based capacity allocation serves the objective of fostering enables the allocation of cross-zonal capacity for the exchange of balancing capacity to a region with common and harmonised rules and processes for the exchange and procurement of balancing

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capacity developed in accordance with Article 33 of the EB Regulation, and therefore facilitates the coupling of local balancing capacity markets. By doing so, this methodology contributes to an efficient utilisation of balancing capacity resources across bidding zone borders in order to secure the volume of balancing capacity needed to maintain operational security. The market-based cross-zonal capacity allocation process is using submitted bids from BSPs and a transparently defined forecasting method for estimating the value of cross-zonal capacity for the single day-ahead coupling to allocate cross-zonal capacity for balancing capacity procurement in the respective region. Hence, this methodology for market-based capacity allocation fosters effective competition, in a non-discrimination/discriminatory and transparency/transparent way in balancing markets as stated in article (Article 3(1)(a) and enhancing of the EB Regulation), enhances the efficiency of balancing as well as the efficiency of European and national balancing markets as stated in article (Article 3(1)(b) of the EB Regulation by defining the required principles necessary for the application of the methodology of market-based allocation as detailed in Article 3 of this methodology for market-based allocation including additional requirements for harmonisation, and foster transparency by means of the notification process as specified in Article 4;

(a)a. The methodology for market-based allocation facilitates the objective for the integration of the balancing markets and for) and contributes to the objective of integrating balancing markets and promoting the possibilities for the exchanges of balancing services while using market-based mechanisms and contributing to operational security as stated in article (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 market-based allocation, make explicit rules on respecting day-ahead markets as detailed in Articles 6, 7, 8 and 9 of this methodology for market-based allocation; the EB Regulation).

b. The This methodology for market-based capacity allocation takes into account the impact on the day-ahead market by using the forecasted market value of cross-zonal capacity in the day-ahead market for the objective to maximise the total economic surplus of both the day-ahead energy and balancing capacity markets. By allowing the exchange of balancing capacity, leading to a more efficient balancing capacity market and price formation, it also contributes to efficient investment signals in new capability for providing balancing capacity. Therefore, the methodology for market-based capacity allocation contributes to the efficient long-term operation and development of the electricity transmission system and electricity sector in the Union while facilitating the efficient and consistent functioning of the day-ahead, intraday and balancing markets (Article 3(1)(d) of the EB Regulation).

(b)c. The methodology for market-based capacity allocation ensures that the procurement of balancing services is fair, objective, transparent and market-based, avoids undue barriers to entry for new entrants, fosters the liquidity of balancing markets while preventing undue distortions within the internal market in accordance with article electricity (Article 3(21)(e) of the EB Regulation. The rules on), since it will foster liquidity for the procurement of balancing capacity are required to be harmonised per application of methodology for market-based in integrated balancing capacity markets while taking into account the impacts on the day-ahead market. The allocation according to Articles 3 and 5 of this methodology for market-based allocation. For avoidance of undue barriers to participate

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for new entrants and to foster liquidity, exact timings are still to be decided per application of methodology for cross-zonal capacities by the market-based capacity allocation process provides a transparent input for the procurement of balancing capacity in an objective way and for additional is based on market design principles. Furthermore, common rules are stated in Articles 7 to 9 how inputs from the market value balancing capacity and volume as well as the offered volumes and prices shall be determined; day-ahead energy markets.

d. This methodology for market-based capacity allocation takes into account the facilitation of demand response including aggregation and energy storage and participation of renewables by enabling short GCTs of balancing capacity procurement and complex bidding does not negatively impact the objectives in accordance with article Articles 3(2)(f) and article 3(2)(g) of the EB Regulation as defined in Articles 5.

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TITLE 1
General provisions

Article 1
Subject matter and 3 of this scope

- (c) ~~This document is the methodology for market-based allocation, respectively;~~
- (d) ~~This methodology for market-based allocation 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;~~
- (e) ~~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;~~

In conclusion, the methodology for market-based allocation meets the objectives of the EB Regulation.

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Abbreviations

The list of abbreviations used in this methodology for market-based allocation 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

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Article 4

Subject Matter and Scope

1. This methodology for market-based allocation specifies the market-based process of the allocation allocation process of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves in accordance with Article 41(1) of the EB Regulation for the Core CCR. It is based on the comparison of the forecasted market value of cross-zonal capacity for the exchange of energy and the actual market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves for the CCR Core; the market-based process is based on the forecasted market values of cross-zonal capacity for the exchange of energy and the actual market values of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves in accordance with Article 39 of the EB Regulation.
2. The application of the This methodology of also includes the algorithm principles for the cross-zonal capacity allocation function.
3. This methodology for market-based capacity allocation is covers the bidding zone borders of the Core CCR.
2. The application of this methodology shall be subject to a proposal for application the methodology pursuant to Article 38(1)(b) of the EB Regulation, 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.
- 3.4. The methodology for the application of the market-based allocation shall includedefine the BZBs bidding zone borders, the market timeframe, and the duration of application and the detailed description of a methodology to be applied in accordance with articleArticle 38(2)(a) of the EB Regulation.
- 4.5. Two or more Core TSOs exchangingwilling to exchange balancing capacity and/or willing to perform sharing of reserves by applying the methodology of market-based capacity allocation shall use a common and harmonised set of rules and processes for the exchange and procurement of balancing capacity in accordance with articleArticle 33(1) of the EB Regulation, and respecting the requirements set out in articleArticle 32 of the EB Regulation.
5. The list of standard products for balancing capacity for frequency restoration reserves and replacement reserves is subject to the methodology pursuant to article 25(2) of the EB Regulation and out of the scope of this methodology of market-based allocation.
6. A TSO applying a central dispatching model and the market-based cross-zonal allocation process shall convert as far as possible the integrated scheduling process bids into standard balancing capacity product bids, pursuant to Article 27(3) of the EB Regulation. In this case, each reference to the standard balancing capacity bids in this market-based methodology, shall be understood for this TSO as a reference to the integrated scheduling process bids converted into standard balancing capacity bids.

Article 2

Definitions and Interpretationinterpretation

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1. For the purposes of the methodology for market-based capacity allocation, terms used in this methodology for market-based allocation, the terms used shall have the definition given to them in article meaning of the definitions included in Article 2 of the EB Regulation, Article 3 of the SO Regulation and Article 2 of the CACM Regulation, Article 2 of the Commission Regulation (EU) 2019/9432016/1719 of 26 September establishing a guideline on forward capacity allocation (hereafter referred to as the "FCA Regulation"), Article 2 of the Electricity Regulation, Article 2 of the Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity, article 2 of the (hereafter referred to as "Transparency Regulation, article 2 of the CACM Regulation, article 3 of the SO Regulation and article 2 of the EB Regulation.") and Directive (EU) 2019/944.
2. The following additional definitions shall also apply:
- (a) 'Adjustment factor' means a correction to the calculated shadow price(s) associated with the reference day to calculate the forecasted market value of cross-zonal capacity for the exchange of energy 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 balancing service providers' bids in a balancing capacity auction are selected after the gate closure time and the balancing service providers 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 of each application of the market-based methodology.
 - (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)(a) 'Mark-up' means the addition to 'adjustment factor' means a correction factor for 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 during application in the capacity procurement optimization function: the allocation of the cross-zonal capacity for the exchange of balancing capacity or sharing of reserves;

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(b) 'Reference cross-zonal capacity allocation function' means the functionality that optimises the allocation of cross-zonal capacity across the day-ahead market timeframe and the market timeframe for the exchange of balancing capacity or sharing of reserves;

(c) 'economic surplus from the exchange of balancing capacity or sharing of reserves' means the sum for the relevant time period of (i) the TSOs' surplus for the exchange of balancing capacity or sharing of reserves, (ii) the BSPs' surplus for the exchange of balancing capacity or sharing of reserves and (iii) the congestion income. The surplus for BSPs is the difference between the balancing capacity price and the prices of the accepted balancing capacity bids multiplied by the accepted volume of the balancing capacity bids. The surplus for TSOs is the difference between the technical price limit and the balancing capacity price multiplied by the volume of the TSO demand;

(d) 'positive forecast error' means an underestimation in percent per day ahead market time unit of the initial forecasted market value of cross-zonal capacity for the exchange of energy.;

(e) 'Pre-final day-ahead capacity domain' is the preliminary output of the day-ahead capacity calculation after validation but before considering long-term capacity nominations.

(f) 'reference day' means the day which is used to define the forecasted market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves energy; and

(h) 'Shadow price' means the dual price of a critical network element associated with a contingency used in capacity calculation, or allocation constraint representing the increase in the economic surplus if a constraint is increased by one (1) MW.

(g) 'TSO demand' means the balancing capacity volume to be procured within the scope of the methodology pursuant to Article 33(1) of the EB Regulation by the connecting TSO and defined per scheduling area and bidding zone in accordance with Article 32(1) of the EB Regulation.

3. In this methodology for market-based allocation, unless the context requires otherwise:

(a) the singular indicates also includes 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 market-based allocation;

(c) any reference to cross-zonal capacities shall include also the reference to allocation constraints as applied in the respective capacity calculation methodology pursuant to Article 20 of the CACM Regulation;

(d) any reference to legislation, regulations, directives, orders, instruments, codes regulation, directive, order, instrument, code or any other enactment shall include any modification, extension or re-enactment of it when then in force; and

(e) any reference to an Article without an indication of the document shall mean a reference to this methodology for market-based allocation.

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TITLE 2
Market-based allocation process of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves

Article 3
Principles for Applying applying market-based Crosscross-zonal Capacity Allocationcapacity allocation process

1. In the context of this methodology for The market-based capacity allocation, an application of the market-based methodology consists of two or more Core TSOs that apply process shall be executed by the cross-zonal capacity allocation function and shall determine the amount of cross-zonal capacities to be allocated to the exchange of standard balancing capacity products or sharing of reserves for each day ahead market time unit following the objective in Article 8(4).
2. TSOs shall use standard balancing capacity products for frequency restoration reserves and replacement reserves pursuant to Article 25(2) of the EB Regulation and submit all balancing capacity bids from standard balancing capacity products to the capacity procurement optimisation function pursuant to Article 33(3) of the EB Regulation. TSOs shall not modify or withhold any balancing capacity bids and shall include them in the procurement process, except under conditions set out in Article 26 and Article 27 of the EB Regulation.
3. A single gate closure time shall apply for all balancing capacity markets where this methodology is applied irrespective of time zone differences, such that one gate closure time shall be applied for the submission of all standard balancing capacity bids. This gate closure time shall be set D-1 after the pre-final capacity calculation and before the final day-ahead capacity calculation. For TSOs applying a geographical area sharing (central dispatching model and applying this market-based methodology, the gate closure time 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.
- 1.4. For each application of the market-based methodology, the validity period of standard balancing capacity bids shall be equal to or a) common BZB(s) multiple of the day-ahead market time unit and shall be less or equal to the total amount of day-ahead market time unit of the concerned day.
- 2.5. TheThe pricing principle used for the settlement of standard balancing capacity bids for each application of this methodology for market-based allocation 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 market-based allocation 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 the market-based methodology, the contracting period of standard balancing capacity bids shall be equal to or a multiple of the day-ahead MTU and has a maximum contracting period of one (1)

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day. The contracting period is the period for which a BSP can submit one or more balancing capacity bids during the procurement process of balancing capacity.

5. For each application of the market-based methodology, the validity period of standard balancing capacity bids shall be equal or a multiple of the day-ahead MTU and have a maximum validity period of one (1) day. 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 market-based methodology, the TSO-BSP settlement rules shall be harmonised. In case of a Core TSO applying a central dispatching model and applying this market-based methodology, the TSO-BSP settlement rules of standard balancing capacity products procured within the application of the market-based methodology 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.

6. The cross-zonal capacity allocation function shall allow linking of bids which participate in the market-based cross-zonal capacity allocation process in accordance with the defined linking provisions pursuant to the methodology pursuant to Article 33(1) of the EB Regulation. Besides the exemption pursuant to Article 7(4)(b), such links shall only be allowed within the market-based allocation process.

7. All TSOs applying this market-based process shall ensure compatibility between the cross-zonal capacity allocation function and the capacity procurement optimisation function, including the selection of standard balancing capacity bids which determine the output of the cross-zonal capacity allocation function in accordance with Article 8(5).

8. According to Article 38(4) of the EB Regulation, cross-zonal capacities allocated to the exchange of standard balancing capacity products or sharing of reserves where this market-based allocation process is applied, shall be:

(a) exclusively provided to the cross-border FRR control processes in accordance with Article 149 of the SO Regulation until all TSOs of a bidding zone border are connected to the respective platform pursuant to Articles 20 and 21 of EB Regulation;

(b) exclusively provided to the respective platform, pursuant to Articles 19 to 21 of the EB Regulation, of the standard balancing capacity product it was allocated for, starting from the connection of the TSOs from the concerned bidding zone border to the respective platform.

9. The process of releasing allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves, pursuant to Article 38(9) of the EB Regulation, shall be:

(a) coordinated by the cross-border control process in accordance with Article 149 of the SO Regulation until the connection of the TSOs to the platforms pursuant to Article 19 to 21 of EB Regulation;

(b) coordinated between the platforms for balancing energy pursuant to Articles 19 to 21 of the EB Regulation, starting from the connection of the TSOs to these platforms.

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Article 4
Notification ~~Process~~ for the Use of the Market-based Allocation
~~Process~~ allocation process

1. ~~Core TSOs~~Each TSO intending to apply ~~the methodology for this~~ market-based allocation ~~process~~ shall notify all ~~Core TSOs~~ six (6) TSOs of the same synchronous area(s) 3 (three) months ~~before the application prior to entering into operation~~ in accordance with ~~article~~ 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)~~ (three) months prior to entering into operation. ~~The~~ This announcement on the ENTSO-E website shall include:

(a) ~~at the~~ TSOs involved;

(b) the expected date for the exchange of balancing capacity and/or sharing of reserves pursuant to Article 33(1) of the EB Regulation with the market-based allocation process to enter into operation;

(c) the detailed description of the specifications, including the market timeframe, in accordance with article 38(2) of the EB Regulation;

(d) the forecast of the average expected amount of frequency restoration power interchange due to the cross-zonal FRR activation process or reserve replacement power interchange due to the cross-zonal RR activation process;

(e) the maximum limit(s) of cross-zonal capacity for exchange of balancing capacity as defined pursuant to Article 5(1) and maximum amount of exchange or sharing of reserves pursuant to Article 5(2); and

(f) the type and direction of standard balancing capacity product which will be exchanged or shared;

~~e. All TSOs applying this market-based methodology, shall share the planned date of entry into operation; and~~

~~d. algorithm applying the forecasting technique consisting of the use of reference days, adjustment factors and mark-ups to determine the forecasted market value of cross-zonal capacity for the exchange of energy.~~

2. ~~allocation function with all Core TSOs and market participants may provide remarks regarding the forecasting technique announced in accordance to paragraph 1(d) not later than two (2)~~

The TSOs intending to apply this methodology of market-based allocation shall publish 3 (three) months ahead of the application. Core TSOs applying the market-based methodology shall take the remarks by all Core TSOs properly into account.

2. Core TSOs applying the methodology for market-based allocation shall share the applied cross-zonal capacity allocation optimisation function with all Core TSOs.

Article 5

Timeframe of Market-based Allocation

1. The of this methodology for market-based allocation process to allocate cross-zonal capacity for the exchange of balancing capacity and/or sharing of reserves shall include the following consecutive timings for each on the ENTSO-E website the expected costs and benefits of such an application of the

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methodology of market-based methodology in CCR Core. In the following, “(each) application” refers to “(each) application of the market-based methodology in CCR Core”.

- a. The GCT for BSPs to submit to Core TSOs (TSO-BSP-GCT) the standard balancing capacity bids shall be the same for each BSP (per standard product and per direction) and shall be organised in between one (1) week in advance of the provision of the balancing capacity and before the final computation of the cross-zonal capacity of the single day-ahead coupling has been computed. The TSO-BSP-GCT shall be specified in the proposal for the establishment of common and harmonised rules and processes for the exchange and procurement of balancing capacity pursuant to article 33(1) of the EB Regulation.
- b. For Core TSOs applying central dispatching model and applying this market-based methodology, 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.
- c. Each Core TSO applying the market-based methodology 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, per validity period and in each direction, within one (1) hour after the results of cross-zonal capacity optimisation are known.
- d. Simultaneously, Core TSOs applying the market-based methodology shall notify all BSPs in the scheduling areas of the application about their selected standard upward balancing capacity bids and/or downward balancing capacity bids and at the latest one (1) hour before the GCT of the SDAC. In case the procurement of different balancing capacity products is performed subsequently, the notification per product and per application shall be done before the subsequent TSO-BSP-GCT of another product.
- e. 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 market-based allocation process to allocate cross-zonal capacity for the exchange of balancing capacity and/or sharing of reserves shall include the following steps:

- a. BSPs submit standard upward and standard downward balancing capacity bids to the connecting TSO.
- b. For Core TSOs who are applying a central dispatching model and are applying this market-based methodology, 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.

e.3. Core TSOs applying the market-based methodology shall perform the cross-zonal capacity allocation optimisation function after the TSO-BSP-GCT of standard balancing capacity bids and determine the allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves per application based on:

- i. the actual market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves determined in accordance with Article 8;

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- ii. the balancing capacity demand and if relevant TSO balancing capacity tolerance band for sharing of reserves of each Core TSO within the application;
 - iii. the forecasted market value of cross-zonal capacity for the exchange of energy determined in accordance with Article 7;
 - iv. applied limitations of maximum allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves per BZB;
 - v. the latest available cross-zonal capacity per BZB for the SDAC;
 - vi. the minimum available cross-zonal capacity resulted from the available transmission capacity extraction; and
 - vii. already allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves based on other application of this methodology of market-based allocation and other methodologies according to article 38.3 and article 41 of the EB Regulation.
- d. Core TSOs applying the market-based methodology shall determine the allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves per standard product, per validity period of the standard product, per direction and per BZB.

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~~ **Article 5**

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 41(2) of the EB Regulation to respect the volume limitations for the allocation of cross-zonal capacity or sharing of reserves

- 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 market-based allocation shall be applicable per BZB and include the cumulative allocation of all balancing capacity products and per direction.
- 3. The maximum of 10% of cross-zonal capacity allocated on a market-based process on a Core BZB (in accordance with article 41(2) of the EB Regulation) is determined as the 10% 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.

5.1. TheIn accordance with Article 41(1)(d) of the EB Regulation, the process to define 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 for the cross-zonal capacity allocation function shall be as follows:

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6.(a) In case flow-based is applied by default the maximum volume of cumulative allocated cross-zonal capacity allocated 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 be 10% of cross-zonal capacity volume based on available transmission constraint extraction of the particular BZB calculated for the day-ahead timeframe in accordance with the capacity calculation methodologies developed pursuant to Article 20(2) of the CACM Regulation;

7. Core TSOs applying the market-based methodology may apply additional lower limits besides the limitations of article 41(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.

(b) Article 7 to resolve a situation where the limit for the maximum volume of cross-zonal capacity allocated for the exchange of balancing capacity in accordance with paragraph 1(a) is not sufficient to satisfy TSO demand in a bidding zone, a TSO may increase the percentage limit pursuant to paragraph 1(a) on the relevant critical network elements for the relevant day-ahead market time units. The limit for the maximum volume of cross-zonal capacity allocated for the exchange of balancing capacity shall only be increased to the point until the TSO demand is satisfied and maximum up to 20% of the calculated cross-zonal capacity calculated for day ahead market timeframe. If this maximum limit is still not sufficient to satisfy a TSO demand, a fall-back procedure pursuant to Article 7(6) shall be initiated. TSOs shall notify the regulatory authorities of the Core CCR about each increase of the limit for the maximum volume of cross-zonal capacity allocated for the exchange of balancing capacity above the threshold set in paragraph 1(a). This notification shall include at least the final volume percentage and value in MW of cross-zonal capacity allocated for the exchange of balancing capacity and the reasons for the shortage of balancing capacity bids in the importing bidding zone. The annual impact of such increases shall be reported pursuant to Article 12(10)(c);

(c) if increases pursuant to paragraph (1)(b) occur due to a structural local shortage of BSPs' bids for a standard balancing capacity product in a bidding zone, the limit for the maximum volume of cross-zonal capacity allocated for the exchange of balancing capacity in accordance with paragraph (1)(a) may be increased by 2 percentage points. Such increase of the default limit shall be reported to stakeholders and the regulatory authorities of the Core CCR at least two weeks in advance of application. This process can be performed repeatedly until the maximum limit of 20% is reached. The applied default limits shall be published in accordance with Article 12(8).

2. The exchange of balancing capacity or sharing of reserves shall, in addition to the limit defined in accordance with paragraph 1, be limited by the rules for the exchange and sharing of reserves in accordance with Title 8, Chapter 1 and 2 of the SO Regulation through the:

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(a) maximum procurement volume of balancing capacity per direction for a specific bidding zone, or a set of bidding zones due to operational security requirements pursuant to Article 165(3)(g) of the SO Regulation;

(b) minimum procurement volume of balancing capacity per direction for a specific bidding zone, or a set of bidding zones defined in accordance with the dimensioning process pursuant to Article 157(2)(g) of the SO Regulation.

Article 6.

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

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 in single day-ahead coupling

1. The initial forecasted market value of cross-zonal capacity for the exchange of energy shall be defined 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.

2.1. The forecasted market value of cross-zonal capacity for the exchange of energy between bidding zones represents market time unit and shall reflect the expected change of economic surplus for the exchange of energy and shall be calculated based on the shadow price associated to the critical network elements limiting the exchange, adjusted by the sensitivity of these element(s) on an exchange between the relevant bidding zones, on the selected reference day(s). The forecasted market value of cross-zonal capacity for the direction of the exchange of energy is 0 EUR/MW if there are no limiting network elements limiting the exchange between two bidding zones in the Core CCR for the single day-ahead coupling. It shall be calculated based on:

3. The forecasting methodology using shadow prices:

(a) shall include adjustment factors order books from the reference day, provided by the relevant NEMOs;

(b) pre-final day-ahead capacity domain for the day of the provision of the balancing capacity resulting from the day-ahead capacity calculation.

2. The initial forecasted market value shall be a dynamic value dependant on the amount of cross-zonal capacity allocation for the exchange of balancing capacity and sharing of reserves. The initial forecasted market value shall be determined on the basis of at least:

(a) one recalculation of the single day-ahead market coupling with the inputs listed in paragraph 1 assuming zero allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves; and

(b) one recalculation with the inputs listed in paragraph 1 considering the maximum volume of allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves pursuant to Article 5.

3. The positive forecast error shall be determined by calculating the difference for each day-ahead market time unit and for each run recalculation of the single day ahead coupling for determining the dynamic forecast value in accordance with paragraph 2 between:

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- (a) the initial forecasted market value of cross-zonal capacity for the exchange of energy resulting from a performed recalculation of the day-ahead market coupling based on forecasted calculation inputs and an assumed volume of allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves in accordance with paragraph 2; and
- (b) the actual market value of cross-zonal capacity for the exchange of energy based on the actual inputs of the trading day and assuming the same volume of allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves as in sub-paragraph (a).
4. The adjustment factor shall be based on the assessment of the positive forecast error and shall be equal or higher than 1. The adjustment factor shall be set to a level, which would have limited the average of all positive forecast errors calculated pursuant to paragraph 3 over the last 30 days to not more than 5%. For the calculation of the average, occurrences of negative forecast error shall be considered as zero. The applicable adjustment factor shall be published in accordance with Article 12(4).
5. The forecasted market value for the exchange of energy per day ahead market time unit, shall be equal to the product of the initial forecasted market value pursuant to paragraph 1 and 2 and the adjustment factor pursuant to paragraph 4.
6. The default reference day shall be:
- (a) the previous working day whenever cross-zonal capacity is allocated for a working day; and
- (b) the previous weekend day or bank holiday whenever cross-zonal capacity is allocated for a weekend day or bank holiday (in any of the relevant bidding zones).
- a. A different reference day than the one pursuant to paragraph 6 may be chosen in exceptional circumstances to improve the accuracy of the forecasting forecast of the forecasted market value of cross-zonal capacity for the exchange of energy; and
- b. 7. may include mark-ups to take into account the uncertainty of the forecasting if the market value of cross-zonal capacity for the exchange of energy. If a different reference day is chosen, TSOs shall publish the chosen reference day accordance with Article 12(4). The process for changing the reference day and the actual impacts of changes of the default reference day shall be published in accordance with Article 12(9) and (10)(b).
4. By default, the following reference days The TSOs shall be chosen:
- a. the previous working day whenever cross-zonal capacity is allocated for a working day;
- b. the previous weekend day whenever cross-zonal capacity is allocated for a weekend day; and
- c. the previous Sunday or bank holiday whenever cross-zonal capacity is allocated for a bank holiday in the respective bidding zone.
8. In case the analysis of monitor the efficiency pursuant to Article 7(6) of of the forecasting shows that different reference days are more suitable the application of the methodology of market-based allocation shall choose the more accurate reference day, or a combination of them pursuant to Article 12(10).
5. The concept and computation of adjustment factors and mark-ups to The determination of the forecasted market value of cross-zonal capacity for the exchange of energy between bidding zones shall be included

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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.

6. The TSOs of each application of the methodology of market-based allocation shall monitor, demonstrate and publish on the ENTSO-E website the efficiency of the forecasting, the appropriateness of the choice of reference days, and application of adjustment factors and mark-ups on at least 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.

- 7.9. The rules in this methodology for market-based in single day-ahead coupling shall be performed by one single entity allocation 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 day-ahead flow-based capacity calculation.

Article 87

Determination of the Actual Market Value market value of cross-zonal capacity for the Exchange exchange of Balancing Capacity or Sharing balancing capacity and sharing of Reserves reserves

1. The actual market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves between all bidding zones where the this market-based capacity allocation methodology is applied shall be:
- a.(a) equal to the change of economic surplus from the exchange of balancing capacity or sharing of reserves per MW of cross-zonal capacity allocated;
 - b.(b) defined per day-ahead MTU market time unit;
 - c.(c) calculated per standard balancing capacity product, per validity period and per direction, separately;
 - d.(d) calculated based on the standard upward balancing capacity bids or standard downward balancing capacity bids submitted to the capacity procurement optimisation function pursuant to article Article 33(3) of the EB Regulation; and
 - e.(e) calculated based on TSO balancing capacity demand and if relevant on TSO balancing capacity elastic demand applying a tolerance band for sharing of reserves.
2. In accordance with paragraph (1)(a), the The actual market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves between all the bidding zones, where the this market-based capacity allocation methodology is applied, shall be calculated based on the change of economic surplus from due to the exchange of balancing capacity or sharing of reserves, resulting from the change of available cross-zonal capacities allocated to the market timeframe for the exchange of balancing capacity or sharing of reserves.

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Article 9

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

1. The objective of the allocation of cross-zonal capacity between the exchange of energy for the day-ahead market and the exchange of balancing capacity or sharing of reserves shall be the maximisation of the sum of expected economic surplus for the exchange of energy and the economic surplus from the exchange of balancing capacity or sharing of reserves.
2. The allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves is determined simultaneously with the selection of standard balancing capacity bids by the capacity procurement optimisation function.
3. The determination of the allocation. The TSOs shall not put a price on the TSO demand used in the market-based allocation process.
4. TSOs may increase the TSO demand of a certain standard balancing capacity product to:
 - (f) select an indivisible bid if such an increase would decrease the overall procurement costs for the respective standard balancing capacity product; or
 - (g) substitute a lower quality standard balancing capacity product if such substitution is based on firm bid(s) from BSPs during the time of the market-based process and would decrease the combined overall procurement costs for both standard balancing capacity product or in case of volume shortage of the lower quality standard balancing capacity product and if there is no possibility for a similar lower quality standard balancing capacity product to participate directly in the market-based process.
5. TSOs may decrease the TSO demand of a certain standard balancing capacity product in case of sharing of reserves.
6. If the demand for a standard balancing capacity product of TSOs in a region where market-based cross-zonal capacity allocation is applied, exceeds the available amount of bids for the relevant standard balancing capacity product, while taking into account the maximum volume of allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves in accordance with Article 5, a fall-back procedure shall apply. Such fall-back procedure shall be described in the methodology pursuant to Article 33(1) of the EB Regulation.
7. If a TSO demand for a standard balancing capacity product per bidding zone exceeds the available amount of locally submitted BSP bids in the bidding zone for the respective standard balancing capacity product but the maximum volume of allocated capacity is enough to cover the deficit, the market-based capacity allocation shall be performed. To calculate the change of economic surplus from the exchange of balancing capacity or sharing of reserves in such a case, the difference between the technical price limit and the marginal price of the importing BSP bids shall be considered as the change of economic surplus of the TSO of the bidding zone with insufficient bids. In case of insufficient local bids to meet the local TSO demand and a simultaneous scarcity situation in SDAC, the maximum between technical price limit applied in SDAC and the highest local BSP's bid price shall be used as the technical price limit for the market-based cross-zonal capacity allocation.

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Article 8

Determination of the allocated volume of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves

1. The cross-zonal capacity allocation function shall be based on a comparison of determining the actual market value allocated volume of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves and the considering the selection of balancing capacity bids via the capacity procurement optimisation function.
2. The inputs to the algorithm for the cross-zonal capacity allocation function are:
 3. (a) the forecasted market value of cross-zonal capacity for the exchange of energy for each marginal MW;
 - (b) The optimisation resolution of the list of balancing capacity bids from balancing service providers for each bidding zone, day-ahead market time unit and standard balancing capacity product sorted in order of their bid prices;
 - (c) the TSO demand for each bidding zone, day-ahead market time unit and standard balancing capacity product; and
 - (d) optionally, possible costs associated to the congestion income assessment pursuant to Article 11(4).
3. The constraints to the algorithm for the cross-zonal capacity allocation function are:
 - (a) the maximum volume of allocated cross-zonal capacity for the exchange of balancing capacity and/or sharing of reserves equals the optimisation resolution of the optimisation function defined pursuant to Article 5(1);
 - (b) the minimum and maximum procurement volume of the balancing capacity defined pursuant to Article 5(2); and
4. The objective of the cross-zonal capacity allocation function shall be the maximisation, per trading day, of the sum of
 - (h) the expected economic surplus for SDAC Standard upward, based on the forecasted market value for the exchange of energy pursuant to Article 6(5), and
 - (i) the economic surplus from the exchange of balancing capacity bids and downward or sharing of reserves based on the actual market value for the exchange of balancing capacity bids with a granularity larger than the pursuant to Article 7(2).
- 4.5. The output from the algorithm for the cross-zonal capacity allocation function, per standard balancing capacity product and for each day-ahead MTU are considered as block bids in the optimisation market time unit is the available cross-zonal capacity allocated to the exchange of balancing capacity or sharing of reserves.
- 5.6. Each marginal volume of cross-zonal capacity shall be allocated to the exchange of balancing capacity and sharing of reserves energy in case the actual market value of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves pursuant to Article 7(2) is higher than lower or equal to the

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forecasted market value of cross-zonal capacity for the exchange of energy, ~~within the limitations of pursuant to Article 6 of this methodology of market-based allocation.(5).~~

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 off from different balancing capacity products;~~
- ~~(c)(b) standard balancing capacity bids and exchange of energy bids products.~~

8. ~~Core TSOs or Core regulatory authorities of each application may apply additional thresholds and/or margins to 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 market-based methodology 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 market-based methodology.~~

10. ~~Competition on the allocation of cross-zonal capacity within an application of the market-based methodology between different products for a certain BZB shall be based by default on a first-come first-serve principle. Each application may deviate from this approach using the thresholds and margins proposed in Article 9(8).~~

Article 10
Pricing of cross-zonal capacity

Core TSOs applying the methodology for market-based allocation shall calculate the cross-zonal capacity price for the volume of cross-zonal capacity that is Article 9 Firmness regime for the allocation of cross-zonal capacity

1. ~~The cross-zonal capacity 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 this market-based methodology, shall correspond for each direction to the difference between the marginal prices of the standard product balancing capacity~~

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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 cross-zonal capacity

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 optimisation by the cross-zonal capacity allocation 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 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 market-based methodology 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 market-based allocation, 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.
- 4.2. In the event of force majeure majeure or emergency situations, curtailment of cross-zonal capacities which were allocated using the cross-zonal capacity allocation function 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 Article 41(34) 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 Article 33(1) of the EB Regulation.
- 5.3. 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 of ensuring firmness of procured standard 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.
- 6.4. The costs of ensuring firmness shall be shared in accordance with the regional methodologies developed in accordance with article Article 74 of the CACM Regulation and article Article 76 of the SO-Regulation for the cases which are that fall within the scope of these methodologies.

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7.5. Any costs of ensuring firmness which are outside the scope of the methodologies referred to in paragraph 6.4 shall be borne by the Core TSO requesting the curtailment.

8. Core TSOs shall not increase the transmission reliability margin which is 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 10
Pricing of cross-zonal capacity

1. The congestion income coming from the application of this methodology for market-based allocation 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 41(4) of the EB Regulation.
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 market-based methodology as set out in Article 12(3).
3. For each day-ahead MTU and for each BZB of the application of this market-based methodology, the allocated TSOs allocating 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 applying this methodology for market-based capacity allocation within the Core CCR shall calculate the 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 this market-based methodology 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

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.

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document shall be updated and published promptly as soon as any changes occur. Each publication shall be announced via the ENTSO-E website.

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7.1. In case the BZB consists of several interconnectors with different sharing keys, and the interconnectors 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 price for the volume of 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, that is allocated for the exchange of balancing capacity or sharing of reserves.

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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.

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9.2. In case physical transmission rights are applied at a certain BZB, the rules on sharing of congestion income from the price of 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 shall be calculated separately for each market time unit and each standard balancing capacity product.

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Article 13
Publication

1. Core TSOs shall publish this methodology for market-based allocation without undue delay on the ENTSO-E website after all regulatory authorities of the CCR Core have approved this methodology for market-based allocation.
3. Each Core TSO The prices in EUR/MW of cross-zonal capacity per day ahead market time unit in each direction shall be equivalent to the difference in cross-zonal marginal prices of a standard balancing capacity product in bidding zones applying the market-based methodology shall publish information on offered volumes as well as offered prices of procured allocation process pursuant to Article 38(1) of the EB Regulation.

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Article 11
Sharing of congestion income

1. The congestion income shall be calculated per application of the market-based allocation process and day-ahead market time unit and shall be equal to the difference between the 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, price multiplied by TSO demand in the respective bidding zone and the balancing capacity price multiplied by the volume of accepted BSP bids in a bidding zone.
2. The congestion income pursuant to article 12(3)(f) of the EB Regulation paragraph 1 will be shared in accordance with the methodology of Article 73 of the CACM Regulation and in accordance with Article 41(4) of the EB Regulation.
3. Each Core TSO On an monthly basis TSOs of a cooperation applying the market-based methodology process in accordance with Article 38(1) of the EB Regulation shall compare the monthly

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congestion income calculated in accordance with paragraph 1 with the congestion income which could have been generated for the amount of cross-zonal capacity allocated for the exchange of balancing capacity or sharing of reserves if allocated to the single day ahead coupling instead. The TSOs of a cooperation applying the market-based process in accordance with Article 38(1) of the EB Regulation shall inform all TSOs and regulatory authorities of the CCR and ACER of the outcome of this assessment.

4. If the comparison pursuant to paragraph 3 shows a deficit on a monthly basis of generated congestion income following the allocation of cross-zonal capacities for the exchange of balancing capacity and sharing of reserves, the TSOs of a cooperation applying the market-based process in accordance with Article 38(1) of the EB Regulation should pay a compensation to the single day ahead coupling to cover such deficit. The costs of such compensation shall be split among the TSOs of a cooperation applying the market-based process in accordance with Article 38(1) of the EB Regulation in accordance with the distribution of shares of overall decreased procurement costs per TSO from the application of the market-based process in the relevant month. The compensation to the single day-ahead coupling should be shared among all TSOs in accordance with the shares of decreased congestion income pursuant to the comparison in accordance with paragraph 3.

Article 12

Publication of information

2. The TSOs applying this market-based capacity allocation process shall publish all relevant and required information on the transparency website of ENTSO-E according to Article 12(5) of the EB Regulation.
3. The TSOs applying this market-based capacity allocation process shall publish the following information on the allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves as soon as possible but no later than one hour before the single day-ahead coupling gate closure time, as defined in accordance with Article 47(2) of the CACM Regulation, pursuant to Article 12(3)(h) of the EB Regulation:
 - (a) date and time when the decision on allocation was made;
 - (b) period of the allocation;
 - (c) volumes allocated including the actual percentage limit applied in accordance with Article 5 (1)(a) to (c); and
 - (d) market values used as a basis for the allocation process in accordance with Article 6(5) and Article 7(2).
4. The TSOs applying this market-based capacity allocation process shall publish the following information on the use of allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves as soon as possible but no later than 1 (one) week after the use of allocated cross-zonal capacity, pursuant to Article 12(3)(i) of the EB Regulation:
 - (a) volume of allocated and used cross-zonal capacity per day-ahead market time unit;
 - (b) volume of released cross-zonal capacity for subsequent time frames per day ahead market time unit in accordance with Article 38(8) of the EB Regulation;

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(c) estimated realised costs and benefits of the allocation process. The TSOs will, based on the bid data for the respective standard balancing capacity product, estimate the reduction in procurement costs and estimated welfare gains compared to fulfilling the TSO demand without allocating cross-zonal capacity for exchange of the respective standard balancing capacity product. These estimated costs and benefits will be published as values for each bidding zone, day ahead market time unit and each standard balancing capacity product for the balancing capacity market where this methodology is applied.

5. The TSOs applying this market-based allocation process shall publish the applicable adjustment factor and reference day no later than 2 hours before the gate closure time pursuant to Article 3(3). In case of a different reference day than the one pursuant to Article 6(6) this publication shall include the specific reasons for the change of reference day and the expected impact of this change.

6. Each TSO applying this market-based allocation process and increased the TSO demand in accordance with Article 7(4)(b) shall publish information at least on the amount of the increase and the anonymised bid curve from the standard balancing capacity not participating in the market-based process on which basis the TSO demand was increased by no later than one day after the performed market-based allocation process.

7. The TSOs applying this market-based allocation process shall publish the description of the requirements of the algorithm for the cross-zonal capacity allocation function at least one month before its application.

8. The TSOs applying this market-based allocation process and using the option of Article 8(2)(d) shall publish a detailed description how the possible costs associated to the congestion income assessment pursuant to Article 11(4) are considered in the determination of the allocated volume of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves at least one month before the option is used.

9. The TSOs applying this market-based allocation process shall publish an overview of the applicable default limits for the maximum volume of cross-zonal capacity allocated for the exchange of balancing capacity pursuant to Article 5(1)(a) and (c).

10. The TSOs applying this market-based allocation process and intend to deviate from the default reference day pursuant to Article 6(6) and (7) shall publish a description of the process for deviating from the default reference day at least one month before this process is applied.

11. The TSOs shall monitor the efficiency of the forecasting methodology and shall, by three months after the go-live of the market-based allocation process and subsequently at least once a year, submit a report to the relevant regulatory authorities. This report shall include at least:

(a) a comparison of the forecasted and actual market values of cross-zonal capacity for the exchange of energy, et alia including:

i. an assessment comparing the forecasted market value of cross-zonal capacity for the exchange of energy at the latest one (1) day after resulting from a recalculation of the single day-ahead market coupling using the applied calculation inputs pursuant to Article 6(1) and the volume of the actually allocated cross-zonal capacity for the exchange of balancing capacity and sharing of reserves with the actual market values

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of cross-zonal capacity for the exchange of energy resulting from the outcome of the SDAC;

ii. an analysis on the positive forecast error including an assessment revealing to which level the underestimation of the forecasted market value was effectively reduced considering the applied adjustment factor;

iii. an impact assessment considering additional recalculation(s) of the single day-ahead market coupling to determine the dynamic initial forecasted market value of cross-zonal capacity for the exchange of energy in accordance with Article 6(2);

(b) if the default reference day was changed in accordance with Article 6(7), an impact assessment of the change of the default reference day;

3.(c) assessment of the impact on the price formation of the single day-ahead coupling due to the allocation of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves;

4. Each Core TSO applying the market-based methodology shall publish information in accordance with article 12(3)(h) assessment of occurred increases of the EB Regulation on limits for the allocation maximum volume of cross-zonal capacity allocated for the exchange of balancing capacity or sharing of reserves pursuant to article 38 in accordance with Article 5(1)(a)b), including statistics on the amount of incidents, increased volumes and percentages, reasons for the EB Regulation as soon as possible but no later than six (6) hours before the use incidents and an analysis of the allocated cross-zonal capacity.

(d) Each Core TSO applying the market-based methodology shall inform economic surplus effects on the use of allocated SDAC;

5. assessment of impacts on the economic surplus of the SDAC and economic surplus from the exchange of balancing capacity from the application of the market-based allocation process and the specific impact following an increase of a default limit for the maximum volume of cross-zonal capacity allocated 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 cross-zonal capacity, pursuant to article 12(3)(i) of the EB Regulation.

6.(e) Subject to approval pursuant to article 18 of the EB Regulation, a Core TSO applying pursuant to the market-based methodology may withhold the publication of information on offered prices and volumes of balancing capacity 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 this market-based methodology shall report such withholdings at least once a year to the relevant regulatory authority process described in accordance with article 59 of Directive (EU) 2009/944 and pursuant to article 12(5) of the EB Regulation Article 5(1)(c); and

7. Core TSOs applying the market-based methodology shall publish the efficiency where necessary, proposals to improve the accuracy of the forecasted market value values, including a different limit for the exchange maximum volume of energy to their respective regulatory authorities and market participants to analyse the forecast efficiency.

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Article 14

Implementation Timeline

1. By four (4) months after approval of this methodology for market-based allocation, 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 shadow prices including adjustment factors and market-based cross zonal capacity pursuant to Article 7;
 - c. alignment with relevant nominated electricity market operators on the support of determining the shadow prices, 5(1), the selection of the reference days; 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 pursuant to Article 12.
3. (f) By six (6) months after approval of this methodology for market-based allocation, all Core TSOs shall submit an day pursuant to Article 6(5) and (6) or an amendment of this methodology for market-based allocation to the Core regulatory authorities subject to the findings of the implementation impact assessment pursuant to paragraph 2. the process to determine the adjustment factor pursuant to Article 6(3).
12. After Core NRA approval of the amendments pursuant to paragraph 3, During implementation pursuant to Article 13(2), the TSOs shall inform regulatory authorities about the progress and the outcome of the performed verification processes for implementing the market-based allocation process.

TITLE 3
Final provisions

Article 13

Publication and implementation of the methodology for market-based capacity allocation

- 4.1. The TSOs shall publish this methodology for market-based allocation shall be considered implemented in accordance with article 5(3) of Regulation (EU) 2019/942 of capacity allocation without undue delay on the ENTSO-E website after a decision has been made by the European Parliament and of the Council of 5 June 2019 establishing a European Union Union Agency for the Cooperation of Energy Regulators (hereinafter – ACER in accordance with Article 6(2) of the EB Regulation).
2. Article 15
The TSOs shall implement this methodology until no later than 24 months after a decision has been made by the European Union Agency for the Cooperation of Energy Regulators in accordance with Article 6(2) of the EB Regulation by establishing the cross-zonal capacity allocation function and all relevant related measures to be ready for application of the market-based allocation process for the

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exchange of balancing capacity or sharing of reserves, where two or more TSOs intend to commonly procure balancing capacity.

3. As a first step towards implementation pursuant to paragraph 2, this methodology may be applied as an early implementation without considering the requirements pursuant to Article 2(2)(c), Article 3(5), Article 10(3) and Article 11.

Article 14 Language

The reference language for this Core TSOs' methodology for market-based capacity allocation shall be English. For the avoidance of doubt, where Core TSOs need to translate this Core TSOs' methodology for market-based capacity allocation into their national language(s), in the event of inconsistencies between the English version published by Core TSOs in accordance with articleArticle 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, in accordance with national legislation, provide the relevant national regulatory authorities with an updated translation of this Core TSOs' methodology for market-based capacity allocation to their relevant Core regulatory authorities.

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