Italy North TSOs proposal for long-term cross-zonal capacity calculation in accordance with Article 10 of the Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a Guideline on Forward Capacity Allocation

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DISCLAIMER This document is released on behalf of the transmission system operators ("TSOs") of Italy North Region solely for the purposes of public consultation on the proposal on long-term cross-zonal capacity calculation in accordance with Article 10 of the Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on Forward Capacity Allocation (FCA). This version is a draft proposal and does not constitute a firm, binding or definitive TSOs' position on the content.

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TSOs of Italy North, taking into account the following:

WHEREAS

1. This document sets out the common coordinated capacity calculation methodology in accordance with article 10 seq. of Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on Forward Capacity Allocation (hereafter referred to as the "FCA Regulation"). This methodology is hereafter referred to as the "Italy North TSOs proposal for long-term cross-zonal capacity calculation" (LT CCM).

   The LT CCM takes into account the general principles and goals set in the FCA Regulation as well as Regulation (EC) No 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (hereafter referred to as "Regulation (EC) No 2019/943").

   In addition, this proposal takes into account the effective structure of the grid and the borders between Italy and third countries by establishing TSO-TSO based contractual frameworks to include third countries as Technical Counterparties. Therefore, this proposal is developed by Italy North TSOs taking into account Technical Counterparties' grid elements.
2. According to article 4(8) of the FCA Regulation, the expected impact of the LT CCM on the objectives of the FCA Regulation has to be described and is presented below.
3. The LT CCM serves the objective of promoting effective long-term cross-zonal trade with long-term cross-zonal hedging opportunities for market participants (article 3(a) of the FCA Regulation) by taking into account the hedging needs of market participants by calculating reliable capacities at an early stage and making them available to market participants, which makes long-term planning possible since it ensures that the cross-zonal capacity is calculated in such a way that the same LT CCM will apply to all market participants on all respective bidding zone borders in the Italy North CCR, thereby ensuring a level playing field amongst market participants.
4. The LT CCM contributes to the optimal calculation of long-term capacity (article 3(b) of the FCA Regulation) since it takes into account historical data, outages and new grid elements. It provides a calculation approach, coordinates the timings of input delivery and validation requirements of the capacity calculation between Italy North TSOs, the Technical Counterparty and the Coordinated Capacity Calculator of Italy North (CCC of Italy North).
5. The LT CCM contributes to the objective of providing non-discriminatory access to long-term cross-zonal capacity (article 3(c) of the FCA Regulation) by adhering to the rules of the Single Allocation Platform and by publication of the results, hence ensuring non-discrimination between market participants.
6. The LT CCM is designed to ensure a fair and non-discriminatory treatment of Italy North TSOs and the Technical Counterparty, the Agency for the Cooperation of Energy Regulators (hereafter referred to as "ACER"), National Regulatory Authorities (hereafter referred to as "NRAs") and market participants

(article 3(d) of the FCA Regulation) since it has been developed and adopted within a process that ensures the involvement of all relevant stakeholders and independence of the approving process.

7. This LT CCM also contributes to the objective of respecting the need for a fair and orderly forward capacity allocation and orderly price formation (article 3(e) of the FCA Regulation) by making available in due time the information about cross-zonal capacities to be released in the market, and by ensuring a backup solution when capacity calculation fails to provide results.
8. The LT CCM enables Italy North TSOs to provide market participants with reliable information on cross-zonal capacities and import/export limits for year and month ahead allocation in a transparent way and at the same time. This includes regular reporting on specific processes within capacity calculation. The LT CCM therefore contributes to the objective of transparency and reliability of information (article 3(f) of the FCA Regulation).
9. Finally, the LT CCM provides a long-term signal for efficient investments in transmission, generation and consumption, and thereby contributes to the efficient long-term operation and development of the electricity transmission system and electricity sector in the Union (article 3 (g) of the FCA Regulation).
10. In conclusion, the LT CCM contributes to the general objectives of the FCA Regulation to the benefit of all market participants and electricity end consumers.
11. The LT CCM covers the annual and monthly long-term time frames (pursuant to article 9 of the FCA Regulation).
12. Italy North TSOs and the Technical Counterparty determine the final capacity values to meet the form of product regulated in the Italy North Design of Long Term Transmission Rights (in accordance with article 31.3 of the FCA Regulation). Those capacity values are subject to the Italy North Methodology for splitting long-term cross-zonal capacity (in accordance with article 16 of the FCA regulation).
13. The LT CCM is based on forecast models of the transmission system. The inputs of the LT CCM are determined more than a year, respectively more than a month, before the electricity delivery date taking into account the available knowledge at that time. Therefore, the outcomes are subject to inaccuracies and uncertainties that are higher than the inaccuracies and uncertainties of the day-ahead capacity calculation methodology. The aim of the reliability margin is to cover the risk induced by these forecast errors.
14. The LT CCM shall be compatible with the day-ahead and intraday capacity calculation methodologies (article 10 (3) of the FCA Regulation). This compatibility is achieved by considering historical inputs from the day-ahead or intraday capacity calculation methodology.
15. Italy North TSOs and the Technical Counterparty remain responsible for maintaining operational security regardless of whether there is a coordinated application of capacity calculation or not. For this reason they need to validate the calculated cross-zonal capacities to ensure that they do not violate operational security limits. This validation is performed in a coordinated way to verify whether a coordinated application of remedial actions can address possible operational security issues. This step

may lead to reductions of cross-zonal capacities below the values originally calculated. In order to avoid undue discrimination these measures of reduction have to be performed in a coordinated way. In case of missing coordination, the results might be that an Italy North TSO might have more capacities to the detrimental effect (operational security issues) of another Italy North TSO.

16. Transparency and monitoring of capacity calculation are essential for ensuring its efficiency and understanding. This methodology establishes significant requirements for Italy North TSOs and the Technical Counterparty to publish the information required by market participants, to report the information to regulatory authorities and to analyse the impact of capacity calculation on the market functioning.

SUBMIT THE FOLLOWING LONG-TERM CAPACITY CALCULATION METHODOLOGY PROPOSAL TO THE NATIONAL REGULATORY AUTHORITIES OF THE ITALY NORTH REGION:

GENERAL PROVISIONS

Article 1:
Subject matter and scope

1. The long-term common capacity calculation methodology as determined in this LT CCM is the common proposal of all Italy North TSOs and the Technical Counterparty in accordance with article 10 seq. of the FCA Regulation and shall cover the Italy North CCR bidding zone borders.
2. This document is a common Methodology of the Italy North Transmission System Operators (hereafter referred to "Italy North TSOs and the Technical Counterparty") of the Capacity Calculation Region Italy North (hereafter referred to as "Italy North CCR") as described in the ACER decision no 06/2016 of 17 November 2016 on the electricity transmission system operators proposal for the determination of capacity calculation regions.

Article 2:
Definitions and interpretation

1. For the purposes of the LT CCM, the terms used shall have the meaning given to them in article 2 of Regulation (EC) 2019/943, article 2 of Regulation (EC) 2013/543 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 2019/943 of the European Parliament and of the Council, article 2 of Commission Regulation (EC) 2015/1222 establishing a guideline on Capacity Calculation and Congestion Management (hereafter referred to as the "CACM Regulation") and article 2 of the FCA Regulation.
2. In addition, the following definitions, abbreviations and notations shall apply:

ACER	Agency for the Cooperation of Energy Regulators
BZB	Bidding Zone Border standing also for set of BZB (i.e. technical profiles) where applicable
CC	Capacity Calculation
CCC	Coordinated Capacity Calculator, as defined in article 2(11) of the CACM Regulation
CCM	Capacity Calculation Methodology
CCR	Capacity Calculation Region, as defined in article 2(3) of the CACM Regulation
DA	Day-Ahead, as defined in article 2(34) of the CACM Regulation
DA CCM	Day-Ahead Capacity Calculation Methodology
ENTSO-E	European Network of Transmission System Operators for Electricity

EU	European Union
LT	Long-Term
LTCC	Long-Term Capacity Calculation
LT CCM	Common Coordinated Long-Term Capacity Calculation Methodology
NRA	National Regulatory Authority
NTC	Net Transfer Capacity
OPC	Operational Planning Coordination
TSO	Transmission System Operator
TTC	Total Transfer Capacity

3. In addition, the following definitions shall apply:

a. 'TERNA' is the Italian Transmission System Operator;

b. 'RTE' is the French Transmission System Operator;

c. 'APG' is the Austrian Transmission System Operator;

d. 'ELES' is the Slovenian Transmission System Operator; 'FR-IT border' means bidding zone border between France and the connecting Italian bidding zone;

e. 'Technical Counterparty' is any non-EU TSO to be included in the procedures and processes of this methodology;

f. 'Y-1' means the year before the year of delivery;

g. 'M-1' means the month before the month of delivery;

h. 'Allocation Constraints' means the constraints to be respected during capacity allocation to maintain the transmission system within operational security limits and have not been translated into cross-zonal capacity or that are needed to increase the efficiency of capacity allocation;

i. 'CNTC' means Coordinated Net Transfer Capacity approach for capacity calculation;

j. '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;

k. '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.

l. '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 1th of May till 30th of September) and Winter (from the 1st of October till the 30th of April).

m. 'Peak Hours' means the hours from 08.00 at 19.59 from Monday to Friday.

n. 'Off-Peak Hours' means the hours from 20.00 at 07.59 from Monday to Friday and all hours for Saturday, Sunday.

o. Season(s) and Peak/Off-Peak Hours(s) can be combined as four Seasonal Period(s) :

i. Winter peak
ii. Winter Off-peak
iii. Summer peak
iv. Summer Off-peak

4. In this LT CCM, 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 LT CCM; 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.

METHODOLOGY FOR LONG-TERM CROSS-ZONAL CAPACITY CALCULATION

Article 3:
Application of this methodology

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

Article 4:
Capacity Calculation Approach

1. A statistical approach based on historical cross-zonal capacity for day-ahead or intraday timeframes calculated in a coordinated manner in the Italy North Region is applied in order to properly take into account all sources of uncertainty related to the long-term capacity calculation timeframes.
2. As input for the long-term capacity calculation timeframes, the latest available historical NTC values will be used, coming from either the DA or ID CC which are based on the CNTC approach according to the DA & ID CCMs.

Article 5:
Selection of historical day-ahead or intraday cross-zonal capacity data

1. In order to allow the CCC to perform the relevant CCC-FCA process, the following relevant input data shall be gathered:
    a. the allocated NTC time series of the past years for each border/direction of the TSOs of the Italy North Region and Technical Counterparties. In order to minimize the uncertainty in the allocated NTC timeseries, the most recent NTC sample coming from DA and ID capacity calculation processes will be considered for each historical market time unit;
    b. the NTC reductions (maintenance and Allocation Constraint) time series of the past years for each Italy North and Technical Counterparty's border/direction;
    c. Commissioning date of new investments during the past years for each Italy North and the Technical Counterparty border;
    d. the real time reduction and capacity curtailment time series of the past years for each border/direction. Such data will be used for filtering out NTC samples affected by reduction in real time and curtailments (for which TSOs will assume that allocated capacity was not secure at all);
    e. Additional information linked to the DA and ID capacity calculation processes that will be considered as filtering parameters in the statistical analysis;
2. After the needed inputs described in the Article 5.1 have been gathered, the historical data selection

can be applied and summarized as follow:

a. Create the historical hourly allocated NTC profile and matching each sample with the respective hourly NTC reductions (maintenance and Allocation Constraint) and the eventual real time reduction/curtailments linked to DA and ID processes;

b. Separate the historical allocated NTC profile for each Seasonal Period.

c. Exclude non-relevant samples which may reflect problems in the calculations which lead to unrealistic results as mentioned in Article 6.1(b).

d. Consider as time window to be used for statistical analysis always the last three years.

Article 6:
Statistical analysis of historical data

1. Before the duration curve creation is done, a statistical analysis of historical data is achieved following the computation steps below:
   a. The initial dataset for long-term capacity calculation is composed of historical cross zonal capacity values per border in both directions (import and export) as described in Article 5.
   b. All NTC values which correspond to a non-representative hours in the Italy North CCR (i.e. timestamps with Allocation Constraints, real time capacity reductions, capacity curtailment, triggering of export corner and capacity calculation process fails) are excluded from the dataset.
   c. For each historical NTC value per border, the associated NTC reduction per border (if any) is added in order to obtain a capacity corresponding to a full grid situation (without maintenance which could limit the capacity).
   d. New grid elements commissioned during the historical time window are specifically considered in order to include their impact on the NTC values as described in Article 8 and Article 9.
   e. The initial dataset is divided in four different Seasonal Periods.

   For each Seasonal Period and border/direction, NTC values are ordered to obtain historical Italy North's full grid NTC duration curves.
2. A risk level of 3% is fixed to allow the four values selection of long-term capacity per border for each seasonal period.
3. The Italy North TSOs and the Technical Counterparty will perform every year an analysis on the historical data of the applied curtailment over the last three years as already mentioned in the Article 5.2(d). Then, the risk level selection is performed by considering the hours in which curtailments have been applied in such considered time window.
4. The hourly bilateral NTC reduction profile (which reflects the maintenance plan of the relevant grid elements for the Italy North region) and the Allocation Constraints profiles for each respective border/direction is computed as follows:

a. The maintenance NTC reduction profile is calculated considering the historical NTC reduction values of unavailability which have been coordinated during the past weekly and monthly OPC processes;

b. The Low Consumption NTC reduction profile is calculated considering the best hourly forecast the Italy North TSOs and the Technical Counterparty can do at yearly and monthly stage and using the last available information. Such reduction refers to maximum import value linked to voltage regulation and dynamic stability issues that happens during the so-called low consumption hours. Such profile will be provided by each TSO per season and border/direction.

5. Each new grid investment will not be considered in the first year of the commissioning. As a consequence, yearly capacity calculation will be 0 for the first year.

6. The new grid investments will be treated taking as a reference its respective DA NTC reduction value, calculating a percentage X% of this value to include in the monthly computation. The method to calculate X% will be defined in the final version submitted to Italy North NRAs.

7. Such investment value is added on top of hourly NTC import/export profiles that already consider maintenances and Allocation Constraints.

8. For each new investment a maintenance plan will be also considered in order to properly compute the new NTC profile for each border/direction also considering when such new elements will be out of service during the delivery period.

Article 7:
Reliability margin methodology

1. Reliability margin long-term capacity calculation approach is taken into account by statistical assessment based on historical cross-zonal capacity for day-ahead or intraday timeframes calculated in a coordinated manner in the Italy North CCR. Italy North TSOs and the Technical Counterparty shall not apply any additional reliability margin in the long-term market time frames.

Article 8:
The yearly capacity calculation

1. The hourly profile for the bilateral yearly NTC is computed by considering:
   a. the full-grid NTC value for each season obtained from the statistical analysis after fixing the risk level;
   b. the hourly bilateral NTC reductions profile (which reflect the hourly outage planning impact on the yearly profile as described in the Article 6.4 of this proposal) and the hourly Allocation Constraint profile coordinated during the yearly OPC process.

2. Once the effect of a new grid investment is calculated for each season and border/direction, its respective investment value is added on top of hourly NTC import/export profiles that already consider maintenances and Allocation Constraints. For each new investment a maintenance plan will be also considered in order to properly compute the new NTC profile for each border/direction.
3. For the statistical analysis, new grid investments are considered as out of service as described in Article 6.5.

Article 9:
The monthly capacity calculation

1. The monthly timeframe statistical methodology aims at updating the yearly NTC profile already described in the previous paragraphs. In other words, the monthly NTC profile will be calculated by considering:
   a. The yearly seasonal "full-grid" NTC values: the monthly "full-grid" seasonal NTC will be the value of the corresponding Seasonal Period already calculated in the yearly statistical methodology by fixing a proper risk level.
   b. An updated version of planned maintenance calendar and related NTC bilateral reductions from OPC processes: in this way it is possible to update the previous yearly NTC profile by considering possible variations in the yearly planned and "extraordinary" out of service combinations.
   c. Recalculated Allocation Constraints values based on most updated input data.
2. In the case of the first year of commissioning of a new grid investment, characterised by the absence of previous historical data provided by the DA & ID computations, the monthly profile including the new investment(s) is created as follows:
   a. The NTC reduction linked to the unavailability of existing elements and new grid investments has been coordinated during the past yearly, monthly and weekly OPC Processes.
   b. Since the first monthly capacity calculation after the commissioning of the new grid investment, an additional NTC value associated to the new grid investment will be added to the NTC profile as described in Article 6.7.

Article 10:
Cross-zonal capacity validation methodology

2. In accordance with article 15 of the FCA Regulation, referring to article 26 of the CACM Regulation, the Italy North TSOs and the Technical Counterparty shall coordinate the validation and the right to correct cross-zonal capacity relevant to the Italy North TSO's BZBs for reasons of operational security during the validation process. In exceptional situations cross-zonal capacities can be reduced by all Italy North TSOs and the Technical Counterparty. These potential situations are at least:
   a. an occurrence of an exceptional contingency or forced outage as defined in article 3 of the SO Regulation;
   b. an occurrence of a mistake in the input data, that leads to an overestimation of cross-zonal capacity from an operational security perspective;
3. In each quarterly report, the Italy North CCC shall provide all the information on the reductions of cross-zonal capacity, separately for coordinated and individual validations. The quarterly report shall include at least the following information:
   a. the identification of exceptional contingencies or forced outages;
   b. the volume of reduction of cross-zonal capacity;
   c. the detailed reason(s) for reduction.
4. The Italy North CCC shall coordinate with neighbouring CCCs during the validation process, where at least the reductions in cross-zonal capacity are shared among them. The Italy North CCC shall provide to Italy North TSOs and the Technical Counterparty any information on decreased cross-zonal capacity from neighbouring CCCs. Italy North TSOs and the Technical Counterparty may then apply the appropriate reductions of cross-zonal capacities as described in Article 15(1).

FINAL PROVISIONS

Article 11:
Fallback procedures

1. If the CCC fails to provide the yearly capacity in due time each TSO of Italy North Region and technical counterparties should determine the yearly NTC for its relevant borders by their own. Finally the minimum of all bilateral NTC values is chosen.
2. If the CCC fails to provide the monthly capacity in due time each TSO of Italy North Region and technical counterparties should determine the monthly NTC for its relevant borders by their own taking into account the yearly NTC and the changes in the outage planning, if any. Finally the minimum of all bilateral NTC values is chosen.

Article 12:
Publication and Implementation of the CCC-FCA methodology Proposal

1. The TSOs of Italy North Region and the Technical Counterparty shall publish the LT CC methodology Proposal without undue delay after all NRAs have approved the proposed LT CC methodology or a decision has been taken by ACER in accordance with article 4(9) of the FCA Regulation.
2. The TSOs of Italy North Region and the Technical Counterparty shall start implementing this LT CC methodology proposal as soon as the NRAs of the Italy North Region approve it, and will complete the implementation process no later than 18 months after approval. The implementation process shall consist of the development of the appropriate IT tools and infrastructure, design of operational processes and at least an internal test and external parallel run if applicable.
3. The TSOs of Italy North Region and the Technical Counterparty foresee the step-wise implementation of the following parts of this methodology, based on the timeline below:

LTCC	**Deadline**
Yearly capacity calculation Implementation	01/11/2021
Monthly capacity calculation Implementation	01/12/2021

4. Once the LT CC methodology proposal is implemented, the TSOs of the Italy North region and the Technical Counterparty will publish the following information before each long-term auction:
   a. the duration curve of the yearly and monthly NTC full grid profile relevant to determine the long-term capacity, highlighting the value associated to the chosen risk level;
   b. the NTC bilateral hourly profile for both yearly and monthly timeframes, computed starting from NTC full grid and by deducting maintenances and adding new investments; maintenances profile (along with the associated outages) and new investments profile (along with the associate network reinforcements) shall be made available.

Article 13:
Improved efficiency of statistical approach

1. According to FCA Regulation Art 10.4(b), the long term capacity calculation methodology in the Italy North CCR increases the economic efficiency of the capacity calculation. The uncertainties in long-term cross-zonal capacity calculation are better addressed with the same level of system security:
    a. The statistical approach directly benefits from the better forecasts in the short-term process, whenever an improvement on short-term CCM is implemented.
    b. The same high level of firmness for a scenario-based approach would lead to a higher reliability margin value and consequently a lower final capacity than the statistical approach.
    c. Italy North TSOs and the Technical Counterparty are obliged to use reference scenarios (in accordance with FCA Regulation). Such scenarios only refer to ad-hoc cases created for the whole continental Europe and referring to generic scenarios, but do not represent any situations which may be meaningful for a long term CC in the Italy North CCR. This could possibly lead to reduced capacities in the region. To cover such specific cases, several additional scenarios for NTC calculation would be needed and approved at ENTSO-E level with the process in force.
    d. An improvement on the reference scenarios, supposed to be congestion free, is always necessary. As a consequence, the Remedial Action Optimization process would have to be adapted for the long-term timeframe, which has been assessed as a huge technical effort. Besides, the availability of the remedial actions applied during real-time is difficult to ensure so far ahead.
    e. A quantitative justification shall be added with the final submission of this proposal to Italy North NRAs.

Article 14:
Language

1. The reference language for this Proposal shall be English.
2. For the avoidance of doubt, where TSOs need to translate this 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, in accordance with national legislation, provide the relevant NRAs with an updated translation of this Proposal.