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Consultation feedback on the Italy North TSOs  
proposals for the capacity calculation  
methodologies in accordance with Article 21  
of Commission Regulation (EU) 2015/1222  
of 24 July 2015 establishing a guideline on  
capacity allocation and congestion  
management

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**May 2018**

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## Introduction

This document is a summary of the feedback to the questions raised by stakeholders interested in the proposals for coordinated capacity calculation methodology for the day-ahead and intra-day market timeframes to be applied in the Italy North region in accordance with Article 21 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (hereafter referred to as the “CACM Regulation”).

The abovementioned proposals were submitted to public consultation (conducted via the ENTSO-E consultation hub) between 23 February and 23 March 2018, in accordance with Article 12 of the CACM Regulation. In addition, a dedicated workshop was held in Paris on 14 March 2018. This document contains feedback on the remarks/ comments received on both these occasions.

The participating TSOs for this calculation are APG (AT), ELES (SI) RTE (FR), TERNA (IT), Swiss Grid (CH) and the following borders are considered:

- AT-IT border
- SI-IT border
- FR-IT border
- CH-IT border

## I. Questions and Answers during the consultation workshop in Paris<sup>1</sup>

On 14 March 2018 Italy North TSOs invited stakeholders to participate into a workshop where Italy North TSOs presented their implementation plan and answered the questions that stakeholders could have. A summary of the questions and the responses is provided below.

### A. Questions concerning D-2 and ID methodologies

1. Could you give some explanations concerning the independency between variables  $U_s$  and  $U_r$ ?

The proposal envisaged a very low risk level (more than 99%) and thus a quite high TRM. Italy North TSOs have not included any additional margin on the single network elements: all the installed capacity is considered for the capacity calculation process; therefore, all the potential deviations shall be managed by the mean of the TRM. In other CCRs the TRM may be low (i.e. a higher risk), since some additional margins may be kept on the most critical network elements.

The TSOs were asked to elaborate this point, explaining why they chose this approach and whether there are some alternatives. A comparison with the practices adopted in other CCRs is much welcomed.

The TSOs of Italy North region adapted the methodology of the TRM in order to make it more transparent, based on the convolution of the probability distribution functions of the two variables TRM1 and TRM2 (TRM1 for the uncertainties of the forecast and TRM2 for the unintended deviation).

2. Could you give a proper definition of the “sensitivity to cross-zonal power exchanges”?

The TSOs shall give in the explanatory document more details about the envisaged 5% threshold.

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<sup>1</sup> Italy North NRAs understand that including the mathematical details in a legal written proposal is a complex task. A specific technical annex to the methodology would, thus, be welcomed to address the main details of the computation process and the rules to handle the remedial actions. NRAs in general address the issue of stakeholder involvement and transparency. As some methods and processes are quite complex, a purely written description, as the one provided during the consultation might not allow stakeholders to provide meaningful answers. A workshop with stakeholders should be organized: timings should be agreed with Italy North NRAs.

The sensitivity to cross zonal power exchanges is the relative change of flow on CNE after the change of zonal balance. The zonal balances are adjusted using the same GLSK as for the capacity calculation.

According to initial experimentation, 5% threshold is expected to ensure all important critical elements are included, but on the other side ensure exclusion of elements not impacted by the Italy North import.

3. Could you explain how additional constraints like voltage and stability issues are taken into account in the capacity calculation?

In particular the TSOs were asked to describe the main criteria and steps to be followed to compute the capacity when such constraints apply.

TSOs will indeed dynamically adapt the list of monitored elements in order to keep calculation time feasible and respect the sensitivity methodology. The same selection criteria will be applied for voltage constraint as explained in the Explanatory Note.

4. How are GSKs applied?

The application of the GSKs varies from a TSO to another (Proportional, Merit Order, etc). The different types of GSKs are described in the Explanatory Note.

5. Could you clarify the meaning of the balance equations reported in the explanatory note?

The TSOs included more details about the meaning of the balance equations in the Explanatory Note.

6. Could you give more details on how remedial actions are considered in capacity calculation?

The TSOs included more details on how remedial actions are considered in capacity calculation in the Explanatory Note and in the Methodology.

7. Could you distinguish between curative and preventive remedial actions?

The TSOs included more details on curative and preventive remedial actions in the Explanatory Note and in the Methodology.

8. In case preventive remedial actions are considered during day-ahead capacity calculation, are these remedial actions effectively implemented or are they assumed as a warning and implemented only if their activation is confirmed in real time?

In such cases, the remedial actions are considered as a warning and implemented only if their activation is needed and applicable in real time

9. How do you intend to address the issue of Interaction and coordination between different CCRs in terms of remedial actions? Is a coordination between capacity calculators envisaged? If yes, will be remedial actions shared among CCR or will each apply to only one CCR?

For the moment no coordination is done with other CCR(s).

10. Concerning the computation process, how is the initial step computed? What is the stopping criteria?

The TSOs included more details on this point in the Explanatory Note and in the Methodology.

11. Could you provide for additional explanations concerning the TTC selection process?

The TTC selection process is a temporary measure introduced to avoid too high or too low values in case some input data are affected by significant errors. If the capacity results are not acceptable (i.e. they are outside a predefined band) they are automatically corrected by the capacity calculator before the validation process is run by each TSO. If the quality of the input data improves, the TSOs will evaluate whether enlarging the selection band or definitively abandoning this step (look at the “main conclusions workshop” document for NRAs’ concerns on TTC).

12. How do you intend to mitigate discretion in the validation process?

One reason undergoing the capacity reduction asked for in the validation step is unexpected flow patterns. A proper report on the reduction motivation is foreseen by CACM. NRAs expect that such a report should be delivered by the TSOs.

The TSOs of Italy North Region will provide a specific report in accordance with Article 26.5 of the CACM Regulation to Italy North NRAs every 3 months indicating reasons of the reduction occurred during validation phase.

13. Which is the impact on the capacity calculation and on countertrading and redispatching in the event the selection process doesn't apply?

The NTC given to the market is capped to the LTTC values 11% of the cases and it is capped to the UTTC value 23% of the cases. Generally, the capacity given to the market shall be higher if no TTC selection process is performed.

No study has been performed to assess the impact of the selection process on the countertrading and redispatching.

14. Could you explain how LTTC impact the capacity? Why is the capacity increase merely temporary one?

The LTTC limit is used to ensure that calculated TTC is not too low. During the experimentation period it was observed some calculated Italian import capacities are extremely low because of different issues in input data (for example overloaded radially connected elements, improper GSKs, insufficient voltage support, etc.) or serious bugs in the process of Coordinated Capacity Calculator. As calculated TTCs cannot be increased during validation process, it is vital to increase them beforehand. During the validation process, TTC can be decreased again if considered so by the party performing validation.

The increase due to LTTC limit is only applied when calculated TTC value is much lower than anticipated, therefore calculation is considered as unreal, therefore it is assessed for each calculated timestamp individually.

15. What justifies the validation process and particularly the capacity reduction?

Unexpected flow patterns justify the capacity reduction during the validation phase. During the validation process TSOs check for overloads that are typically not detected during the capacity calculation. This typically happens during planned and unplanned outages.

A proper report on the reduction motivation is foreseen by CACM. NRAs expect that such a report should be delivered by the TSOs.

16. What justifies the 24 months delay in the methodology's implementation?<sup>2</sup>

The planning of implementation of sub processes has been detailed in the methodology.

17. Could some parts of the methodology be implemented before?<sup>3</sup>

Yes. The planning of implementation has been added in the methodology.

## B. Questions concerning ID calculation

1. Are mixed strategies allowed for ID capacity calculation?

Yes, some explanations have been added in the Explanatory Note and in the Methodology.

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<sup>2</sup> This question only concerns D-2 methodology.

<sup>3</sup> This question only concerns D-2 methodology.

2. Could you explain the relation between the intraday gate opening time for continuous trading, potential complementary regional intraday auctions and the capacity calculation process?

In case the capacity calculation process is not completed 15 minutes before the intraday cross-zonal gate opening time as defined in accordance with Article 59 of CACM Regulation, then Italy North TSOs shall provide an ATC between zero cross-zonal capacity and the left-over capacity from the previous auction to the continuous trading mechanism, until the intraday capacity calculation process is performed. During the continuous trading process the schedules are updated continuously. These updated schedules are the input for the capacity calculation processes that provide updated capacities for the following auctions/ the following continuous trading process.

## II. Questions and answers from the consultation via ENTSO-E website

From 23/02/2018 to 23/03/2018 Italy North TSOs held a consultation on their capacity calculation methodology.

During this consultation period, the opportunity was given to stakeholders to give their opinion on the methodology and to ask for details or improvements.

Please find below the responses from stakeholders anonymized and organized by topics. For each topic, the response received is presented in a box, followed by the answers from Italy North TSOs.

### A. Transparency

We recommend the inclusion of an article on transparency. At least four levels of transparency should be foreseen:

- full transparency on the methodology and creation of a stakeholder forum to discuss implementation conditions and provide feedback to questions by stakeholders
- every release of the algorithm applied by the RSC for capacity calculation should be developed in an open source environment.
- all parameters of the capacity calculation should be transparently set and published.
- the outputs of capacity calculation, in terms of remaining available margin for every CNE, and translation (if any) into NTCs should be published immediately after each capacity calculation.

The TSOs will organize a meeting with Stakeholders (Market Parties and NRAs) in order to present them the current process and the evolutions to be done. Some inputs regarding the D2CC process are published on JAO website (<http://www.jao.eu/marketdata/datamarketdisclosure>). TSOs of Italy North intend to provide more data in the future.

The level of commitment towards “qualitative” transparency (e.g. alerting the market of seasonal FMAX changes, the Standardized Procedure for Assessing the Impact of Changes – SPAIC) should be formalized in the binding documents.

The TSOs are already committed to transparency as required by network codes (e.g. CACM). The inclusion of article on transparency will not have an impact on TSOs’ obligations.

[ACTOR] states that “many provisions of the proposal leave the possibility for the participating TSOs to adapt some key aspects of the methodology during the implementation phase. TSOs should therefore ensure an appropriate stakeholders’ involvement in the implementation phase, which could take the form of an “Italy North Consultative Group” similarly to what already exists for other CCRs (such as CORE region for example).”

The TSOs will organize a meeting with Stakeholders (Market Parties and NRAs) in order to present them the current process and the evolutions to be done.

[ACTOR] states that “the current level of transparency (mentioned above) is not sufficient for us to understand the fundamentals of the computation that steer the results. Because of that, we can’t forecast the results further than two day-ahead. In particular, the current level of transparency does not meet the transparency standard in the CWE region where a similar capacity calculation process is operated daily.”

Some inputs regarding the D2CC process are published on JAO website (<http://www.jao.eu/marketdata/datamarketdisclosure>). TSOs of Italy North intend to provide more data in the future.

[ACTOR] states “Article 6 worries us. Though the TSOs of the CCR propose too “only monitor” the operational security limits and contingencies on network elements significantly influenced by cross-zonal power exchanges in article 6.1, article 6.3 foresees a possibility to define rules for “sharing the power flow capabilities of network elements among different capacity calculation regions in order to accommodate these flows”. The wording of article 6.3 is very imprecise and leaves too much room for the TSOs of the CCR to implement an alternative capacity calculation methodology not defined in the current document, and possibly non-compliant with the principles of the CACM Guideline and of the 3rd energy package.”

Despite the possibility of defining rules for sharing the power flow capabilities, Italy North TSOs are bound by network codes and any rule will be subject to the NRAs approval.

Publication of Critical Network Element input data (necessary for the transparency to reach at least the CWE transparency standard):

- o Unique Identifier of the CNECO
- o Unique identifier of the CNE
- o Unique identifier of the CO
- o Geographical description of the location of the CNEs
- o Geographical description of the location of the COs
- o Monitored I<sub>max</sub> in Ampere (or F<sub>max</sub> in MW)

Some inputs regarding the D2CC process are published on JAO website (<http://www.jao.eu/marketdata/datamarketdisclosure>). TSOs of Italy North intend to provide more data in the future.

Publication of Allocation Constraint input parameter.

TSOs of Italy North intend to provide more data in the future.

Publication of Ref Prog:

- o Initial balance before shifting the CGM: Used commercial flow per modelled border
- o Final balance at the end of the computation: Final commercial flow per modelled border

Initial balance before shifting the CGM is currently published on JAO website. The final balance at the end of computation cannot be published because final balance can be impacted by the validation process. As a result, since load flow is not performed after the validation process, actual balances and border flows cannot be obtained.

Publication of output data:

Physical Flow on each CNECO:

- ✓ Initial Physical Flow on each CNECO in the CGM
- ✓ Final Physical Flow on each CNECO in the CGM after shifting to Italian maximum import and after applying remedial actions

TSOs of Italy North intend to provide more data in the future. The final physical flows on CNECOs at the end of computation cannot be published because the validation process could affect the final Flow. Furthermore, there is no load flow calculation performed after the validation process, the Physical flows cannot be obtained.

Publication of static Grid Model: Description of the structural physical parameters of the network that is modelled by the NIB TSOs: Line and transformer impedances / capacity

TSOs of IN do not plan to publish more data regarding the line and transformer impedances/ capacity.

Additional transparency requirements that are specific to NIB methodology:

- Publication the splitting factors used for splitting NTC NIB into border NTC (described in “3.5 Methodology of bilateral splitting among borders”)
- Publication of capacity reduction request issued by TSO (described in “3.4 Methodology for the validation of cross-zonal capacity):
  - o Amount of reduction
  - o Concerned border
  - o Reason
- Publication of Remedial Action output found during the capacity calculation process (described in “3.1.4 Remedial Actions”)

The TSOs of Italy North (IN) will publish the splitting factors in the future. The TSOs of Italy North Region will provide a specific report in accordance with Article 26.5 of the CACM Regulation to Italy North NRAs every 3 months indicating reasons of the reduction occurred during validation phase. TSOs of IN do not plan to publish any further data regarding remedial action output.

Every release of the algorithm applied by the RSC for capacity calculation should be developed in an open source environment and downloadable by stakeholders.

The Guidelines do not request this kind of publication, so IN TSO do not plan to publish this information.

The outputs of capacity calculation, in terms of remaining available margin for each CNE, and translation into NTCs should be published immediately after each capacity calculation.

The NTCs are published per border, IN TSOs do not plan to publish any additional data.

Outages of all significant CNE should be published in a timely and usable manner on ENTSO-E Transparency platform, and that failure to do so shall be considered as a breach to transparency obligations (this obligation shall be included in the binding documents).

Italy North TSOs respect REMIT transparency regulation and do not plan to go further in the IN Capacity Calculation Project.

The following parameters should be published in day-ahead:

- List of CNE with their explicit names,
- Fmax, Fref and TRM (once it is not a standard value any longer) of each CNE,
- A PTDF-like indicator (which could be a simple by-product of the dichotomy),
- Aggregate inputs of the CGM, by bidding zone: Load, Generation (broken down at least by RES/conventional), Net positions (broken down by border and including non-IN borders),
- GSLK per node,
- List of Remedial Actions and their impact of each on the capacity of each CNEC,
- An indicator relating to voltage and phase angle issues.

TSOs of IN do not plan to publish any further data regarding the CNE

The PTDF-like indicator, Fmax and Fref are not related to an NTC based CC, so we cannot provide these values.

TSO's are not obligated to publish following data:

- Aggregate inputs of the CGM, by bidding zone
- GSLK per node
- Impact of the remedial actions on the CNE
- The voltage and phase angle are not checked during the IN CC

The following should also be published as needed, but with a reasonable notice period (unless in case of incidents):

- A notification when new CNE are introduced/withdrawn,
- An impact assessment in case of new grid elements or major changes in generation.

NRAs will in future receive limiting CNECs with all relevant information from the IN TSOs. Publishing new grid elements or major changes in the generation are not under IN Capacity Calculation project responsibility.

The methodologies provide no transparent justification for the selection of internal lines as critical network elements or for the application of external constraints. This will prevent real regional welfare optimization: by leaving so much room to local and uncoordinated definition of the elements, there is a risk that the implementation of these methodologies will generate distortions and/or welfare de-optimization.

Point 1.7 of Annex I to Regulation (EC) No 714/2009", requires not to prefer cross zonal exchanges before internal exchanges. The proposed CNE selection criteria fulfill this requirement.

[ACTOR] is surprised to see that CCMs are missing for some CCRs. Though article 20 CACM foresees deadline extensions for the submission of CCMs in certain regions, the CCRs Italy North, Greece-Italy, Ireland-UK, Baltic and South East Europe are missing. Not all these CCRs benefit from an exemption clause in the CACM Regulation. TSOs must justify why they did not submit a methodology and informing market participants on the expected timeline for the submission.

The TSOs of Italy north are in line with the schedule given by the IN NRAs for submitting the Methodology.

TSOs should maintain online a documentation describing the applied capacity calculation methodology, including full details on how all parameters of the capacity calculation methodology are set. Documents subject to consultation for most of the regions (e.g. SWE, Hansa, CORE, Channel...) are incomplete in this regard.

IN TSOs consider the Explanatory Note as the document answering this need of transparency. It will remain public and will be updated if significant changes are implemented.

As soon as the capacity is validated for a bidding zone border, the total CNTC/Flow-Based domain should be disclosed so that market participants can take updated values into account. The CACM Regulation indeed foresees that “information on available capacity should be updated in a timely manner based on latest information”.

IN TSOs agree to publish the values as soon as they are validated. Besides, they will still be able to update these values until Market coupling firmness deadline for D-1 (or equivalent for other timeframes).

TSOs shall provide information on:

- a) The Common Grid Model used for capacity calculation (including expected flows on all CNEs),
- b) The full list of non-anonymous Critical Network Elements (or elements likely to limit cross-zonal capacities in case of CNTC) to be considered in capacity calculation.
- c) Operational Security Limits and Reliability Margins on all CNEs
- d) PTDF or extent to which cross-zonal flows affect the CNE for CNTC.
- e) The methodologies and the results of the “likely market directions” that are used in the capacity calculation. Transparency on the methodology should be included in the CCM. The daily information of these likely directions should be published as soon as available.
- f) Full transparency on the GSK methodologies. We are opposed to vague elements such as “custom” GSK. A fully transparent and prescriptive methodology should be adopted. In addition, operational transparency on GSKs, i.e. the value per node and per hour.
- g) “Basic” elements such as the definition of “peak” and “off-peak”. By observing GSK patterns (where already in place), we have the impression that the definition of “peak” does not correspond to the market definition (i.e. H9-H20 weekdays).
- h) Vertical Load should be broken down into final load and RES/distributed generation (similar breakdown as foreseen in the ENTSO-E Transparency Platform)
- i) The binding documents shall also mention that outages of all significant CNE should be published in a timely and usable manner on ENTSO-E Transparency platform, and that failure to do so shall be considered as a breach to transparency obligations.

TSOs of Italy North intend to provide more data in the future. Regarding the specific points raised:

1. To a) According to CGM methodology, CGMs will not be published.

2. To b) NRAs will receive limiting CNECs with all relevant information.
3. To c) Operational security limits are already published when required by national regulation, no extra publication from IN Capacity Calculation Project is planned. For the TRM, the formula is available in the methodology, please refer to it. The TRM is applied on the Total Transferee Capacity (for the whole IN Border), not RM per grid element.
4. To d) The PTDF-like indicator is not relevant for this capacity calculation methodology since preventive RAs can be different between the last secure and the first insecure level of exchange.
5. To e) In the IN CC methodology, it is explained that the full import of Italy is the most likely market direction.
6. To f) IN TSOs assume that the updated proposed methodology is clear enough.
7. To g) The GSK is delivered for 24 timestamps. With this the Peak/off-peak scenarios are not necessary.
8. To h) It is not the responsibility of the IN Capacity Calculation Project.
9. To i) SWE IN TSOs respect REMIT transparency regulation and do not plan to go further in the IN Capacity Calculation Project.

Article 7 does not provide a harmonised methodology for GSKs. Should TSOs think that local specificities prevent harmonisation of principles and methodologies, these specificities should be clearly explained. Article 7.7 foresees the possibility for TSOs to change the type of GSK, without justification to and approval of the regulator, and without transparency to the market. This is a unique – and not acceptable – provision compared to other CCMs.

The GSK methodology is used by each TSO to reflect the realistic market behavior and the generation mix of the respective country. Any change of the type of GSK will be done in coordination with the NRAs

## B. Granularity

[ACTOR] recommends the removal of the upper limit of the Total Transfer Capacity (UTTC) introduced in the “Methodology for TTC selection” of the Explanatory Note (point 3.3). TSOs indicate that a “limiting band” is considered necessary “until the real operation proves that forecast evaluations of the D-2 process are sustainable”. This TTC selection methodology not foreseen in CACM Regulation is questionable. Furthermore, if the purpose of this limiting band is to address the risk of deviations between forecasts in capacity calculation and effective power flows in real time, it seems that such risk should already be captured by the reliability margin methodology.

IN TSOs will remove the UTTC as soon as the IDCC V2 will be in service. In the meanwhile, the IN TSOs intend to increase the band according to the methodology proposed and described in the Explanatory Note.

We strongly contest the rationale of calculating a TTC instead of NTCs for each border. Sharing a TTC between Northern borders may unduly limit commercial flows through North Italy, e.g. from Slovenia to France. If North Italy chooses to apply a NTC capacity calculation – as a matter of fact, we have seen no justification so far for applying NTC instead of Flow-Based in this CCR-, this means that bilateral cross-zonal exchanges will be calculated independently from other bilateral exchanges. The limitations applying to each border should be regarded independently. We regard a TTC computation as a different approach for capacity calculation and consider therefore that deriving NTCs from a computed TTC would not be compliant with the CACM guideline.

Coordinated NTC calculation by assessment of TTC of northern Italian borders taken as a whole is due to specific security situation of this region. The tripping of an element or changes in the bidding zone of one TSO has a very strong impact on other TSOs in the capacity calculation region. Therefore, it is not

possible to perform coordinated capacity calculation for each bidding zone border separately, at least not efficiently. In alignment with CACM Guideline Article 20.3, the TSOs of Italy North region may extend the deadline using flow-based approach for the respective region until Switzerland joins the single day-ahead coupling. Therefore, the NTC approached is currently the targeted solution. Nonetheless, the TSOs of Italy North region will start the study to develop the flow-based approach without waiting for this deadline.

We consider unacceptable that the proposed methodology (and explanatory document) does not provide any detail as of how the TTC (or NTCs) will be calculated based on the selected CNEs, TRMs, and GSKs. Otherwise, TTCs or NTCs could be set arbitrarily, which would be a massive step back with respect to the requirements of the CACM Regulation. We call therefore for a detailed methodology, including full details on the capacity calculation algorithm that will determine NTCs in the end.

Further Explanations were added in the CC methodology Document and the Explanatory Note. The IN TSOs take into account all the CNEs, TRMs and GSKs for the TTC Calculation according to requirements of the CACM guidelines.

CACM GL Art 14.2 mandates that individual values should be calculated for each day-ahead market time unit (i.e. at least hourly values as of today) and for each remaining intraday market time units.

See answer below.

The proposal in article 12.4 to maintain the current eight-time stamps for 24 months and move to twelve timestamps after this is not acceptable. The CACM Regulation requires TSOs to calculate capacity for each market time unit. Hence, moving to 24 timestamps from the entry into force of the CCM is a pre-requisite to ensure compliance with the Regulation. It is also necessary to ensure the maximization of welfare in all hours of the day. We note that this was the objective of the TSOs of the North Italy CCR in their “capacity calculation approach” back in 2015, and this objective should now be translated into action.

A study conducted by the IN TSOs showed that the calculation of 12 timestamps is sufficient for the CC in this region to ensure the maximization of welfare. Further incensement of timestamps will not provide any significant benefits however, cost slot of resources. For the 12 timestamps which will not be calculated by the CCC an extrapolation is performed taking into account the capacity calculated between two compounded time stamps.

### C. Coordination of capacity calculation process on the different borders

[ACTOR] contests the rationale of calculating a Total Transfer Capacity (TTC) for all northern Italian borders taken as a whole, instead of calculating it for each bidding zone border separately. Sharing a TTC between all Italian northern borders may limit unduly commercial exchanges through Italy North Region (e.g. from Slovenia to France). Furthermore, it is a capacity calculation approach which is not compliant with the following relevant CACM provisions:

- Article 29(8)(a) provides that each capacity calculator applying the coordinated NTC approach shall: “use the common grid model, generation shift keys and contingencies to calculate maximum power exchange on bidding zone borders, which shall equal the maximum calculated exchange between two bidding zones on either side of the bidding zone border respecting operational security limits”;
- In addition, Article 21(1)b(vi) provides that for the coordinated NTC approach, the capacity calculation shall include : “the rules for calculating cross-zonal capacity, including the rules for

efficiently sharing the power flow capabilities of critical network elements among different bidding zone borders”.

The same questionable approach is also applied for calculating the Transmission Reliability Margin (TRM): “one TRM value is calculated for all the IN borders together” (see point 3.1.1.1 Explanatory Note). Similarly, the Cross-Zonal Capacity (CZC) Validation Methodology (as explained in the Explanatory Note) provides that each TSO has the opportunity to validate this TTC calculated for all IN borders and to further reduce the CZC. This approach is not compliant with Articles 22 and 26 of CACM Regulation which provide that the Reliability Margin Methodology and the CZC Validation Methodology should be applied for each bidding zone border separately.

[ACTOR] considers that such approach will result in an inefficient limitation of cross-zonal capacity and cross-border exchanges. TSOs should thus make further efforts to move towards a compliant capacity calculation methodology in the coming months, while also involving stakeholders more closely.

Coordinated NTC calculation by assessment of TTC of northern Italian borders taken as a whole is due to specific security situation of this region. The tripping of an element or changes in the bidding zone of one TSO has a very strong impact on other TSOs in the capacity calculation region. Therefore, it is not possible to perform coordinated capacity calculation for each bidding zone border separately, at least not efficiently. The same answer applies also to TRM calculation.

In our understanding, as soon as NTC are calculated for each border between bidding zones, a CNE selection process should be managed for each border. This means that a network element should not be considered critical with respect to exchanges between Bidding Zone A and Bidding Zone B if limiting the commercial exchange between these two zones is not the most efficient way to address a potential congestion over this network element. This principle should be clearly established in Art. 6.2. Only if a critical network element applies to capacity calculation for several borders should coordination between capacity calculations should be considered.

CNE selection process will be performed before TTC calculation and will be based on sensitivity of CNE on Italian import. If bidding zone member to Italy exchange will not have significant effect on the CNE, the CNE won't be included in the CCC.

[ACTOR] states that “TSOs provide no detail on how TSOs will assess and report interdependencies between Channel, CORE, and Hansa regions...”

*CACM GL Art 21.2 foresees that, the capacity calculation methodology shall state the frequency at which capacity will be reassessed in the intraday time frame.*

*For ex. TSOs provide no frequency in the CCM of the CCR Hansa, CCR Nordic and CCR Core.*

*Those principles should be included in the target model. Transitory solutions that are not implementing those principles, if any, should duly explain the rationale behind those choices and provide stakeholders with a roadmap to the target model. 1.3. Transparency.”*

In a first step, the individual values for cross-zonal capacity will be calculated only once and only for the intraday market time units covered by XBID2 auction (16h-24h). As soon as the Intraday Coupling Model proposal will be implemented for Italian Borders, the ID CCC methodology Proposal will be used to calculate the individual values for cross-zonal capacity offered to the complementary regional intraday auctions.

#### D. TRM

As mentioned in CACM Art.22.1, the reliability margin shall be calculated on the basis of the probability distribution of deviations between the expected power flows at the time of the capacity calculation and the realized power flows. In addition, Art. 21.4 requests that the reliability margin computation should take due consideration of the share of the deviation that results from remedial actions taken by the TSOs, such as for example topological changes, HVDC or PST settings, countertrading or redispatching actions.

We call for clarity in all capacity calculation methodologies on whether “controlled” deviations are considered or not in the setting of transmission reliability margins. Also, deviations related to a change in net positions of the bidding zones with respect to the forecasted CGM should be neutralized. When outage rates are considered for the unavailability of some transmission assets, we recommend that it should include only outages that occur after the Long Term Firmness

Deadline (i.e. 11h DA).

Furthermore, to reinforce stakeholder confidence and help market participants better anticipate the Flow-Based domains/CNTC settings, TSOs shall report systematically on the historical record of deviations for any network element likely to limit cross-zonal trades. We believe that historically realized and forecasted flows on CNE should be part of the list of indicators followed by NRAs. This would allow a proper “feedback loop” in the process.

The TSOs of Italy North region adapted the methodology of the TRM in order to make it more transparent, based on the convolution of the probability distribution functions of the two variables TRM1 and TRM2 (TRM1 for the uncertainties of the forecast and TRM2 for the unintended deviation).

Regarding deviations on network elements, TSOs of Italy North region will report to NRAs all the information required by CACM guideline.

The capacity calculation proposal mentions that the TTC is reduced by the TRM and then split between the borders according to a “splitting factor”. TSOs should be more transparent on this factor and should provide more explanations on how it is determined, in particular according to the CNEs, RAMs, and GSKs.

For sake of equity, the TSOs of Italy North use the same “splitting factors” for the TRM and the GSK application and the NTC calculation for each timeframe unit.

The explanatory note foresees that the reliability margin should be set at 500 MW until the present methodology is implemented. TSOs must provide more technical justifications on the reasons to keep 500 MW as reliability margin.

As soon as the methodology will be approved by the NRAs of Italy North region, the TSOs will start the implementation of the TRM methodology described in the Explanatory Note. As written in the methodology, the TRM methodology described in the Explanatory Note shall be effective no later than 24 months after the approval of NRAs. Until that, the TRM value will be equal to 500 MW.

The explanatory note suggests also that this reliability margin would be applied ex-post to the overall TTC. Reliability margins should apply to the TTC of each bidding zone border taken separately and not to the overall TTC. In this regard, [Actor] would even recommend to apply the TRM to each Critical Network Element taken into account in capacity calculation.

The CACM guideline Article 22.5 mandates that TSO shall determine the reliability margin for critical network elements, where the flow-based approach is applied, and for cross-zonal capacity, where the coordinated net transmission capacity approach is applied. Since TSOs of Italy North region apply the

coordinated net transmission capacity approach, the reliability margin is determined for cross-zonal capacity and not for each critical network elements.

The proposal provides that the TRM will be reviewed once a year and the value of the K factor could be reassessed by the TSOs during the implementation phase. This leaves too much room for TSOs' decision without much transparency or regulatory oversight. Stakeholders must be dully involved and that TSOs will provide further justification and information at this stage.

The TSOs of Italy North region adapted the methodology of the TRM in order to make it more transparent, based on the convolution of the probability distribution functions of the two variables TRM1 and TRM2 (TRM1 for the uncertainties of the forecast and TRM2 for the unintended deviation).

Article 5.3 foresees that the RAM will be defined according to the probabilistic occurrence of unintended load frequency deviations and scenario uncertainties in TTC computations.

- We disagree with including load frequency deviations or (more generally uncertainty on the net position of a bidding zone) in the setting of reliability margins.

Such uncertainty can be modelled through GSKs. The only relevant deviations to be considered should be related with deviations from reference situation or GSK.

- A K factor is used to set the acceptable probabilistic occurrence at a level that would prevent actual flows being higher than forecasted ones. The TSOs decided to set this K factor at 3 without justification, either in the methodology or the explanatory document. A capacity calculation methodology cannot be based on the rule of thumb and every element of it should be duly justified.

- The explanatory document foresees, without any justification, that the reliability margin should be set at 500 MW. The associated text suggests that this reliability margin would be applied ex-post to the overall TTC. If this is really the intention of North Italy TSOs, we oppose this approach, as the CACM Guideline mandates that reliability margins should apply to the RAM of each Critical Network Element.

For the first point, the CACM guideline Article 22.2, the methodology of the TRM shall in particular take into account unintended deviations of physical electricity flows within a market time unit caused by the adjustment of electricity flows within and between control areas, to maintain a constant frequency.

For the second point, the TSOs of Italy North region adapted the methodology of the TRM in order to make it more transparent, based on the convolution of the probability distribution functions of the two variables TRM1 and TRM2 (TRM1 for the uncertainties of the forecast and TRM2 for the unintended deviation).

For the third point, the CACM guideline Article 22.5 mandates that TSO shall determine the reliability margin for critical network elements, where the flow-based approach is applied, and for cross-zonal capacity, where the coordinated net transmission capacity approach is applied. Since TSOs of Italy North region apply the coordinated net transmission capacity approach, the reliability margin is determined for cross-zonal capacity and not for each critical network elements.

## E. Allocation constraints

[ACTOR] regrets that TSOs of the IN Region intend to consider specific allocation constraints (voltage profiles or network stability issues) in capacity calculation. TSOs should make the demonstration that those phenomena are significantly influenced by cross-border exchanges between

the bidding zone of the IN region. Indeed, most frequently, costly remedial actions at local level can address the issue in a much more efficient way than restricting cross-border exchanges.

Allocation constraints are necessary during low demand/high renewable infeed periods of the Italian Power System since the activation of a minimum amount of internal dispatchable power plants able to provide system services shall be ensured in order to avoid:

- Voltages above the operational security limits;
- Low system inertia;
- Dynamic instability.

While we acknowledge that in some circumstances, the use of external constraints might be needed, there should be no double counting: only elements that are not included in the RAM can be set as external constraints. There should also be full transparency and justification for the application of external constraints based on an economic efficiency criterion. We also noticed some inconsistencies between “allocation” and “external constraints”. For instance, Polish balancing issues can be set as an “external constraint” in Core but as an “allocation constraint” in Hansa.

There is no double counting of external constraints considering that, as stated in the previous answer, they are not related to the maximum permissible flow on network elements, which instead is the only limitation considered during the capacity calculation process. Where needed, allocation constraints are set only to ensure the security of the Italian Power System, thus they cannot be based on an economic criterion. External constraints and allocation constraints are basically synonyms (the first is usually used when FB methodology is applied while the second is used for the NTC methodology).

## F. Critical network element (CNE)

The process for the periodical update of the list of CNEs and contingencies should be clarified. Article 6.4 foresees that the list of CNEs shall be reviewed at least once a year. We recommend clarifying the text in order to make sure that the impact of CNEs is reviewed for every market time unit to avoid any undue limitation of cross-zonal exchanges, while the static list of CNEs could indeed be reviewed at least once a year.

As stated in Article 6.5, the CNEs list is updated at least once a year and is used by the coordinated capacity calculator in order to determine the maximum net transmission capacity for each bidding-zone border. Then the impact of each CNE is evaluated for every market time unit according to the operational conditions of the network. This approach is reflected in the methodology proposal.

Apart from cross-border transmission assets, CNEs should be selected with respect to efficiency, i.e. only when it is more efficient to limit cross-border trade instead of using (costly) remedial actions. If TSOs intend to use a sensitivity criteria for the selection of CNEs (sensitivity to an increase of cross-border exchanges in terms of additional transit), they should demonstrate that the selected threshold discriminates efficiently cross-border-relevant constraints.

The threshold has now been established based on TSOs' experience as a trade-off between the need of ensuring the operational security of the power system and the goal of maximizing the overall social welfare. Moreover, presently there is no agreed methodology for Countertrading and Redispatching inside the region as well as cost-sharing methodology CACM compliant. So, IN TSOs decided to not use extensively costly remedial actions during the capacity calculation.

TSOs do not define “critical network elements” as solely interconnectors. We conclude that their monitoring list would also include internal network elements. The possibility to select internal lines or transformers (not tie-lines) as critical network element is questionable as this basically means that a possible congestion on such internal line will be managed by limiting cross-zonal trade. It seems discriminating cross-zonal trade towards trade within a zone. It also means that internal (national) measures within the bidding zone (like redispatch) are not taken into consideration to manage such congestion. Such practice is in conflict Article 16(3) of Regulation No 714/2009 and Article 1.7 of the Guidelines on the management and allocation of available transfer capacity of interconnections between national systems (Annex I of Regulation No 714/2009): “... TSOs shall not limit interconnection capacity in order to solve congestion inside their own control area, ...”. This article also allows for deviation from that general rule, in some cases, however then this shall be justified. The full text of this article 1.7 is:

When defining appropriate network areas in and between which congestion management is to apply, TSOs shall be guided by the principles of cost-effectiveness and minimisation of negative impacts on the internal market in electricity. Specifically, TSOs shall not limit interconnection capacity in order to solve congestion inside their own control area, save for the abovementioned reasons and reasons of operational security. If such a situation occurs, this shall be described and transparently presented by the TSOs to all the system users. Such a situation shall be tolerated only until a long-term solution is found. The methodology and projects for achieving the long-term solution shall be described and transparently presented by the TSOs to all the system users.

ACER has underlined and clarified these regulations in its Recommendation of 11 November 2016. For example it is written: “As a general principle, limitations on internal network elements’ should not be considered in the cross-zonal capacity calculation methods”.

Sensitivity analyses highlighted how also some internal grid elements, especially if located near to the border, are significantly impacted by cross-zonal exchanges so that their possible overload cannot be managed only by means of internal measures. As a consequence, in order to ensure the operational security of the power system, these elements shall be taken into account during the capacity calculation process as well as tie-lines.

The 5% threshold chosen for the present proposal (article 6(2)) is the same as CWE region, but the participating TSOs do not provide any justification. The 5% criterion, though currently apparently applied in the CWE flow-based capacity calculation, has never been approved. On the contrary, it was identified as one of the open issues that still need to be resolved. In their Position Paper on CWE Flow-Based Market Coupling of March 2015, the CWE NRAs write the following (in paragraph 9.12 CBCO selection).

At present, the sensitivity threshold of 5% has been proposed based on IN TSOs’ experience. However, as stated in Article 6.2, the percentage to be used can be reassessed during the implementation of the D-2 CCC Methodology if further analyses suggest its variation.

### **G. Cross-border relevant constraints**

The way cross-zonal relevant constraints are foreseen in the CCM proposals is very problematic. We believe that a global paradigm shift is necessary, in order to comply with Article 16(3) of Regulation No 714/2009 (“TSOs shall not limit interconnection capacity in order to solve congestion inside their own control area”) and with the ACER Recommendation 02/2016 of 11th November 2016.

The starting point of CCMs should be that no internal constraint is considered. The regulatory framework (as well as the ACER Recommendation) however foresees that derogation to this principle is possible where economically justified, as explained in article 1.7 of Regulation No 714/2009:

When defining appropriate network areas in and between which congestion management is to apply, TSOs shall be guided by the principles of cost-effectiveness and minimisation of negative impacts on the internal market in electricity. Specifically, TSOs shall not limit interconnection capacity in order to solve congestion inside their own control area, save for the abovementioned reasons and reasons of operational security. If such a situation occurs, this shall be described and transparently presented by the TSOs to all the system users. Such a situation shall be tolerated only until a long-term solution is found. The methodology and projects for achieving the long-term solution shall be described and transparently presented by the TSOs to all the system users.

In the proposed CCM, this approach is not respected:

The proposed approach to define a fixed PTDF threshold under which CNEs should be disregarded from the FB domain computation does not provide any consideration for the economic efficiency of the restrictions. No justification is provided.

Moreover, this approach would probably lead to significant propagation of constraints. Once an element is “labelled” as influent, it will remain there, limiting any exchanges in the CCR. We believe that a more dynamic approach should be put in place, where CNE are only limiting relevant flows and only where economically efficient.

Also, where TSOs intend to consider voltage or network stability issues in capacity calculation, the involved TSOs should make the demonstration that these phenomena are significantly influenced by cross-zonal exchanges and that the proposed restriction is economically efficient. Indeed, most frequently, costly remedial actions can address the issue in a much more efficient way than restricting cross-zonal exchanges.

Regarding "rules for avoiding undue discrimination between internal and cross zonal exchanges to ensure compliance with point 1.7 of Annex I to Regulation (EC) No 714/2009", this means that we should not neither prefer cross zonal exchanges before internal exchanges. The proposed selection criteria fulfill this requirement.

The CACM Regulation (Article 21.1.i.b) requires that that the description of the capacity calculation approach shall include rules to avoid undue discrimination between internal and cross-zonal exchanges to ensure compliance with point 1.7 of Annex I to Regulation (EC) No 714/2009. Such rules are missing, or at least there is no explanation how the proposed methodologies would avoid such undue discrimination. TSOs seem to argue that by selecting both interconnectors as well as internal network elements as critical network elements and by applying “Advanced Hybrid Coupling”, undue discrimination would be avoided. However, there is no proof that this avoids undue discrimination. On the contrary, internal trade within a bidding zone remains possible without limitations, whereas trade is not only restricted because of congestions at the interconnector but also for the purpose of managing internal congestions. Moreover, the concept of “advanced hybrid coupling” is not clearly described. We consider that undue discrimination may only be avoided if there is a clear justification - based on an economic efficiency assessment - for the selection of internal network elements as critical network element.

Regarding "rules for avoiding undue discrimination between internal and cross zonal exchanges to ensure compliance with point 1.7 of Annex I to Regulation (EC) No 714/2009", this means that we should neither prefer cross zonal exchanges before internal exchanges. The proposed selection criteria fulfill this requirement.

Article 6.6 allows the Italian TSO Terna to further limit cross-zonal trade by imposing external constraints (maximum import and export constraints of bidding zones) to maintain the transmission system within operational security limits. However, there is no methodology described. This objective cannot be an acceptable criterion. Such issues, if duly justified, can be addressed more efficiently with remedial actions, which would avoid constraining unnecessarily cross-zonal exchanges. We

recommend that the TSOs of Italy North region not apply allocation constraints in the capacity calculation within the CCR. This clear statement was made in the CCMs of other CCRs (SWE, SEE).

The TSOs included more details on external constraints in the Explanatory Note. The operational constraints related to grid stability or voltage profiles cannot be transferred to the CC model because they can't be transformed into power flows on critical network elements. Therefore, additional constraint is needed to ensure grid stability and security.

## H. Remedial actions

We believe that costly remedial actions should be systematically considered in the capacity calculation, to the same extent that they are considered in coordinated security assessment. Where economically efficient, costly remedial actions should be taken in order to allocate the maximum of cross-zonal capacity to the market, such as proposed in article 11(2) of the IU CCM. The use of HVDC setting should also be included in the list of remedial actions.

Congestion “rents” and redispatch “costs” are both financial redistributions elements that should be considered on an equal footing in order to optimize regional welfare.

Until there is no agreed methodology for Countertrading and redispatching inside the region as well as cost-sharing methodology CACM compliant, IN TSOs decided to not use extensively costly remedial actions inside the capacity calculation. For the time being, some costly remedial actions, as starting or shutting down units, are used by some TSOs in a curative way.

Moreover, there is no relevant HVDC for the time being inside the region. Once, HVDC will be commissioned, these ones will be used to optimize as well the capacity.

The methodology only stipulates that the calculation can take (preventive or curative) remedial action into account. It is unclear why the methodology does not explicitly mention redispatching and countertrading. Costly remedial actions should be systematically considered in the capacity calculation, to the same extent that they are considered in coordinated security assessment, in order to maximize the cross-zonal capacity made available to the market.

Until there is no agreed methodology for Countertrading and redispatching inside the region as well as cost-sharing methodology CACM compliant, IN TSOs decided to not use extensively costly remedial actions inside the capacity calculation. For the time being, some costly remedial actions, as starting or shutting down units, are used by some TSOs in a curative way.

Reduction of cross-zonal capacity should only be considered when economically efficient remedial actions from an overall welfare perspective (including costly RAs) have been exhausted. We recommend adopting the wording used in the CCM for the SWE region to amend article 8: “[the TSOs] 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 [concerned] border”.

Each IN TSO provides all its remedial actions available to the CCC in order to optimize the capacity given to the market.

## I. Limits

The capacity calculation methodology should provide explanation and transparency on how the power factor is computed and impacts critical network elements.

The starting case/general rule should be that it is set at a sufficiently high value that could only be reduced in case this would create security problem, with appropriate justification. It should be backed

by a statistical calculation and measurement of actual power factors on relevant network elements. There should be no double counting. The power factor should also be monitored by NRAs.

The power factor is not relevant in our case, as the computation is performed in AC, taken into account active and reactive power flowing over grid elements. The limits for the lines are directly expressed in Amps and for transformers in MVA. Power factors remains an issue in a Flow-Based methodology due to the linearization of the network, when the limits are expressed in MW.

Article 9 covers the validation methodology. This article describes what TSOs may do. It does neither prescribe what they shall do, nor what they may not do.

Validation should be done to correct mistakes. However, it seems that validation as described in this article will result in additional reductions of the capacities.

Article 26 of the CACM Regulation requires a validation process, however in accordance with Articles 27 to 31 of the CACM Regulation; this is not ensured by Article 9 of the CCM.

Once the Coordinated Capacity Calculator has calculated the TTC, it provides the concerned TSOs with these values. Each TSO then has the opportunity to validate the TTC value calculated centrally or can reduce the value in case the centralized calculation could not see a particular constraint.

Those constraints could be, but not limited to, dynamic behavior of the grid, unplanned outage that occurs after the deadline to update the inputs.

The TSO requesting a capacity reduction is required to provide a reason for this reduction, its location (all borders on only one border) and the amount of MW to be reduced in accordance with article 26.5 of CACM regulation. Furthermore, a report of all reductions has to be submitted to the NRAs on a regular basis.

## J. Inclusion of exports

Export must be included: lack of symmetry in the approach to import and export capacities, without any detailed and justified rationale<sup>4</sup>.

[ACTOR] states: “lacks transparency when treating export capacity. In fact, it is clearly affirmed in the proposal (Article 10) that “The TSOs of the Italy North Region do not see the need to perform daily capacity calculation in export direction because the full export is still expected to be the unlikely market direction. Nevertheless, the export capacity for each border is reassessed every year, and this value is used for the daily allocation”.

Furthermore, we would like to stress the fact that annual NTC export values are systematically below the annual NTC import ones, as can be observed from the data made available by the Italian TSO (<https://www.terna.it/en-gb/sistemaelettrico/importexport.aspx>; NTC 2018 published the 14/12/2017, NTC 2017 published the 22/12/2016). There is a clear lack of symmetry in the approach to import and export capacities, without any detailed and justified rationale.

We ask the involved TSOs to revise with a transparent approach the methodology for the calculation of export capacity, in order to obtain more consistent and symmetric values of export and import values. The CACM Regulation, as already recalled above, should promote effective XB competition in the generation, trading and supply of electricity and transmission capacity availability is a pre-condition for this to happen. Besides, it can be observed that XB price differentials have changed in

<sup>4</sup> Main conclusions workshop document: “*Bi-directional capacity*”

Export capacity from Italy towards Europe shall be computed on a daily basis according to CACM regulation. Italy North NRAs find it disappointing that no step in that direction has been made in the draft proposal so far, especially taking into account that that exports from Italy is occurring quite frequently (depending on the different borders), as discussed during the workshop. However, given the complexity of this process they accept that TSOs propose a timetable in the CCM to work on this point as soon as possible.

the recent with respect to the past: an asymmetric treatment of imports and exports capacities could, then, undermine the level playing field among market participants located in different member states.

[ACTOR] states that *“accordance with relevant CACM provisions, the capacity calculation methodology for day-ahead timeframe should be applied on a daily basis, in each direction (including export), and for each market time unit.”*

TSO will present a time schedule to the NRAs for developing an Export Methodology and a schedule for implementation.

[ACTORS] contest the rationale of calculating a TTC instead of NTCs for each border. [ACTOR] states: *“Sharing a TTC between Northern borders may unduly limit commercial flows through North Italy, e.g. from Slovenia to France. If North Italy chooses to apply a NTC capacity calculation – as a matter of fact, we have seen no justification so far for applying NTC instead of Flow-Based in this CCR-, this means that bilateral cross-zonal exchanges will be calculated independently from other bilateral exchanges.”* TSOs must demonstrate that the Flow Based approach would not be more efficient, as required by CACM Regulation.

In alignment with CACM Guideline Article 20.3, the TSOs of Italy North region may extend the deadline using flow-based approach for the respective region until Switzerland joins the single day-ahead coupling. Therefore, the NTC approached is currently the targeted solution. Nonetheless, the TSOs of Italy North region will start the study to develop the flow-based approach without waiting for this deadline.

## K. Proposal vs Explanatory note

[ACTOR] recommends to include further detailed description of the capacity calculation methodology in the binding proposal itself, including: the way NTCs will be calculated based on the selected critical network element (CNE), Transmission Reliability Margin and Generation Shift Key (GSKs) as well as full details on the capacity calculation algorithm that will determine the Net Transmission Capacity (NTC).

Firstly, the Explanatory Note is a key part of the methodology itself: it provides indeed for a technical and detailed description of the methodology.

Secondly, the Explanatory Note content is taken into account to assess the Methodology itself and its compliance with CACM Regulation.

Thirdly, any change to the Explanatory Note will not contradict the content of the methodology or CACM. Indeed, Italy North TSOs are bound by network codes in any initiative they undertake, and their action is always subject to NRAs' control.

The binding proposal should describe the capacity calculation methodology in detail. The articles notably fail to provide any of the details requested by article 21.1.b of the CACM Regulation, including:

- (i) a mathematical description of the applied capacity calculation approach with different capacity calculation inputs;
- (ii) rules for avoiding undue discrimination between internal and cross-zonal exchanges to ensure compliance with point 1.7 of Annex I to Regulation (EC) No 714/2009;
- (iii) rules for taking into account, where appropriate, previously allocated cross-zonal capacity;
- (iv) rules on the adjustment of power flows on critical network elements or of cross-zonal capacity due to remedial actions in accordance with Article 25;

- (v) for the flow-based approach, a mathematical description of the calculation of power transfer distribution factors and of the calculation of available margins on critical network elements;
- (vi) for the coordinated net transmission capacity approach, the rules for calculating cross-zonal capacity, including the rules for efficiently sharing the power flow capabilities of critical network elements among different bidding zone borders;
- (vii) where the power flows on critical network elements are influenced by cross-zonal power exchanges in different capacity calculation regions, the rules for sharing the power flow capabilities of critical network elements among different capacity calculation regions in order to accommodate these flows.

Relevant information is provided in the Explanatory Note (see answer above). Italy North TSOs will include this information in the methodology itself if required by NRAs.

#### **L. FB vs CNTC justification**

CACM GL Art 20.7 specifies that this computation should be flow-based, unless TSOs demonstrate that a flow-based capacity calculation approach would not be more efficient.

According to the Guideline CACM Article 20.3, the TSOs of Italy North region may extend the deadline without prejudice for submitting the proposal for a common coordinated capacity calculation methodology using flow-based approach for the respective region up to six months after Switzerland joins the single day-ahead coupling. If the TSOs of Italy North region still want to use the ATC approach after this deadline, indeed the TSOs shall demonstrate that a flow-based capacity calculation approach would not be more efficient. Nonetheless, the TSOs of Italy North intend to investigate the application of the flow-based approach in the region.