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Greece-Italy TSOs proposal of common capacity calculation methodology for long-term timeframe in accordance with Article 10 of Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation

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**November 2019**

All TSOs, taking into account the following:

### Whereas

- (1) This document (hereafter referred to as “Greece-Italy common capacity calculation methodology for long-term timeframe”, or “GRIT common capacity calculation methodology for long-term timeframe”) is a common proposal developed by all Transmission System Operators (hereafter referred to as “TSOs”) within the Greece-Italy Capacity Calculation Region (hereafter referred to as “GRIT CCR”) , as defined in accordance with Article 15 (1) of Regulation (EU) 2015/1222 on Capacity Allocation and Congestion Management (the “CACM Regulation”) CACM Regulation, on the common capacity calculation performed for the forward capacity allocation within the long-term market timeframes. This proposal is required by Article 10 (1) and developed in accordance with Article 10 of “FCA Regulation”.
- (2) This proposal (hereafter referred to as the “CCC-FCA methodology Proposal”) takes into account the general principles and goals set in Commission Regulation (EU) 2016/1719 establishing a guideline on forward capacity allocation (hereafter referred to as the “FCA Regulation”) as well as Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity (hereafter referred to as “Regulation (EC) No 714/2009”).
- (3) The goal of the FCA Regulation is the coordination and harmonization of forward capacity calculation and allocation in the long-term capacity markets. To facilitate these aims the TSOs in the Capacity Calculation Region shall calculate in a coordinated manner the available cross-border capacity.
- (4) Article 10 of the FCA Regulation constitutes the legal basis for this proposal and defines several specific requirements that the CCC-FCA methodology Proposal should take into account:

*“2. The approach used in the common capacity calculation methodology shall be either a coordinated net transmission capacity approach or a flow-based approach.*

*3. The capacity calculation methodology shall be compatible with the capacity calculation methodology established for the day-ahead and intraday time frames pursuant to Article 21(1) of Regulation (EU) 2015/1222.*

*4. The uncertainty associated with long-term capacity calculation time frames shall be taken into account when applying:*

  - (a) *a security analysis based on multiple scenarios and using the capacity calculation inputs, the capacity calculation approach referred to in Article 21(1)(b) and the validation of cross-zonal capacity referred to in Article 21(1)(c) of Regulation (EU) 2015/1222; or*
  - (b) *a statistical approach based on historical cross-zonal capacity for day-ahead or intraday time frames if it can be demonstrated that this approach may:*
    - (i) *increase the efficiency of the capacity calculation methodology;*
    - (ii) *better take into account the uncertainties in long-term cross-zonal capacity calculation than the security analysis in accordance with paragraph 4(a);*
    - (iii) *increase economic efficiency with the same level of system security.”*
- (5) Article 23 (1) of the FCA Regulation defines the following: “Where TSOs apply the statistical

*approach pursuant to Article 10, the process for the calculation of long-term cross-zonal capacity shall include at least: (a) a selection of historical day-ahead or intraday cross-zonal capacity data sets from a single period or a set of periods and order the data into a duration curve; (b) a calculation of capacity corresponding to the risk level for the selected data set; (c) a calculation of long-term cross-zonal capacity to be offered to forward capacity allocation taking into account a margin to reflect the difference between historical cross-zonal capacity values and forecasted long-term cross-zonal capacity values; (d) common rules to take into account available information about planned outages, new infrastructure and generation and load pattern for the long-term capacity calculation time frames.”*

- (6) Article 10 (1) of the FCA Regulation defines the deadline to submit the common proposal based on the coordinated net transmission capacity approach for the TSOs from the GRIT CCR, as follows: *“1. No later than six months after the approval of the common coordinated capacity calculation methodology referred to in Article 9(7) of Regulation (EU) 2015/1222, all TSOs in each capacity calculation region shall submit a proposal for a common capacity calculation methodology for long-term time frames within the respective region. The proposal shall be subject to consultation in accordance with Article 6.”*
- (7) Article 4 (8) of the FCA Regulation requires that the proposed timescale for the implementation and the expected impact of the CCC-FCA methodology Proposal on the objectives of the FCA Regulation is described. The impact is presented below (point (10)) of this Whereas Section.
- (8) The CCC-FCA methodology Proposal contributes to and does not in any way hinder the achievement of the objectives of Article 3 of the FCA Regulation:

Article 3 (a) of the FCA Regulation aims at promoting effective long-term cross-zonal trade with long-term cross-zonal hedging opportunity for market participants. The CCC-FCA methodology proposal serves the objective of promoting effective competition in long-term cross-zonal trade by defining a set of harmonized rules for capacity calculation, which contributes to the effectiveness of the long-term forward capacity allocation processes.

Article 3 (b) of the FCA Regulation aims at optimizing the calculation and allocation of long-term cross-zonal capacity. By coordinating the timings for the delivery of inputs, calculation approach and validation requirements of the CCC-FCA between TSOs and the Coordinated Capacity Calculator, the CCC-FCA methodology proposal contributes to achieve the objective of optimizing the calculation and allocation of cross-zonal capacity.

Article 3 (g) of the FCA Regulation aims at contributing to the efficient long-term operation and development of the electricity transmission system and electricity sector in the Union. By using the best possible forecast of the transmission systems at the time of each capacity calculation within the GRIT CCR, the results of the coordinated capacity calculation contribute to determine the most limiting branches within this region, thus supporting TSOs for a more efficient development of the electricity transmission system.

- (9) In conclusion, the CCC-FCA methodology Proposal contributes to the general objectives of the FCA Regulation.

**SUBMIT THE FOLLOWING CCC-FCA METHODOLOGY PROPOSAL TO ALL NATIONAL REGULATORY AUTHORITIES:**

## **Article 1**

### **Subject matter and scope**

The common capacity calculation methodology for long-term as determined in this Coordinated Capacity Calculation (CCC) Forward Capacity Allocation (FCA) methodology Proposal is the common proposal of all TSOs of GRIT CCR in accordance with Article 10 of the FCA Regulation.

## **Article 2**

### **Definitions and interpretation**

1. For the purposes of the CCC-FCA methodology proposal, the terms used shall have the meaning set forth in Article 2 of Regulation (EC) 714/2009, Article 2 of Regulation (EC) 2015/1222, Article 2 of Regulation (EC) 543/2013, which amends the previous, and Article 2 of Regulation (EC) 2016/1719.
2. In addition, the following definitions shall apply:
  - a. 'Terna' is the Italian Transmission System Operator;
  - b. 'ADMIE' is the Greek Transmission System Operator;
  - c. 'GR-IT Border' means bidding zone border between Greece and the connecting Italian bidding zone;
  - d. 'Internal Italian Border' means a border between two bidding zones belonging to the Italian Control Area;
  - e. 'Y-1' means the year before the year of delivery;
  - f. 'M-1' means the month before the month of delivery;
  - g. 'CNTC' means Coordinated Net Transfer Capacity approach for capacity calculation;
  - h. 'NTC' means the net transfer capacity that amounts to the maximum total exchange program (MW) for commercial purposes between adjacent bidding zones for each market time unit in a specific direction. NTC is obtained by subtracting the reliability margin to the TTC;
  - i. 'TTC' means the total transfer capacity that amounts to the maximum total exchange program (MW) complying with the operational security limits between adjacent bidding zones for each market time unit in a specific direction;
  - j. 'Season' means a part of the year with similar weather conditions. For the scope of this document, the year is conventionally composed by two seasons: Summer (from the 1<sup>th</sup> of May till 30<sup>th</sup> of September) and Winter (from the 1<sup>st</sup> of October till the 30<sup>th</sup> of April);
  - k. 'peak hours' means the hours from 08.00 at 19.59 from Monday to Friday;
  - l. 'off-peak hours' means the hours from 20.00 at 07.59 from Monday to Friday and all hours for Saturday, Sunday.
3. In this CCC-FCA methodology Proposal, 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 proposal; 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**

#### **Application of this proposal**

This proposal applies solely to the common capacity calculation methodology for long-term within the GRIT CCR. Common capacity calculation methodologies for long-term within others Capacity Calculation Regions or other timeframes are outside the scope of this proposal.

### **Article 4**

#### **Capacity calculation approach**

For the long-term capacity calculation timeframes, CNTC approach is adopted in the GRIT CCR. This choice is mainly driven by radial grid structure of the GRIT Region.

A statistical approach based on historical cross-zonal capacity for day-ahead or intraday timeframes calculated in a coordinated manner in the GRIT CCR is applied in order to properly take into account all sources of uncertainty related to the long-term capacity calculation timeframes.

### **Article 5**

#### **Capacity calculation time-frame**

In accordance with Article 9 of FCA Regulation, the TSOs of GRIT CCR shall calculate the long-term cross-zonal capacity for each forward capacity allocation (namely yearly and monthly timeframes) and for each bidding-zone border of the GRIT CCR.

- For yearly timeframe, the TSOs of GRIT CCR shall ensure that the long-term cross-zonal capacity is calculated by the 15th of December of Y-1.
- For monthly timeframe, the TSOs of GRIT CCR shall ensure that the long-term cross-zonal capacity is calculated by the 10th of M-1.

### **Article 6**

#### **Reliability margin methodology**

Since a statistical approach is considered to take properly into account all sources of uncertainty (eg. long-lasting unplanned outages, outages planned after the computation deadline, RES and load variability) related to the long-term capacity calculation timeframes, reliability margin is equal to 0MW on each border of the GRIT CCR.

### **Article 7**

#### **Selection of historical day-ahead or intraday cross-zonal capacity data**

In accordance with Article 23 (1) of FCA Regulation, for each bidding-zone border of GRIT CCR, the cross-zonal capacity for day-ahead or intraday timeframes of the last two years are taken into account in the statistical approach.

The TSOs of the GRIT CCR shall send historical values of cross-zonal capacity for day-ahead or intraday timeframes of the last two years to the Coordinated Capacity Calculator at least 5 working days before relevant deadlines set in Article 5.

## **Article 8**

### **The yearly capacity calculation for Internal Italian Borders**

The Coordinated Capacity Calculator of the GRIT CCR shall define two values of yearly cross-zonal capacity, respectively for peak and off-peak hours for the whole year for each Internal Italian Border and for each direction, corresponding to the maximum value between:

- a) the 50° percentile of the historical series. This value is considered a balanced estimation of the expected available capacity for the upcoming year;
- b) the 10% of the 95° percentile of the historical series increased, when relevant and if positive, of the difference between the TTC value computed according to Article 11 and the 95° percentile of the historical series. This value acts as a floor for the yearly capacity value, if point a) is too low due to exceptional events registered in the recent years.

The statistical approach could lead respectively to too optimistic or too conservative values in case of:

- planned outages expected in the delivery year, that could imply a relevant reduction of the cross zonal capacity, or
- relevant infrastructures expected to be commissioned before the start of the delivery year, that could imply a relevant increase of the cross zonal capacity,

For this reason or if historical series for a given border are not available, cross border capacity shall be computed according to Article 11 of this methodology.

## **Article 9**

### **The monthly capacity calculation for Internal Italian Borders**

The Coordinated Capacity Calculator of the GRIT CCR shall define two values of monthly cross-zonal capacity for each day of the delivering month, respectively for peak and off-peak hours for each Internal Italian Border and for each direction, corresponding to the minimum value between:

- a) for each planned outage in the day that could impact cross-zonal capacity, the 50° percentile of the historical series considering only relevant hours in past where the same element was out of service. This value provides the cross-border capacity value that has been available at least the 50% of the hours in the last 2 years when the same outages were in place.
- b) the maximum value between:
  - i) the 95° percentile of the historical series of the hours of the same Season of the day under assessment. This is a proxy of the maximum cross-border capacity value expected;
  - ii) when relevant, the TTC value computed according to Article 11. This is an estimation of the potential increase of the cross-border capacity in case of new investments are commissioned.
- c) when relevant, the TTC value computed according to Article 11. This is relevant when a combination of grid outages are expected to affect cross-border capacity but this effect cannot be appreciated with a statistical approach.

If historical series for a given border are not available, for each day of the delivering month, cross border capacity shall be computed according to Article 11 of this methodology.

## **Article 10**

### **The yearly and monthly capacity calculation for GR-IT Border**

The Coordinated Capacity Calculator of the GRIT CCR shall define the cross-zonal capacity for each hour of the delivery period (year/month) for GR-IT Border and for each direction, according to the following approach:

- a) If the HVDC link between Italy and Greece is expected to be available, the cross-border capacity (in each direction) is equal to the 50<sup>o</sup> percentile of the historical series considering all hours of the last 2 years during which the cable was available;
- b) If an outage of the HVDC link between Italy and Greece is planned in the delivery hour, the cross-border capacity (in each direction) is equal to the 50<sup>o</sup> percentile of the historical series considering all hours of the last 2 years during which the cable was unavailable.

## **Article 11**

### **Ad hoc capacity calculation process**

1. In case planned outages could imply a relevant reduction of the cross zonal capacity and this cannot be appreciated within the statistical approach, TSOs of the GRIT CCR shall activate the “ad hoc” capacity calculation process based on security analysis at least 30 days before the relevant deadline set according to Article 5.
2. In case relevant infrastructure could imply a relevant increase of the cross zonal capacity and this cannot be appreciated within the statistical approach, TSOs of the GRIT CCR shall activate the “ad hoc” capacity calculation process based on security analysis at least 20 days before the relevant deadline set according to Article 5.
3. In case the “ad hoc” capacity calculation process is activated by one of the TSOs of the GRIT CCR:
  - i. the activating TSO shall define relevant scenarios and available CGMs to be considered in the security analysis at least 20 days before the relevant deadline set according to Article 5;
  - ii. TSOs of the GRIT CCR shall adapt the Year-ahead Common Grid Models developed according to Article 67 of the Commission Regulation (EU) 2017/1485 in order to better reflect scenarios defined according to the previous point at least 15 days before the relevant deadline set according to Article 5;
  - iii. The Coordinated Capacity Calculator of the GRIT CCR shall define cross-zonal capacity for long-term timeframe applying the TTC calculation process detailed in Annex 1 of the Greece-Italy TSOs proposal of common capacity calculation methodology for the day-ahead and intraday market timeframe in accordance with Article 21 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management at least 5 days before the relevant deadline set according to Article 5. In doing so The Coordinated Capacity Calculator of the GRIT CCR for the TTC calculation process shall use:
    - the Reliability margin methodology defined in Article 6 of the Greece-Italy TSOs proposal of common capacity calculation methodology for the day-ahead and intraday market timeframe in accordance with Article 21 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management.
    - the methodologies for operational security limits and contingencies defined in Article 7 of the Greece-Italy TSOs proposal of common capacity calculation methodology for the day-ahead and intraday market timeframe in accordance with Article 21 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion

management.

- the generation and load shift keys methodology defined in Article 8 of the Greece-Italy TSOs proposal of common capacity calculation methodology for the day-ahead and intraday market timeframe in accordance with Article 21 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management.
- the methodology for remedial actions in capacity calculation defined in Article 9 of the Greece-Italy TSOs proposal of common capacity calculation methodology for the day-ahead and intraday market timeframe in accordance with Article 21 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management.

## **Article 12**

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

1. The TSOs of GRIT CCR shall validate the long-term cross-zonal capacities calculated by the Coordinated Capacity Calculator of the GRIT CCR for the GR-IT border.
2. Terna shall validate the long-term cross-zonal capacities calculated by the Coordinated Capacity Calculator of the GRIT CCR for the Internal Italian borders.
3. Upon request, in case the “ad hoc” capacity calculation process referred in Article 11 is activated, the Coordinated Capacity Calculator shall make available to the TSOs of GRIT CCR the common grid model where the final TTC value is simulated.
4. Where required, TSOs can validate the cross-zonal capacities calculated by performing security analysis with grid model provided in accordance with Article 12.3.
5. Where one or more TSOs of GRIT CCR do not validate the cross-zonal capacity calculated, the concerned TSO(s) shall provide the Coordinated Capacity Calculator with the updated amount of cross-zonal capacities for the border considered and the reasons for the reduction. The final cross-zonal capacity is the minimum value sent by the TSOs of GRIT CCR of the border considered.

## **Article 13**

### **Fallback procedures**

1. Prior the yearly capacity calculation process for the year Y started, the TSOs of GRIT CCR shall ensure the Coordinated Capacity Calculator is provided with the last coordinated cross-zonal capacities defined for the current year (Y-1) according to the long-term capacity calculation processes.
2. For the yearly capacity calculation process performed in Y-1, where an incident occurs in the capacity calculation process and the Coordinated Capacity Calculator is unable to produce results within the allotted time for the calculation process, the yearly cross-zonal capacities for the year Y are considered equal to the yearly capacities computed for the year Y-1. The TSOs of GRIT CCR shall validate and review these values where relevant.
3. Prior the monthly capacity calculation process for the month M (belonging to the calendar year Y) started, the TSOs of GRIT CCR shall ensure the Coordinated Capacity Calculator is provided with the last coordinated cross-zonal capacities defined for the year Y according to the long-term capacity calculation processes.



4. For the monthly capacity calculation process performed in M-1, where an incident occurs in the capacity calculation process and the Coordinated Capacity Calculator is unable to produce results within the allotted time for the calculation process, the monthly cross-zonal capacities for the month M are considered equal to the yearly capacities computed for the year Y. The TSOs of GRIT CCR shall validate and review these values where relevant.

## **Article 14**

### **Transparency**

1. The TSOs of GRIT CCR shall publish:
  - i. by the 15<sup>th</sup> of December of Y-1, the cross-zonal capacity values for the GR-IT Border (in each direction) computed for yearly timeframe according to Article 10;
  - ii. by the 10<sup>th</sup> of M-1, the cross-zonal capacity values for the GR-IT Border (in each direction) computed for monthly timeframe according to Article 10.
2. The TSOs of GRIT CCR shall publish:
  - i. by the 15<sup>th</sup> of December of Y-1, for each Internal Italian Border and for each direction, the entire statistical curve based on historical values, marking relevant points (eg. 5<sup>o</sup>percentile, 50<sup>o</sup>percentile and 95<sup>o</sup>percentile);
  - ii. by the 10<sup>th</sup> of M-1, for each Internal Italian Border and for each direction, all the relevant statistical curves based on historical values, marking relevant points (eg. 5<sup>o</sup>percentile, 50<sup>o</sup>percentile and 95<sup>o</sup>percentile).
3. The values published following article 14.2 above shall be considered for reference only and not binding in relation to the transit limits used for the specific hedging product offered according to Arera Resolution 205/04 and.
4. GRIT TSOs will participate in the elaboration of the ENTSO-E biennial report on capacity calculation and allocation, which will be provided each two years and updated under request of the relevant authorities, according to Article 26 of FCA GL. For GRIT region, this report will contain the capacity calculation approach used, statistical indicators on reliability margins where they are applied, statistical indicators of cross-zonal capacity, quality indicators for the information used for the capacity calculation and, if appropriate, proposed measures to improve capacity calculation.
5. The Agency shall decide whether to publish all or part of this report.

## **Article 15**

### **Publication and Implementation of the CCC-FCA methodology Proposal**

1. The TSOs of GRIT CCR shall publish the CCC-FCA methodology Proposal without undue delay after relevant national regulatory authorities have approved the proposed CCC-FCA methodology or a decision has been taken by the Agency for the Cooperation of Energy Regulators in accordance with Article 4 (9), Article 4 (10) and 4 (11) of the FCA Regulation.
2. The TSOs of GRIT CCR shall implement the CCC FCA methodology Proposal for the yearly capacity calculation timeframe no later than S2-2021.
3. The TSOs of GRIT CCR shall implement the CCC FCA methodology Proposal for the monthly capacity calculation timeframe no later than S2-2021.

## **Article 16**

### **Language**

1. The reference language for this common capacity calculation methodology for long-term Proposal shall be English.
2. For the avoidance of doubt, where TSOs need to translate this CCC-FCA methodology Proposal into their national language(s), in the event of inconsistencies between the English version published by TSOs in accordance with Article 4 (13) of the FCA Regulation and any version in another language, the relevant TSOs shall be obliged to dispel any inconsistencies by providing a revised translation of this CCC-FCA methodology Proposal to their relevant national regulatory authorities.