



Methodology for a market-based allocation process of cross zonal capacity for the exchange of balancing capacity or sharing of reserves in accordance with Article 41 of the Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing

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*Greece Italy* Transmission System Operators taking into account the following:

### Whereas

1. This document is the methodology by the *Greece Italy* Transmission System Operators (hereafter referred to as “TSOs”) of the *Greece Italy* Capacity Calculation Region (hereafter referred to as “*Greece Italy*”). The 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 “**MB CZCA methodology**”) in accordance with Article 41 of Commission Regulation (EU) 2017/2195 establishing a guideline on electricity balancing (hereafter referred to as “**EBGL**”).
2. The MB CZCA methodology takes into account the general principles and goals set in the EBGL, the Regulation (EC) 2017/1485 establishing a guideline on electricity transmission system operation (hereafter referred to as the “**SOGL**”), Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (hereafter referred to as the “**CACM**”) as well as Regulation (EC) No 714/2009 of the European Parliament of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity (hereafter referred to as the “**Electricity Regulation**”) as well as Regulation (EC) 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 (hereafter referred to as the “**Transparency Regulation**”).
3. The MB CZCA methodology takes into account the general principles, goals and other methodologies set out in the EBGL. The goal of the EBGL is the integration of balancing markets while contributing to operational security. To facilitate this goal, while contributing to operational security, it is necessary to integrate balancing markets and promoting the possibilities for exchanges of balancing services while contributing to operational security.
4. The MB CZCA methodology generally contributes to achieving the objectives stated in Article 3 of the EBGL. In particular, this MB CZCA methodology serves the following objectives of the EBGL:
  - (a) The MB CZCA methodology answers the requirements set out in Article 41 of the EBGL;
  - (b) The MB CZCA methodology serves the objective of fostering effective competition, non-discrimination and transparency in balancing markets as stated in Article 3(1)(a) of the EBGL by defining the principles necessary for the allocation of CZC using the market-based approach and the inverted market-based approach, and how to notify it as described in Articles 3 and 4 of this MB CZCA methodology;
  - (c) The MB CZCA methodology 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 and inverted market-based mechanisms and contributing to operational security as stated in Article 3(1)(c) and Article 3(2)(d) of the EBGL by means of defining the rules for the procurement of the balancing capacity, through the allocation of cross-zonal capacity for the balancing capacity market, together with and at the same time as the allocation of cross zonal capacity of the day ahead energy market, as detailed in Articles 5, 6, 7, and 8 of this MB CZCA methodology;
  - (d) The MB CZCA methodology ensures that the development of the day-ahead market is not compromised in accordance with Article 3(2)(e) of the EBGL as it is specified in Articles 5 and 13 of this MB CZCA methodology, the CZC allocated to the exchange of balancing capacity or sharing

of reserves that is not used, shall be released for the exchange of balancing energy processes with shorter timeframes;

- (e) The MB CZCA methodology ensures that the procurement of balancing services is done in a fair, objective, transparent way and uses the market-based mechanisms as stated in Article 3(1)(e) of the EBGL. This MB CZCA methodology states in Articles 9, 10, 11, 12 and in Articles 13 and 14 how the actual and forecasted CZC market values as well as the allocated volumes and prices are determined.
- (f) The MB CZCA methodology aims at respecting the responsibility assigned to the relevant TSOs in order to ensure system security, including as required by national legislation in accordance with Article 3(2)(f) of the EBGL by establishing the maximum limitations to be applied by the TSOs applying the MB CZCA methodology as is defined in Articles 8 of this MB CZCA methodology;
- (g) The MB CZCA methodology takes into consideration agreed European standards in accordance with Article 3(2)(h) of the EBGL, as this methodology is based on the single day-ahead market time unit defined within the CACM Regulation and uses the optimization resolution from the MCO function, as specified in Articles 3, 6, 7, and 9-13 of this MB CZCA methodology;
- (h) The MB CZCA methodology ensures that both possible (market-based and inverted market-based) approaches defined in Article 41(3) of the EBGL are available for Greece Italy TSOs. In particular, the inverted market-based approach is the only CZCA process within the EBGL which is compatible with the markets of those TSOs that procure balancing capacity (or reserve capacity through an integrated scheduling process) after the SDAC. Therefore, with the inclusion of the inverted market-based approach, the allocation process of cross-zonal capacity for the exchange of balancing capacity or sharing of reserves has the maximum applicability within the specificities of the preexisting balancing markets of the Greece Italy CCR.
- (i) In conclusion, the MB CZCA methodology meets the objectives of the EBGL.

## Abbreviations

The list of abbreviations used in this MB CZCA methodology is the following:

- aFRR: frequency restoration reserve with automatic activation
- BSP: balancing service provider
- CACM: Commission Regulation (EU) 1222/2015 establishing a guideline on capacity allocation and congestion management
- CET: Central European Time
- CMOL: common merit order list
- CZC: cross zonal capacity
- CZCA: cross zonal capacity allocation
- DC: direct current
- EBGL: guideline on electricity balancing
- ENTSO-E: European Network of Transmission System Operators for Electricity
- FRR: frequency restoration reserve
- GCT: gate close time
- MB: market-based
- MCO: market coupling operator
- mFRR: frequency restoration reserve with manual activation
- MTU: market time unit
- NRA: national regulatory authority
- RR: replacement reserve
- SDAC: single day-ahead coupling
- SOGL: guideline on system operation
- TSO: transmission system operator

**SUBMIT THE FOLLOWING MB CZCA METHODOLOGY TO GREECE ITALY  
REGULATORY AUTHORITIES:**

## Article 1 Subject matter and scope

1. The *Greece Italy* TSOs lay down in this MB CZCA methodology a methodology to allocate cross zonal capacity for the exchange of balancing capacity or sharing of reserves, which is based on the actual and forecasted market values of cross zonal capacity for the exchange of energy and for the exchange of balancing capacity or sharing of reserves.
2. TSOs exchanging balancing capacity or sharing reserves by applying the MB CZCA methodology shall regularly assess whether the cross-zonal capacity allocated for the exchange of balancing capacity or sharing of reserves is still needed for that purpose.
3. Two or more TSOs exchanging balancing capacity or sharing reserves by applying the MB CZCA methodology shall establish common and harmonised rules and processes for the exchange and procurement of balancing capacity pursuant to Article 33(1) of the EBGL, and respecting the requirements set out in Article 32 of the EBGL.
4. The proposal for the application of the allocation of CZC applying the market-based approach or the inverted market-based approach shall include the bidding zone borders, the market timeframe, the duration of application and the detailed description of a methodology to be applied.
5. According to Article 38(4) of the EBGL, CZC allocated for the exchange of balancing capacity or sharing of reserves shall be used exclusively for the product where it was reserved for, being aFRR, mFRR, or RR. The reliability margin calculated pursuant to CACM shall be used for operating and exchanging frequency containment reserves, except on Direct Current ('DC') interconnectors for which CZC for operating and exchanging frequency containment reserves may also be allocated in accordance with Article 38(1) of the EBGL.
6. The proposal for a list of standard products for balancing capacity for FRR and RR pursuant to Article 25(2) of the EBGL is out of the scope for this MB CZCA methodology and will be treated in a separate document.

## Article 2 Definitions

1. For the purposes of this MB CZCA methodology, the terms used shall have the meaning given to them in Article 2 of the Electricity Regulation, Article 2 of the Transparency Regulation, Article 2 of the CACM, Article 3 of the SOGL and Article 2 of the EBGL.
2. The following definitions shall also apply:
  - (a) 'Bid aggregating interface' means a tool which collects forecasted balancing capacity bids, balancing capacity demand and limitations for the exchange of balancing capacity and sharing of reserves, aggregates data and forwards the relevant information to the market coupling operator function. The bid aggregating interface can either be operated by a TSO or an entity to which a TSO delegated such task.
  - (b) 'Cross-zonal capacity allocation optimization function' means the role to operate the algorithm applied for the allocation of CZC for the exchange of balancing capacity or sharing of reserves in application of the MB CZCA methodology.

- (c) 'Market value of cross zonal capacity for the exchange of energy in SDAC' means the change in the economic surplus of the SDAC (the sum of the producer surplus, consumer surplus and congestion income) resulting from the incremental increase of the CZC allocated for the exchange of energy.
  - (d) '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 balancing service providers' surplus for the exchange of balancing capacity or sharing of reserves and (iii) the congestion income. Surplus for balancing service providers being the difference between the price of the accepted bids and the clearing price per capacity unit multiplied by the accepted capacity volume of the bid. Surplus for TSOs being the difference between the technical price limit and the clearing price per capacity unit multiplied by the volume of balancing capacity demand.
3. In this MB CZCA methodology, 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 MB CZCA methodology;
  - (c) any reference to legislation, regulations, directives, orders, instruments, codes or any other enactment shall include any modification, extension or re-enactment of it when in force;
  - (d) any reference to an Article without an indication of the document shall mean a reference to this MB CZCA methodology.

### **Article 3 Principles for applying the market-based cross-zonal capacity allocation**

1. In case of a TSO applying central dispatching model, the TSO-BSP pricing rules of standard balancing capacity products procured in application of MB CZCA methodology are defined by the TSO in the 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 EBGL.
2. When applying this MB CZCA methodology, the minimum contracting period of standard balancing capacity bids shall be a multiple of the day-ahead MTU and shall be less or equal to the total amount of day-ahead market time units of the concerned day .
3. When applying this MB CZCA methodology, the minimum validity period of standard balancing capacity bids shall be equal or a multiple of the day-ahead MTU and shall be less or equal to the total amount of day-ahead market time units of the concerned day.
4. When applying this MB CZCA methodology, the TSO-BSP pricing rules shall be:
  - (a) defined in terms and conditions related to balancing service providers pursuant to Article 18 of the EBGL,
  - (b) pursuant to Article 32(2) of the EBGL,
  - (c) harmonised within TSOs which have jointly established a proposal pursuant to Article 33(1) of the EBGL.

5. Cross-zonal capacities for the exchange of standard balancing capacity products or sharing of reserves from this MB CZCA methodology shall be exclusively provided to the respective platform, pursuant to Articles 19 to 21 of the EB Regulation, of the product they were allocated for.
6. The process of releasing allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves in accordance with Article 10(2) shall be coordinated between the balancing energy platforms pursuant to Articles 19 to 21 of the EB Regulation.
7. Two or more TSOs may establish common rules pursuant to Article 33(1) of the EBGL for the application of the MB CZCA methodology if they directly share a bidding zone border or indirectly share a bidding border through a TSO which is also applying the MB CZCA methodology within the same common rules pursuant to Article 33(1) of the EBGL.
8. The inverted market-based approach, defined in Article 5, consists in the submission of forecasted balancing capacity bids, determined as specified in Article 12, to the SDAC. Therefore, the application of inverted market-based approach is subject to approval by the market operator of the SDAC.

#### **Article 4 Notification process for the application of the MB CZCA methodology**

1. TSOs within CCR Greece Italy applying this MB CZCA methodology shall inform all European TSOs and stakeholders through an announcement on the ENTSO-E website. This information will be shared at least thirty days before the first relevant gate opening time of the application and will include a detailed description of the common rules for application established pursuant to Article 33(1) of the EBGL: the bidding zone borders, the market timeframe, the duration of application or the allocation of CZC and time for entering into operation.
2. TSOs within CCR Greece Italy applying this MB CZCA methodology shall inform the relevant NRAs of the applied forecast technique to determine the forecasted market value of CZC for the exchange of energy or the forecasted market value of CZC for the exchange of balancing capacity or sharing of reserves.
3. TSOs within CCR Greece Italy applying this MB CZCA methodology shall share the applied CZCA optimization function with all CCR Greece Italy TSOs for transparency purposes.

#### **Article 5 Process of market-based allocation**

1. The market-based methodology pursuant to Article 41 of the EBGL consists of two approaches:
  - a. the market-based approach for the allocation of CZC for the exchange of balancing capacity or sharing of reserves is performed together with the balancing capacity procurement and before the SDAC;
  - b. the inverted market-based approach for the allocation of CZC for the exchange of balancing capacity or sharing of reserves is performed together with the SDAC and before the balancing capacity procurement.
2. The market-based approach for the allocation of CZC for the exchange of balancing capacity or sharing of reserves is based on a comparison of the actual 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. The CZCA optimization function is performed during the procurement of balancing capacity bids and before the SDAC.

3. Articles 6, 9 and 11 are requirements only for the market-based approach.
4. The inverted market-based approach for the allocation of CZC for the exchange of balancing capacity or sharing of reserves is 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 actual market value of cross zonal capacity for the exchange of energy. The CZCA optimization function is performed during the SDAC and before the procurement process of balancing capacity.
5. Articles 7, 10 and 12 are requirements only for the inverted market-based approach.
6. The inverted market-based approach shall use, within the SDAC, the same functions as the co-optimised allocation of CZC pursuant to Article 40 of the EBGL, as specified in Article 7(2), Article 13 and Article 18(2).

### **Article 6 The timeframe of the market-based approach**

1. The process of the market-based approach to allocate CZC for the exchange of balancing capacity or sharing of reserves shall include the following consecutive timings:
  - a. The TSO-BSP GCT of standard upward balancing capacity bids and of standard downward balancing capacity bids shall be defined in the proposal for application of this methodology and organized in between week-ahead and before the final results of the capacity calculation for cross zonal capacity of the SDAC are available.
  - b. Notification to balancing responsible parties of selected standard upward balancing capacity bids or downward balancing capacity bids shall be done not later than one hour before the GCT of the SDAC.
2. The process of the market-based approach to allocate CZC for the exchange of balancing capacity or sharing of reserves shall include the following steps:
  - a. BSPs submit the standard upward and standard downward balancing capacity bids to their respective TSOs.
  - b. For a TSO applying a central dispatching model and applying the market-based approach, BSPs may submit only integrated scheduling process bids (instead of standard balancing capacity bids), which shall be converted, as far as possible, into standard upward and downward balancing capacity bids by the respective TSO, in accordance with Article 27 of EBGL.
  - c. TSOs shall perform the CZCA optimization function after the TSO-BSP GCT of standard balancing capacity bids and determine the allocation of CZC for the exchange of balancing capacity or sharing of reserves.
  - d. TSOs shall determine the allocated CZC for the exchange of balancing capacity or sharing of reserves per product and per direction.
  - e. TSOs shall establish the CMOL of balancing capacity bids using the balancing capacity procurement optimization function, respecting the allocated CZC for the exchange of

balancing capacity or sharing of reserves. The procurement optimization function minimizes the overall balancing capacity procurement costs pursuant to Article 58(3) of the EBGL.

- f. TSOs shall mark the allocated cross zonal capacity for the exchange of balancing capacity or sharing of reserves as already allocated CZC for the CZC calculation process in accordance with Article 38(6) of the EBGL.

## **Article 7 The timeframe of the inverted market-based approach**

1. The process of the inverted market-based approach to allocate CZC for the exchange of balancing capacity or sharing of reserves shall include the following consecutive timings:
  - a. The gate closure time for the submission of all forecasted standard balancing capacity bids and the balancing capacity demand shall be equal to the single day-ahead coupling gate closure time pursuant to Article 47(2) of the CACM Regulation.
  - b. The TSO-BSP GCT of standard upward balancing capacity bids and of standard downward balancing capacity bids shall be equal among TSOs that exchange balancing capacity or share reserves applying this MB CZCA methodology and is organized after the SDAC process and before the GOT of the SIDC.
  - c. The MCO shall send the allocated CZC for the exchange of balancing capacity or sharing of reserves to the TSOs applying this MB CZCA methodology before notification of selected bids for the exchange of energy from the SDAC.
  - d. Notification to the BSPs of available CZC for the exchange of balancing capacity or sharing of reserves shall be equal to the notification of selected bids for the exchange of energy from the SDAC.
  - e. Notification to the BSPs of selected upward balancing capacity bids or downward balancing capacity bids by TSOs shall be done before the GOT of the SIDC.
2. The process of the inverted market-based approach to allocate CZC for the exchange of balancing capacity and for sharing of reserves shall include the following steps:
  - a. The TSOs shall forecast balancing capacity bids, per product and direction.
  - b. The forecasted balancing capacity bids and the balancing capacity demand shall be submitted to the respective bid aggregating interface by the gate closure time of balancing capacity bids in accordance with Article 7(1)(a).
  - c. After the gate closure time, the respective bid aggregating interface shall convert the forecasted balancing bids into a supply curve per bidding zone for the exchange of balancing capacity or sharing of reserves.
  - d. The respective bid aggregating interface shall send to the market coupling operator function per product, per direction and per bidding zone:
    - i. The aggregated supply curves for the respective standard balancing capacity products;
    - ii. The TSOs' demand for the respective standard balancing capacity product;

- iii. The tolerance band for the reduced TSO balancing capacity demand dependent on the available cross-zonal capacities, based on sharing of reserves agreement of two or more TSOs to be applied with the allocation process of the inverted market-based approach;
  - iv. The minimum local reserve requirements; and
  - v. Cross-zonal capacity allocation limitations in accordance with Article.
- e. The deadline for sending the data of Article 7(2)(d) equals the deadline for sending aggregated supply and demand curves of the day-ahead market bids.
  - f. The market coupling operator function shall send the allocated cross-zonal capacity for the exchange of balancing capacity or sharing of reserves to each TSO applying the inverted market-based approach without undue delay.
  - g. The BSPs submit the standard upward and standard downward balancing capacity bids to their connecting TSO. For a TSO applying a central dispatching model and applying the inverted market-based approach, BSPs may submit only integrated scheduling process bids (instead of standard balancing capacity bids), which shall be converted, as far as possible, into standard upward and downward balancing capacity bids by the respective TSO, in accordance with Article 27 of EBGL.
  - h. The TSOs exchanging balancing capacity or sharing reserves establish the CMOL of balancing capacity bids using the balancing procurement optimization function, and select the bids respecting the allocated CZC for the exchange of balancing capacity or sharing of reserves. The balancing procurement optimization function minimizes the overall balancing capacity procurement costs pursuant to Article 58(3) of the EBGL.

#### **Article 8 Process to define the maximum volume of allocated cross zonal capacity for the exchange of balancing capacity or sharing of reserves**

1. The maximum volume (upper limit) of CZC allocated for the exchange of balancing capacity or sharing of reserves with the market-based allocation process shall be limited to 10 % of the available capacity for the exchange of energy of the previous relevant calendar year between the respective bidding zones or, in case of interconnectors not taken into account for the calculation of the available capacity for the exchange of energy for the previous calendar year, 10 % of the total installed technical capacity of those interconnectors.
2. The 10 % of available capacity for the exchange of energy of the previous calendar year between the respective bidding zones means the maximum volume of available capacity for the exchange of energy resulted from the final capacity calculation process in the D-1 or, if available, the intraday timeframe.
3. The volume limitation of Article 41(2) of the EBGL may not apply where the contracting is done not more than two days in advance of the provision of the balancing capacity or for bidding zone borders connected through DC interconnectors until the co-optimised allocation process is harmonised at Union level pursuant to Article 38(3) of the EBGL.

4. According Article 39(6) of the EBGL, where the contracting is done not more than two days in advance of the provision of the balancing capacity, relevant regulatory authorities may set a limit other than that specified in Article 41(2) of the EBGL.
5. The maximum volume of allocated CZC for the exchange of balancing capacity or sharing of reserves shall respect the rules for exchange of FRR and RR within a synchronous area in accordance with Articles 167, 168, 169 and 170 of the SOGL.
6. *Greece Italy* TSOs and NRAs applying this MB CZCA methodology may commonly apply additional limits for the maximum volume of allocated CZC for the exchange of balancing capacity or sharing of reserves.

### **Article 9 Determination of the forecasted market value of cross zonal capacity for the exchange of energy for the market-based approach**

1. The forecasted market value of CZC used for exchange of energy between two bidding zones in the day-ahead market timeframe is defined for each MTU. When calculating the forecasted market value of CZC in day-ahead market timeframe the difference in market clearing prices for each bidding zone of the day-ahead market timeframe on the reference period are used.
2. The forecasting process, for each MTU, bidding zone border and direction, shall comprise the following steps:
  - a. determination of the reference period, pursuant to paragraph 3 and, if applicable, 4(a);
  - b. calculation of the market value of CZC as the SDAC market spread across the selected bidding zone border in the selected reference period and direction: if in the reference period the flow is in the opposite direction of the bidding zone border, and if there is no market spread, the market value of CZC is zero (0);
  - c. if deemed necessary according to paragraph 4, application of adjustment factors to the market value of CZC calculated in the previous step.
3. By default, the following reference periods shall be chosen:
  - a. The previous working day whenever CZC is allocated for a working day;
  - b. The previous weekend day whenever CZC is allocated for a weekend day; and
  - c. The previous Sunday or bank holiday whenever CZC is allocated for a bank holiday.
4. The TSOs shall monitor the efficiency of the forecasting methodology, including a comparison of the forecasted and actual market values of the CZC for the exchange of energy and take appropriate actions, where needed:
  - a. in case this analysis shows that different reference periods are more suitable on a specific border, the TSOs shall choose the more accurate reference period, or a combination of them;
  - b. In case this analysis suggests it may furtherly improve the forecast, TSOs may use adjustment factors.

The metrics for assessing the performance of the forecast shall be defined in the technical document pursuant to Article 18(1).

5. Adjustment factors for the determination of the forecasted market value of cross-zonal capacity for the exchange of energy may be applied in an application of this MB CZCA methodology to improve the forecasted value of cross-zonal capacity for the exchange of energy between bidding zones. A description of the adjustment factors shall be included in the technical document pursuant to Article 18(1). This technical document shall include at least the parameters and methodology based on which the adjustment factors are calculated. Such parameters include, but not limited to: weather forecasts, load forecasts, RES production forecasts.
6. If adjustment factors are applied for the determination of the forecasted market value of cross-zonal capacity for the exchange of energy, this shall be included in the proposal for the application pursuant to Article 33(1) of the EBGL.
7. If the adjustment factors for the determination of the forecasted market value of cross-zonal capacity for the exchange of energy 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 at the expense of cross-zonal capacity allocated to the exchange of energy.

#### **Article 10          Determination of the actual market value of cross zonal capacity for the exchange of energy for the inverted market-based approach**

1. The actual market value of cross zonal capacity for the exchange of energy in SDAC shall be:
  - a. the change of economic surplus for means the change in the economic surplus of the SDAC (the sum of the producer surplus, consumer surplus and congestion income) resulting from the incremental increase of the CZC allocated for the exchange of energy;
  - b. defined per day-ahead market time unit; and
  - c. calculated based on the actual bids for the exchange of energy submitted to the SDAC.
2. In accordance with paragraph 1(a), the actual market value of cross-zonal capacity for the exchange of energy between all bidding zones of the SDAC shall be calculated based on the change of economic surplus for the SDAC depending on the availability of cross-zonal capacity.

#### **Article 11          Determination of the actual market value of cross zonal capacity for the exchange of balancing capacity or sharing of reserves for the market-based approach**

1. The actual market value of CZC for the exchange of balancing capacity or sharing of reserves between all bidding zones included in the common rules pursuant to Article 33(1) of EBGL for the application of this MB CZCA methodology shall be:
  - a. the change of economic surplus from the exchange of balancing capacity or sharing of reserves between all bidding-zones where the MB CZCA methodology is applied, resulting from the change of available cross-zonal capacities allocated for the exchange of balancing capacity or sharing of reserves. The welfare surplus approach is independent of the pricing method for balancing capacity bids;

- b. calculated per MTU;
  - c. calculated per product and direction separately;
  - d. based on the upward balancing capacity bids or downward balancing capacity bids submitted to the capacity procurement optimization function pursuant to Article 33(3) of the EBGL;
2. In case of sharing of reserves, the change of economic surplus will take into account the avoided costs for procuring balancing capacity, considering the change of the total demand of balancing capacity resulting from the change of available cross-zonal capacities allocated for the sharing of reserves.

## **Article 12 Determination of the forecasted market value of cross zonal capacity for the exchange of balancing capacity or sharing of reserves for inverted market-based approach**

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 CZC for the exchange of balancing capacity or sharing of reserves between bidding zones shall be based on standard upward balancing capacity bids and of standard downward balancing capacity bids submitted for the respective balancing procurement optimization on selected reference day(s), in bidding zones which are included in the common rules pursuant to Article 33(1) of EB GL for the application of this MB CZCA methodology.
3. The forecasting process, for each MTU, product, validity period and direction, shall comprise the following steps:
  - a. determination of the reference period;
  - b. selection of reference bids, meaning standard balancing capacity bids submitted to the respective balancing procurement optimization for the selected reference period, product and direction;
  - c. if deemed necessary according to paragraph 4, adjustment of reference bids by adjustment factors;
  - d. calculation of the forecasted market value of cross zonal capacity for the exchange of balancing capacity or sharing of reserves analogously to the rules provided in Article 11(1), where balancing capacity bids used in 11(1)(d) are replaced by the (adjusted) reference bids;
4. The TSOs shall monitor the efficiency of the forecasting methodology, including a comparison of the forecasted and actual market values of the CZC for the exchange of balancing capacity or sharing of reserves and take appropriate actions, where needed:
  - a. in case this analysis shows that different reference periods are more suitable on a specific border, the TSOs shall choose the more accurate reference period, or a combination of them;

- b. In case this analysis suggests it may furtherly improve the forecast, TSOs may use adjustment factors.

The metrics for assessing the performance of the forecast shall be defined in the technical document pursuant to Article 18(1).

5. By default, the following reference periods shall be chosen:
  - a. The previous working day whenever CZC is allocated for a working day;
  - b. The previous weekend day whenever CZC is allocated for a weekend day; and
  - c. The previous Sunday or bank holiday whenever CZC is allocated for a bank holiday.
6. Adjustment factors for the determination of the forecasted market value of CZC for the exchange of balancing capacity or sharing of reserves may be applied in an application of this MB CZCA methodology to improve the forecasted value of CZC for the exchange of balancing capacity or sharing of reserves between bidding zones. A description of the adjustment factors shall be included in the technical document pursuant to Article 18(1). This technical document shall include at least the parameters and methodology based on which the adjustment factors are calculated. Such parameters include, but are not limited to: weather forecasts, load forecasts, RES production forecasts.
7. If adjustment factors are applied for the determination of the forecasted market value of CZC for the exchange of balancing capacity or sharing of reserves, this shall be included in the proposal for the application pursuant to Article 33(1) of the EBGL.
8. If the adjustment factors for the determination of the forecasted market value of CZC 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 at the expense of cross-zonal capacity allocated to the exchange of energy.

### **Article 13 Determination of the allocated volume of cross zonal capacity for the exchange of balancing capacity or sharing of reserves**

1. For the market-based approach, the cross-zonal capacity allocation optimization function shall allocate CZC for the exchange of balancing capacity or sharing of reserves simultaneously with the selection of the balancing capacity bids.
2. For the market-based approach, the objectives of the cross-zonal capacity allocation optimization function are:
  - a. making sure that CZC is allocated to the market, i.e. SDAC or balancing capacity market, where the economic welfare is expected to be the highest; and
  - b. maximising the economic welfare of the exchange of balancing capacity or sharing of reserves, given the constraints defined in common and harmonised rules pursuant to Article 33(1) of the EBGL.
3. For the market-based approach, the inputs of the cross-zonal capacity allocation optimization function are, per MTU:
  - a. standard upward and downward balancing capacity bids, per product;

- b. forecasted market value of CZC for the exchange of energy;
  - c. the TSOs' demand for the respective standard balancing capacity product;
  - d. the tolerance band for the reduced TSO balancing capacity demand dependent on the available cross-zonal capacities, based on sharing of reserves agreement of two or more TSOs to be applied with the market-based allocation process;
  - e. the minimum local reserve requirements; and
  - f. CZC allocation limitations in accordance with Article 8.
4. For the market-based approach, the outputs of the cross-zonal capacity allocation optimization function are, at least:
  - a. volume of allocated CZC, per bidding zone border, product and direction;
  - b. selected balancing capacity bids;
  - c. satisfied TSO demands.
5. For the inverted market-based approach, the allocation of CZC for the exchange of balancing capacity or sharing of reserves is determined simultaneously with the selection of bids for the exchange of energy by the optimization function of SDAC.
6. For the inverted market-based approach, the objective for the allocation of CZC between SDAC and the exchange of balancing capacity or sharing of reserves shall be the maximization of sum of economic surplus for SDAC and the economic surplus from the exchange of balancing capacity or sharing of reserves per trading day.
7. For the inverted market-based approach, the time interval for the determination of the allocation of CZC for the exchange of balancing capacity or sharing of reserves is the same time interval as the resolution of the SDAC. Standard upward balancing capacity bids and downward balancing capacity bids with a granularity larger than the MTU are considered as block bids in the optimization.
8. For the inverted market-based approach, the cross-zonal capacity allocation optimization function requires the inputs listed in Article 7(2)(d). For the inverted market-based approach, the market coupling operator function shall produce the additional output of allocated volumes of CZC for the exchange of balancing capacity or sharing of reserves, per product, bidding zone border and direction.
9. For both approaches, the allocation of CZC for the exchange of balancing capacity or sharing of reserves is constrained by the volume limitations described in Article 8.
10. For both approaches, each marginal volume of CZC shall be allocated to the exchange of energy in case the marginal economic surplus of CZC for the exchange of balancing capacity or sharing of reserves is lower or equal to the marginal economic surplus of CZC for the exchange of energy.
11. For both approaches, netting of CZC 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 from different balancing products;
  - c. a standard balancing capacity bid and a day-ahead market bid; and



- d. bidding zone border directions in case of sharing of reserves.
12. *Greece Italy* TSOs applying this MB CZCA methodology and their respective *Greece Italy* NRAs may commonly apply additional thresholds and/or margins to reduce CZC allocation for the exchange of balancing capacity or sharing of reserves between bidding zones.

#### **Article 14 Pricing of cross zonal capacity**

1. TSOs allocating CZC for the exchange of balancing capacity or sharing of reserves applying the MB CZCA methodology shall calculate the CZC price for the volume of CZC that is allocated for the exchange of balancing capacity or sharing of reserves.
2. The CZC price defined in Article 14(1) for the exchange of balancing capacity or sharing of reserves applying the MB CZCA methodology shall be 0 EUR/MW within the widest area, constituted by bidding zones, where the exchange of balancing capacity or sharing of reserves is not restricted by the cross-zonal capacities, by the allocation constraints or by the limitations defined in Article 8, during a specific market time unit.
3. The CZC price resulting from the allocation of CZC for the exchange of balancing capacity or sharing of reserves applying the MB CZCA methodology 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 border.

#### **Article 15 Firmness regime of cross zonal capacity**

1. The allocated CZC 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 optimization function pursuant to Article 33(3) of the EBGL. The details for the costs of ensuring firmness in case of curtailment of firm CZC will be defined once two or more TSOs of the Greece Italy Capacity Calculation Region will establish common rules pursuant to Article 33(1) of EBGL for the application of the MB CZCA methodology.
2. According to Article 38(4) of the EBGL, 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 frequency restoration reserves with automatic activation, frequency restoration reserves with manual activation or replacement reserves. In accordance with Article 38(9) of the EBGL, when CZC allocated for the exchange of balancing capacity or sharing of reserves has not been used for the associated exchange of balancing energy, said CZC shall be released for the exchange of balancing energy with shorter activation times or for operating the imbalance netting process pursuant to Article 38(9) of the EBGL. Released CZC may be used by all TSOs which are using respective balancing platforms exchanging balancing energy with shorter activation times or operating imbalance netting.
3. The transmission constraints subject to Article 13 shall be firm as soon as these are submitted to the capacity procurement optimization function.
4. The costs of ensuring firmness or in the case of curtailment of firm CZC in the event of force majeure or emergency situations, in accordance with paragraph 3 of this Article, the costs associated with

mitigating the effects of curtailment shall be borne by the relevant TSOs. These costs include the additional costs from the procurement of balancing capacity due to the non-availability of the balancing capacity given the curtailment of CZC.

5. The costs of ensuring firmness shall be shared in accordance with the regional methodologies developed in accordance with Article 74 of CACM Regulation and Article 76 of the SO Regulation for cases which are within the scope of these methodologies.
6. Any costs of ensuring firmness which are outside the scope of the methodologies referred to in paragraph 6, shall be borne by the TSO requesting the curtailment.
7. TSOs shall not increase the reliability margin calculated pursuant to Article 21 of CACM due to the exchange of balancing capacity and or sharing of reserves for frequency restoration reserves and replacement reserves.

### **Article 16      Sharing of congestion income**

1. For each bidding zone border, product, direction and MTU, the congestion income is calculated as the price of CZC, as defined in Article 14, multiplied with the volume of balancing capacity that have been exchanged for the relevant product and direction on that bidding zone border.
2. The sharing of congestion income distribution will follow what is established by the Congestion income distribution methodology document, written in accordance with Article 73 of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a Guideline on Capacity Allocation and Congestion Management.

### **Article 17      Publication**

1. **Greece Italy** TSOs shall publish the MB CZCA methodology without undue delay after concerned NRAs have approved this proposal or a decision has been taken by the Agency for the Cooperation of Energy Regulators in accordance with Article 5(7), Article 6(1) and Article 6(2) of the EBGL.
2. Each TSO applying this MB CZCA methodology shall publish information on offered volumes as well as offered prices of procured balancing capacity, anonymized where necessary, no later than one hour after the results of the procurement have been notified to the bidders, pursuant to Article 12(3)(e) of the EBGL.
3. Each TSO applying this MB CZCA methodology shall publish information in accordance with Article 12(3)(h) of the EBGL on the allocation of CZC for the exchange of balancing capacity or sharing of reserves pursuant to Article 38(1)(b) of the EBGL as defined in article 6(1)(b), 7(1)(d) and 7(1)(e) of this MB CZCA methodology, at the latest 24 hours after the allocation and no later than 6 hours before the use of the allocated CZC.
4. Each TSO applying this MB CZCA methodology shall inform on the use of allocated CZC for the exchange of balancing capacity or sharing of reserves pursuant to Article 38 of the EBGL at the latest one week after the use of allocated CZC, pursuant to Article 12(3)(i) of the EBGL.
5. Each TSO applying this MB CZCA methodology shall publish the approved methodologies at least one month before its application pursuant to Article 12(3)(j) of the EBGL.

6. Subject to approval pursuant to Article 18 of the EBGL, a TSO 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 TSO shall report such withholdings at least once a year to the relevant regulatory authority in accordance with Article 37 of Directive 2009/72/EC and pursuant to Article 12(5) of the EBGL.
7. **Greece Italy** TSOs applying the inverted market-based approach of this MB CZCA methodology shall publish the efficiency of the forecasted market value for the exchange of balancing capacity or sharing of reserves.
8. **Greece Italy** TSOs applying the market-based approach of this MB CZCA methodology shall publish the efficiency of the forecasted market value for the exchange of energy.

### Article 18 Implementation Timeline

1. By twelve (12) months after approval of this MB CZCA methodology, Greece Italy TSOs shall develop a technical document that furtherly specifies, at least:
  - a. inputs, outputs, objective function and constraints of the CZCA optimization function;
  - b. processes involved in the application of the MB CZCA methodology;
  - c. metrics for the decision to improve forecasting through adjustment factors or selection of specific reference period(s), according to Article 9(4) and 12(4);
  - d. methodology and parameters for the calculation of adjustment factors, according to Article 9(5) and 12(6).

TSOs shall send such technical document to the relevant NRAs for information without undue delay.

2. The implementation of the inverted market-based approach of this MB CZCA methodology is subject to the same timeline, technical requirements, governance of the co-optimisation methodology as developed pursuant to Article 40 of the EBGL.

### Article 19 Language

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