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Methodology for a coordinated capacity calculation  
in accordance with Article 37 of Commission  
Regulation (EU) 2017/2195 of 23 November 2017  
establishing a guideline on electricity balancing  
within GRIT CCR

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## Whereas

- (1) This document (hereafter referred to as “Greece-Italy Balancing Timeframe Capacity Calculation methodology Proposal”, or “GRIT BT CC methodology Proposal”), including its annexes, is the methodology for the common capacity calculation performed for Greece-Italy Capacity Calculation Region (hereafter referred to as “GRIT CCR”) required by Article 37 of Regulation (EU) 2015/1222 establishing a guideline Electricity Balancing (hereafter referred to as the “EB GL Regulation”).
- (2) This methodology takes into account the general principles and goals set in the EB GL Regulation while respecting the principles set in the Regulation (EC) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (recast) (hereafter referred to as “Regulation (EC) 2019/943”).
- (3) The goals listed in Article 3 of the EB GL regulation relevant to this methodology are:
  - (a) *fostering effective competition, non-discrimination and transparency in balancing markets;*
  - (b) *enhancing efficiency of balancing as well as efficiency of European and national balancing markets;*
  - (c) *integrating balancing markets and promoting the possibilities for exchanges of balancing services while contributing to operational security;*
  - (d) *contributing 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 day-ahead, intraday, and balancing markets*

To facilitate the achievement of these aims and to offer capacity to the market in the balancing timeframe, it is necessary for TSOs to calculate in a coordinated manner the available cross-border capacity.

- (4) Article 37 of the EB GL Regulation constitutes the legal basis for this methodology and defines several specific requirements that the BT CCC methodology should take into account:
  - “1. *After the intraday-cross-zonal gate closure time, TSOs shall continuously update the availability of cross-zonal capacity for the exchange of balancing energy or for operating the imbalance netting process. Cross-zonal capacity shall be updated every time a portion of cross-zonal capacity has been used or when cross-zonal capacity has been recalculated*
  2. *Before the implementation of the capacity calculation methodology pursuant to paragraph 3, TSOs shall use the cross-zonal capacity remaining after the intraday cross-zonal gate closure time.*
  3. *By five years after entry into force of this Regulation, all TSOs of a capacity calculation region shall develop a methodology for cross-zonal capacity calculation within the balancing timeframe for the exchange of balancing energy or for operating the imbalance netting process. Such methodology shall avoid market distortions and shall be consistent with the cross-zonal capacity calculation methodology applied in the intraday timeframe established under regulation (EU) 2015/1222*
- (5) Article 2 of the EB GL regulation defines ‘balancing’ as “*all actions and processes, on all timelines, through which TSOs ensure, in a continuous way, the maintenance of system frequency within a predefined stability range as set out in Article 127 of Regulation (EU) 2017/1485, and compliance with the amount of reserves needed with respect to the required quality, as set out in Part IV Title V, Title VI and Title VII of Regulation (EU) 2017/1485*”

- (6) Article 2 of the EB GL Regulation defines ‘balancing market’ as *“the entirety of institutional, commercial and operational arrangements that establish market-based management of balancing”*
- (7) Article 36 of the EB GL Regulation identifies the use of cross-zonal capacity, such that *“all TSOs shall use the available cross-zonal capacity, computed according to paragraphs 2 and 3 of Article 37, for the exchange of balancing energy or for operating the imbalance netting process.”*
- (8) Article 2(8) of the CACM Regulation defines the coordinated net transmission capacity approach as *“the capacity calculation method based on the principle of assessing and defining ex ante a maximum energy exchange between adjacent bidding zones”*.
- (9) As per the definition set in Article 2(11) of the CACM Regulation, the coordinated capacity calculator is delegated the task of calculating transmission capacity, at regional level or above.
- (10) Article 16(3) of the Regulation (EC) 2019/943 describes the capacity calculation process and attributes the role of coordinated capacity calculator to the regional coordination centres: *“Regional coordination centres shall carry out coordinated capacity calculation in accordance with paragraphs 4 and 8 of this Article, as provided for in point (a) of Article 37(1) and in Article 42(1). Regional coordination centres shall calculate cross-zonal capacities respecting operational security limits using data from transmission system operators including data on the technical availability of remedial actions, not including load shedding. Where regional coordination centres conclude that those available remedial actions in the capacity calculation region or between capacity calculation regions are not sufficient to reach the linear trajectory pursuant to Article 15(2) or the minimum capacities provided for in paragraph 8 of this Article while respecting operational security limits, they may, as a measure of last resort, set out coordinated actions reducing the cross-zonal capacities accordingly. Transmission system operators may deviate from coordinated actions in respect of coordinated capacity calculation and coordinated security analysis only in accordance with Article 42(2). By 3 months after the entry into operation of the regional coordination centres pursuant to Article 35(2) of this Regulation and every three months thereafter, the regional coordination centres shall submit a report to the relevant regulatory authorities and to ACER on any reduction of capacity or deviation from coordinated actions pursuant to the second subparagraph and shall assess the incidences and make recommendations, if necessary, on how to avoid such deviations in the future. If ACER concludes that the prerequisites for a deviation pursuant to this paragraph are not fulfilled or are of a structural nature, ACER shall submit an opinion to the relevant regulatory authorities and to the Commission. The competent regulatory authorities shall take appropriate action against transmission system operators or regional coordination centres pursuant to Article 59 or 62 of Directive (EU) 2019/944 if the prerequisites for a deviation pursuant to this paragraph were not fulfilled. Deviations of a structural nature shall be addressed in an action plan referred to in Article 14(7) or in an update of an existing action plan.”*
- (11) The BT CC methodology contributes to and does not in any way hinder the achievement of the objectives of Article 3 of the EB GL Regulation.
- (12) Article 3(a) of the EB GL Regulation aims at fostering effective competition, non-discrimination and transparency in balancing markets. The BT CC methodology serves the objectives of fostering effective competition, non-discrimination and transparency by defining a set of harmonised rules for capacity calculation and congestion management which contributes to the effectiveness of the balancing market.

- (13) Article 3(b) of the EB GL Regulation aims at enhancing efficiency of balancing as well as efficiency of European and national balancing markets. The BT CC methodology contributes to the objective of enhancing efficiency of both European and national balancing market by calculating balancing capacity as close as possible to real-time with the last available inputs.
- (14) Article 3(c) of the EB GL Regulations aims at integrating balancing markets and promoting the possibilities for exchanges of balancing services while contributing to operational security. The BT CC methodology does not hinder the integration of balancing markets and the possibilities for the exchanges of balancing energy by offering capacity to the Capacity Management Module (CMM). The CMM project aims to develop a centralized solution for management of CZC among all European platforms (TERRE, MARI, PICASSO and IGCC) for the exchange of balancing energy and TSOs in context of EBGL and requirements of the European platforms (respecting relevant implementation frameworks and their legal deadline), while respecting availability and performance requirements, in accordance with the processes described in Articles 19, 20, 21 and 22 of the EB GL Regulation.
- (15) Article 3(d) of the EB GL Regulations aims at contributing 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 day-ahead, intraday and balancing markets. By ensuring consistency between the BT CC methodology and the day-ahead, intraday and balancing markets, this methodology contributes to the long-term operation and development of the electricity transmission system and electricity sector.
- (16) In conclusion, the BT CC methodology contributes to the general objectives of the EB GL Regulation.

## **Article 1 Subject matter and scope**

The BT CC methodology as determined in this document is the common methodology for the capacity calculation for GRIT CCR in accordance with Article 37 of the EB Regulation.

## **Article 2 Definitions and interpretation**

1. For the purposes of the BT CC methodology, the terms used shall have the meaning given to them in Article 2 of Regulation (EC) 2013/543, Article 2 of Regulation (EC) 2015/1222 and Article 2 of Regulation (EC) 2017/2195 (EBGL Regulation).
2. In addition, the following definitions shall apply:
  - a. 'IPTO' is the Greek Transmission System Operator;
  - b. 'Terna' is the Italian Transmission System Operator;
  - c. 'CNTC' means Coordinated Net Transfer Capacity approach for capacity calculation;
  - d. 'CSA Methodology' means the Methodology for coordinating operational security analysis in accordance with Article 75 of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation;
  - e. 'D' means the day of delivery;
  - f. 'D-1' means the day before the day of delivery;
  - g. 'D-2' means two days before the day of delivery;
  - h. 'BT CCC process 1' is the balancing timeframe capacity calculation process relevant for the MTU from 06:00 till 12:00 of the delivery day D;
  - i. 'BT CCC process 2' is the balancing timeframe capacity calculation process relevant for the MTU from 18:00 till 24:00 of the delivery day D;
  - j. "IDGC": IntraDay Gate Closure
3. In this BT CC methodology, unless the context requires otherwise:
  - a. the singular indicates the plural and vice versa;
  - b. headings are inserted for convenience only and do not affect the interpretation of this methodology; and
  - 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.

### **Article 3 Cross-zonal capacities for the balancing timeframe**

1. For the balancing timeframe, CNTC approach is adopted in the GRIT CCR.
2. Individual TTC values for each market time unit and each bidding zone border are calculated by the Coordinated Capacity Calculator of GRIT CCR adopting the TTC calculation processes and the grid models described in Annex 1. According to the deadlines established in Article 9:
  - a. the BT CCC process 1 starts on D-1 and ends on D.
  - b. the BT CCC process 2 is executed entirely in day D.
3. Already allocated cross-zonal capacities do not affect cross-zonal capacity values for bidding zone borders belonging to the GRIT CCR and they are not considered in the framework of this Capacity Calculation Methodology.

### **Article 4 Reliability margin methodology**

1. Reliability margin is equal to 0MW on each border of the GRIT CCR.
2. Terna shall reassess the values of the reliability margin at least once every 36 months.

### **Article 5 Methodologies for operational security limits, contingencies and allocation constraints**

1. The TSOs of the GRIT CCR shall provide to the Coordinated Capacity Calculator the list of relevant contingencies, including the ordinary and exceptional contingencies, as defined according to the CSA methodology. These contingencies represent an input for the cross-zonal capacity calculation process according to the TTC calculation process described in the Annex 1.
2. Critical Network Element and Contingencies (CNECs) for each border of the GRIT CCR shall be defined according to the TTC calculation process described in the Annex 1.
3. The TSOs of the GRIT CCR shall define the operational security limits of their own grid elements according to the paragraph 2.4 “Operational Security Limits (OSL)” described in the Annex 1.
4. According to the TTC calculation process described in Annex 1, the Coordinated Capacity Calculator of GRIT CCR shall apply the operational security limits defined by the relevant TSOs of GRIT CCR according to paragraph 3.
5. Discriminations between internal and cross-zonal exchanges are avoided in the GRIT CCR capacity calculation methodology by the application of:
  - a proper Bidding Zones configuration
  - a CNEC identification methodology described in the Annex 1.
6. Concerning the Internal Italian borders, Terna shall perform dynamic assessments in order to detect possible additional limitations to be applied (as upper limit) to TTC values. Where relevant, Terna shall perform these assessments at least once a year.
7. Terna shall inform the Italian regulatory authority about the results of the dynamic assessments mentioned in paragraph 6.
8. Terna shall inform in a timely manner the Coordinated Capacity Calculator of GRIT CCR on any relevant upper limit to be applied in the capacity calculation process for the Internal Italian borders, according to the outcomes of the dynamic assessment mentioned in paragraph 6.
9. The Coordinated Capacity Calculator of GRIT CCR shall apply the upper limits provided by Terna according to paragraph 8 in the capacity calculation process for the Internal Italian borders.

## **Article 6 Generation shift keys**

1. The TSOs of GRIT CCR shall define the generation shift keys in accordance with the capacity calculation methodology for the day-ahead and intraday market timeframe for Greece-Italy CCR.
2. For the Italian bidding zones, Terna shall define generation and load shift keys based on a merit order list in order to take into account the high level of RES generation installed in general and close to the GR-IT Border link in particular. Those generators as well as the conventional generation are geographically located in different areas, thus for different generation profiles different power flows in the grid elements and consequently different stress areas in the systems with potential impact in the NTC calculations are obtained.
3. For the Greek bidding zone, ADMIE shall define generation and load shift keys proportional to the remaining capacity available on generation in each base case.
4. The TSOs of GRIT CCR shall make ex-post analysis of the generation and load shift keys (including the ones used in the testing period according to Article 13) and, if necessary, change them accordingly.

## **Article 7 Remedial actions in capacity calculation**

1. The TSOs of GRIT CCR shall define the remedial actions in accordance with the capacity calculation methodology for the day-ahead and intraday market timeframe for Greece-Italy CCR and the CSA Methodology.
2. Each TSO of GRIT CCR shall define individually the remedial actions of its responsibility area to be made available in the BT CCC within GRIT CCR at least on yearly basis.
3. The TSOs of GRIT CCR shall coordinate, prior to the capacity calculation, the remedial actions that can be shared with each other to maximize the available cross-zonal capacities for the GR-IT border.
4. Terna shall identify the remedial actions that can be applied to maximize the available cross-zonal capacities for the Internal Italian borders.
5. Each TSO of GRIT CCR shall provide the list of available remedial actions, for each border of the GRIT CCR and for each BT CCC process, to the Coordinated Capacity Calculator according to the List of Relevant Remedial Actions detailed in the Annex 1.
6. Each TSO of GRIT CCR shall ensure that remedial actions are considered under the condition that the available remedial actions remaining after calculation are sufficient to ensure operational security.
7. In each BT CCC process, the Coordinated Capacity Calculator of the GRIT CCR shall optimize cross-zonal capacity and adjust maximum power exchange applying the list of available remedial actions provided by the TSOs of the GRIT CCR according to point 5.
8. Each TSO of GRIT CCR shall inform the Coordinated Capacity Calculator in a timely manner on any change in its remedial actions within GRIT CCR to ensure an efficient capacity calculation.
9. The TSOs of GRIT CCR can use costly curative remedial actions where technically and economically relevant and in accordance with national regulation, for the capacity calculation within GRIT CCR.



## **Article 8 Balancing timeframe capacity calculation**

1. The TSOs of GRIT CCR shall provide the Coordinated Capacity Calculator of GRIT CCR with the last updated information on the transmission systems in a timely manner for the BT CCC process 1 and BT CCC process 2.
2. The capacity calculation process shall take into account the Remedial Action optimization according to the TTC calculation process detailed in Annex 1.
3. The Coordinated Capacity Calculator of GRIT CCR shall perform the BT CCC process 1 by 04:00 of D, defining the values of TTC for each market time unit from 06:00 till 12:00 of the delivery day D. These values shall be provided to the TSOs of GRIT CCR for validation.
4. The Coordinated Capacity Calculator of GRIT CCR shall perform the BT CCC process 2 by 16:00 of D, defining the values of TTC for each market time unit from 18:00 till 24:00 of the delivery day D. These values shall be provided to the TSOs of GRIT CCR for validation.
5. The Coordinated Capacity Calculator shall cooperate with the neighbouring Coordinated Capacity Calculators when relevant. The TSOs of the GRIT CCR shall ensure such cooperation by exchanging and confirming information on interdependency with the relevant regional Coordinated Capacity Calculators, for the purposes of capacity calculation and validation.
6. The TSOs of the GRIT CCR shall provide information on interdependency to the Coordinated Capacity Calculators before capacity calculation.

## **Article 9 Cross-zonal capacity validation methodology**

1. The TSOs of GRIT CCR shall validate the cross-zonal capacities for each bidding zone border calculated by the Coordinated Capacity Calculator of GRIT CCR for the GR-IT Border:
  - a. By 05:00 of D for BT CCC process 1
  - b. By 17:00 of D for BT CCC process 2
2. Terna shall validate the cross-zonal capacities for each bidding zone border calculated by the Coordinated Capacity Calculator of GRIT CCR for the Internal Italian Borders:
  - a. By 05:00 of D for BT CCC process 1
  - b. By 17:00 of D for BT CCC process 2
3. Each TSO of GRIT CCR shall send the results of its cross-zonal capacity validation to the Coordinated Capacity Calculator of the GRIT CCR and to the other TSOs of the GRIT CCR.
4. Upon request, for each border/direction and for the relevant market time unit, the Coordinated Capacity Calculator shall make available to the TSOs of GRIT CCR the common grid model where the final TTC value is simulated.
5. Where required, TSOs can validate the cross-zonal capacities calculated by performing security analysis with grid model provided in accordance with paragraph 4.
6. Where one or more TSOs of GRIT CCR do not validate the TTC value, the concerned TSO(s) shall provide the Coordinated Capacity Calculator of GRIT CCR with the updated amount of cross-zonal capacities for the border considered and the reasons for the reduction. The provisional validated cross-zonal capacity is the minimum value sent by the TSOs of GRIT CCR of the border considered.
7. The Coordinated Capacity Calculator of GRIT CCR shall provide the TSOs of GRIT CCR with the validated cross-zonal capacity for each bidding-zone border of GRIT CCR after application of the reliability margin defined in accordance with Article 4 to the provisional validate cross-zonal capacity.

8. Upon validation, the Coordinated Capacity Calculator and the TSOs of GRIT CCR shall ensure that validated cross-zonal capacity for balancing timeframe are provided to the relevant balancing platform as soon as they become available.

#### **Article 10 TTC Update process**

1. For each MTU, after the related IDGC, each TSO shall monitor any relevant deviation occurred on the assumptions adopted in the latest Capacity Calculation Process affecting this MTU, and possibly the following MTUs, and inform the Coordinated Capacity Calculator in case those deviations are deemed to significantly impact the use of the capacity in the upcoming balancing processes.
2. In such a case, a Coordinated Capacity Calculation is requested as follows:
  - a. Cross-zonal capacity is computed between those borders and flow-directions effectively impacted
  - b. Cross-zonal capacity is updated for the affected MTU(s)
3. In case such a calculation is requested, at least 50 minutes before the start of the affected MTU for the affected border, TSOs shall provide the following list of relevant information (including but not limited to):
  - a. unplanned outage of grid elements with an impact on the border capacity;
  - b. significant deviations observed between demand and renewable infeed assumptions adopted in the latest Capacity Calculation Process and the most updated forecasts available after the IDGC for the relevant MTU(s);
  - c. the list of the Bidding Zone borders and directions which are deemed to be impacted and for which the new calculation is requested;
  - d. the updated input data necessary for the capacity calculation according to the TTC calculation process described in Annex 1, according to and including the identified relevant deviations;
4. The capacity calculation process shall take into account the Remedial Action optimization according to the TTC calculation process detailed in Annex 1.
5. the Coordinated Capacity Calculator shall define updated TTC values on the impacted Bidding Zone border for the affected MTU(s) at least 25 minutes before the start of the affected MTU(s);
6. The TSOs of GRIT CCR shall validate the TTC values calculated by the Coordinated Capacity Calculator of GRIT CCR for the GR-IT Border at least 15 minutes before the start of the MTU(s);
7. Terna shall validate the TTC values calculated by the Coordinated Capacity Calculator of GRIT CCR for the Internal Italian Borders at least 15 minutes before the start of the MTU(s);
8. Upon validation, the Coordinated Capacity Calculator and the TSOs of GRIT CCR shall ensure that validated cross-zonal capacity for balancing timeframe are provided to the relevant balancing platform as soon as they become available.

#### **Article 11 Fallback procedures**

1. Prior to each BT CCC process performed, the TSOs of GRIT CCR shall ensure the Coordinated Capacity Calculator of GRIT CCR is provided with the last coordinated cross-zonal capacities calculated for each market time unit on each border of the GRIT CCR.
2. For each BT CCC process performed, where an incident occurs in the capacity calculation process and the Coordinated Capacity Calculator of GRIT CCR is unable to produce results, the TSOs of GRIT CCR shall validate the last cross-zonal capacities calculated for the market time unit considered and review it where relevant. The Coordinated Capacity Calculator or TSOs of GRIT CCR where applicable, shall provide the relevant relevant balancing platform with a coordinated value.

## **Article 12 Publication of data**

1. The Coordinated Capacity Calculator of the GRIT CCR shall publish on its website:
  - a. By 05:30 (target) of D for BT CCC 1 process, for each Bidding Zone border or the GRIT CCR:
    - i. the cross-zonal capacity values computed according to Article 9;
    - ii. the list of CNECs or other security limits that are limiting the cross-zonal capacity values computed according to Article 9. For each CNEC, the EIC code of the Critical Network Element and of the contingency shall be published;
    - iii. reductions of capacity occurring in the validation phase, including the location and amount of any reductions, the TSO of the GRIT CCR requesting the reduction and reasons for the reductions provided by the TSO itself (including, if relevant, the EIC code of the CNEC);
    - iv. The vertical load, the total generation and the resulting net position for each Bidding Zone of the Greece-Italy CCR adopted in the computations.
  - b. By 17:30 (target) of D for BT CCC 2 process, for each Bidding Zone border or the GRIT CCR:
    - i. the cross-zonal capacity values computed according to Article 9;
    - ii. the list of CNECs or other security limits that are limiting the cross-zonal capacity values computed according to Article 9. For each CNEC, the EIC code of the Critical Network Element and of the contingency shall be published;
    - iii. reductions of capacity occurring in the validation phase, including the location and amount of any reductions, the TSO of the GRIT CCR requesting the reduction and reasons for the reductions provided by the TSO itself (including, if relevant, the EIC code of the CNEC);
    - iv. The vertical load, the total generation and the resulting net position for each Bidding Zone of the Greece-Italy CCR adopted in the computations.
  - c. By 10 minutes before the start of each impacted MTU the results of any TTC update process activated according Article 10, for each Bidding Zone border or the GRIT CCR:
    - i. the cross-zonal capacity values computed according to Article 9;
    - ii. the list of CNECs or other security limits that are limiting the cross-zonal capacity values computed according to Article 9. For each CNEC, the EIC code of the Critical Network Element and of the contingency shall be published;
    - iii. reductions of capacity occurring in the validation phase, including the location and amount of any reductions, the TSO of the GRIT CCR requesting the reduction and reasons for the reductions provided by the TSO itself (including, if relevant, the EIC code of the CNEC);
    - iv. The vertical load, the total generation and the resulting net position for each Bidding Zone of the Greece-Italy CCR adopted in the computations.

### **Article 13 Publication and Implementation of the CCC methodology Proposal**

1. The TSOs of GRIT CCR shall publish the BT CCC methodology without undue delay after the approval by the national regulatory authorities of GRIT CCR.
2. The TSOs of GRIT CCR shall test the capacity calculation processes foreseen in the GRIT BT CCC methodology for at least three months before implementing the present BT CCC methodology.
3. During the test period, the TSOs of GRIT CCR shall report on the results of the test to the relevant NRAs.
4. During the test period, the TSOs of GRIT CCR shall organize at least one public workshop for discussing the outcomes, if necessary, using webinar solutions.
5. The TSOs of GRIT CCR shall implement the BT CCC methodology no later than March 2025 (go live), with test period to be started no later than January 2025.
6. After six months from the implementation of this methodology, TSOs shall perform a cost benefit analysis comparing potential benefits and risks deriving from a TTC calculation process carried out after each IDGC for the relevant MTU. The cost benefit analysis shall be sent to the regulatory authorities of GRIT CCR no later than 10 months after the implementation of this methodology.

### **Article 14 Language**

1. The reference language for this CCC Methodology shall be English.
2. For the avoidance of doubt, where TSOs need to translate this BT CCC methodology into their national language(s), in the event of inconsistencies between the English version published by TSOs and any version in another language, the relevant TSOs shall be obliged to dispel any inconsistencies by providing a revised translation of this BT CCC methodology to their relevant national regulatory authorities.