Response of EFET, EURELECTRIC, NORDENERGI and MPP to the TSOs' consultation on Capacity Calculation Methodologies

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The Capacity Allocation and Congestion Management Guideline (CACM GL) requests that Day-ahead and Intraday capacity calculations shall be coordinated at regional level. Pursuant CACM GL Art 20.2, TSOs of almost all Capacity Calculation Regions (CCRs) have therefore proposed methodologies dedicated to coordinated capacity calculation.

The European Federation of Energy Traders (EFET), EURELECTRIC, NORDENERGI and the Market Parties Platform (MPP) thank the TSOs for the opportunity to comment on their draft capacity calculation methodologies (CCMs). Given that the consultation periods of the various CCM proposals are planned in the holiday season, our organisations have joined forces in this response to the different consultations. As many of our members will not be able to respond themselves, specific attention should be paid to this document, which represents a wide consensus of the industry. In our response below, we set out a number of key general principles we are convinced that all capacity calculation methodologies should respect. Specific comments for each CCR are then detailed. In addition, individual members might add specific concerns as a complement to this answer.

Overall the proposals for CCMs are disappointing for a number of reasons:

- The proposals **do not seem to comply with the requirements set out in the CACM Regulation**.
- The various CCMs under consultation seem to be **written in isolation without describing the required overall optimisation of the European Grid**.
- Most of the CCMs **lack the level of detail expected from a methodology: the proposals describe the "what", but not the "how"** – though we observe that some proposals are more advanced than other in this respect.
- The **lack of transparency on the methodologies that will be applied in the end** leaves market participants in the dark about the way the network will be operated, which is a fundamental flaw especially in the preferred flow-based environment. A CCM should detail the single common methodology in a CCR in detail. Possible derogations should be duly justified.

Overview

Our four organisations are at the disposal of the TSOs and any other interested party for follow-up questions or clarifications:

EFET: Jérôme Le Page – j.lepage@efet.org

Eurelectric: Charlotte Renaud – crenaud@eurelectric.org

Nordenergi: Andrea Stengel – as@energinorge.no

Market Parties Platform: Ruud Otter – rotter@energie-nederland.nl

1 General principles for DA and ID capacity calculation valid for all CCRs

1.1. General provisions

The CACM Regulation foresees that common regional capacity calculation methodologies should be established by the TSOs of each capacity calculation region. However, we regret that the proposed methodologies are actually only vaguely described, incomplete, unclear and are leaving room for individual/local definition of parameters and sub methodologies. In general, the methodologies present a list of elements/methodologies to be determined at a later stage, but do not provide details on how these elements will be computed. For instance, 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.

We are also 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. Though we are fine with granting some flexibility to the TSOs so they present well detailed methodologies, we would at the very least welcome appropriate communication by the relevant TSOs justifying why they did not submit a methodology and informing market participants on the expected timeline for the submission.

The different CCM proposals for the various capacity calculation regions show important differences for unknown reasons. For example, the CCM of CCR Nordic is described in somewhat more detail than the CCM of CCR Core, although also the Nordic CCM shows major shortcomings. Secondly, the overall approach in the CCM of CCR Channel is fundamentally different from the CCM of CCR Hansa. The CCM Channel correctly starts with the approach that the capacity should be set by the maximum, technical capacities of the interconnectors only, which is in line with the ACER recommendation of 11th November 2016. The CCM Hansa follows a different approach. The CCM for the SWE region provides very limited detail in the binding document on the actual methodology that will be used by TSOs, merely repeating CACM provisions in many instances.

Instead of proposing common CCMs to correspond to the integration and market coupling in day-ahead and intraday markets, our impression is that the proposed methodologies entail a formalization of current practices, which means that the current “black box approach” would become the legally binding standard. Such an outcome would be a major blow against the success of the approach to market integration driven by common European network codes. We believe that a global paradigm shift is necessary: the target methodologies should be complete, detailing how the different elements are computed and combined. Only in case local specificities prevent the use of a harmonized approach could a derogation be granted – provided that full transparency is given.

1.2. Incompatibilities with EU legislation

We noticed several breaches of existing regulations.

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.

- For ex. No consultation specifies explicitly what the market time unit is

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.

- For ex. TSOs provide no demonstration of the equivalence of CNTC against FB for SWE. A public justification should be provided. The comparison between flow based and CNTC in the Nordics is also not sufficient.

CACM GL Art 21.1.b.vi foresees that TSOs should **detail how power flow capabilities of critical network elements are shared among different borders**.

- For ex. 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

As capacities will be calculated on a market time unit basis in a changing environment, this will lead to more uncertain exchange capacity volumes.

According to the Transparency Regulation (EU 543/2013), TSOs shall publish any transmission infrastructure unavailability affecting cross-zonal capacities and communicate their impact on cross-zonal capacities. In the context of coordinated capacity calculation, we acknowledge that it might be difficult to forecast the impact of such events a few days in advance. We thus consider that **TSOs must provide full transparency** on:

a. The capacity calculation methodology

This means 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.

b. **The critical parameters determining the cross-zonal exchange capacity in practice**

This includes **providing information** on:

- The Common Grid Model used for capacity calculation (including expected flows on all CNEs),
- 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.
- Operational Security Limits and Reliability Margins on all CNEs
- PTDF or extent to which cross-zonal flows affect the CNE for CNTC.
- 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.
- 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.
- “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).
- Vertical Load should be broken down into final load and RES/distributed generation (similar breakdown as foreseen in the ENTSO-E Transparency Platform)

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.

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”.

Last but not least, 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.

Should there be any national legal barriers to the disclosure of these elements, we urge NRAs to assess and report on them and to identify possible ways to overcome them.

1.4. Inclusion of 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. 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.

See also our remarks about “cross-zonal relevant constraints”.

1.5. Reliability margins

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.

Last but not least, 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.

1.6. Operational security 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.

1.7. Cross-zonal 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.

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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.

- E.g. this is not the case in SWE, or for some external constraints in the CWE region

1.8. Avoiding undue discrimination between internal and exchanges

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.

2 Comments on the CCM of CCR Hansa

1. The methodology for the DA timeframe is not sufficiently well described in Chapter 1. It starts with a “mathematical description” in Article 3. However, then the article 5 contains a general description of some issues that seem to incline that the capacities can be reduced, but that are not covered by the mathematical description. Article 5.2 allows TSOs to reduce the capacity based on individual assessment. There is no method described that explains how these reductions are calculated. The impact of article 5.1 on the capacity is unclear. However, article 5.2 refers to article 5.1 and therefore it seems that article 5.1 can also result in reductions of the capacities. In particular, it seems that the CCM for the CCR Hansa is made subordinate to the CCM of the CCRs Core and Nordic. Which could mean that available capacities in the CCR Hansa are reduced to manage congestions in the Core and Nordic region. Moreover, article 5 does not contain precise methods to calculate capacities. The title of Article 7 says that it describes the methodology for determining remedial actions, however it does not. It only says that the CCC can consider remedial actions.
2. The definition of “Advanced Hybrid Coupling” in Article 2(1.a) is unclear. The term AHC is only used in Article 13. Article 13(c) suggests that the capacity for the lines in the CCR Hansa is determined by the CCM of CCR Nordic and CCR Core. It suggests that congestions in the Core and Nordic region are managed by limiting cross-zonal trade through the Hansa interconnectors. This is not acceptable. In the Whereas, number 12 (page 3) it is mentioned that AHC is needed to avoid undue discrimination between flows within CCR Hansa or adjacent regions and between bidding zone borders within CCR Hansa. However, there is no justification for this statement. Actually the opposite seems true. By applying AHC cross-zonal trade between the Nordic and Core regions is discriminated against trades within the Nordic CCR and against trades within the Core CCR.
3. The methodology for the ID timeframe has similar shortcomings as for the DA timeframe. It starts with a mathematical description in Article 8. But then article 10 introduces the same possibilities to reduce capacities without a method being described.
4. Article 9 does not specify the frequency of reassessment of capacity in the intraday timeframe. This is not compliant with Article 21(2).
5. Article 11 gives additional possibilities to TSOs to reduce the capacities. Again there is no method described and no requirement for transparency if these restrictions are applied.
6. Article 3 (top of page 5) mentions the application of a TRM for a DC line. Article 4 however mentions that the methodology for determining the TRM applies solely to the AC lines. This is unclear.

7. In conclusion: The proposed CCM is a description of the status quo. Approving this proposal would mean a formal endorsement of the current “black-box” approach in calculation capacities in the Hansa region. This method entails a clear risk that TSOs will “calculate” low capacities in order to manage internal congestions. There is no indication at all that the proposed “method” will result in justified (in terms of efficiency and non-discrimination) results. This proposal could even be labelled as “misleading” as the mathematical description with formulas in articles 3 and 8 does not cover the full calculation process. The proposal does not meet the CACM requirements.

8. This method must be completely revised. It is proposed to take a similar principle as proposed by the Channel region. In this approach, the capacity is set as the “MPTC” (maximum permanent technical capacity which is the maximum continuous active power which a network element (interconnector/HVDC system) is capable of transmitting). Basically, this would mean that Articles 3 and 8 are kept, but that most other articles (like 5 and 11) are removed.

3 Comments on the CCM of CCR Core

3.1 Comments on the day-ahead CCM of CCR Core

1. Article 5 is titled "methodology for critical network elements and contingencies selection". However, this article does not describe any methodology. It simply states that TSOs shall select critical network elements. So instead of describing a methodology it only gives the right to TSOs to select CNEs. It also refers to Article 72 of the SO GL. However, that article does not deal with CNEs. Full transparency on the criteria used by each TSO to select CNEs should be part of the methodology.
2. The explanatory notes are somewhat more descriptive but does not provide any binding element. Article 2.1.1.1 defines CNE as a network element that is significantly impacted by cross-zonal trades. However, it does not give any indication of what "significant" means. Article 2.2.3 further deals with CNE selection. This article starts with a disclaimer mentioning that the selection process is still under development. For the rest this article describes the process at high level, but again it does not give any justification for the efficiency of selecting internal lines as CNE.
3. 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.

4. 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”.
5. The CWE region applies a 5% criterion for identifying CNEs (or CBs) The 5% criterion means that a CB, to be selected, has to have at least one zone-to-zone PTDF that exceeds 5%. So, in the CWE region “significant” means that a line must affected with at least 5% of a cross-zonal transaction. However, although this 5% criterion is apparently currently being applied, it 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):

   > “The project has proposed the rule of 5% to identify a critical branch (the 5% criterion means that a CBCO, to be selected, has to have at least one zone-to-zone PTDF which exceeds 5%). It is stated in the Approval Package that this rule was assessed inside the project to be efficient. This has nevertheless not been demonstrated to CWE NRAs. If there is room for improving this CB selection rule, this could lead to a higher global welfare. As a matter of fact, a network element not considered as a CB in the Flow-Based methodology cannot limit cross-border exchanges. If an overload is expected on this line, the relevant TSO(s) may have to activate potentially costly remedial actions such as re-dispatching. Moreover, the current rule does not prevent the fact that constraints with very low PTDF are active and may have huge impact on prices. Therefore, CWE NRAs consider that the project has to demonstrate, at the latest when applying for a capacity calculation methodology in the frame of the CACM Regulation, whether the 5% rule is optimal, or what other rule could lead to such optimality. The Flow-Based methodology would have to be adapted consequently.

   This demonstration of the optimality of the 5% criterion was never provided and is also not provided by the proposed CCM.
6. Article 7 allows TSOs to further limit cross-zonal trade by imposing external constraints (maximum import and export constraints of bidding zones). However, there is no methodology described. Again, this topic was also identified by the CWE NRAs in their opinion of March 2015. In section 9(7) it is written:

   > The current CWE Flow Based domain is limited by constraints which are not only the Critical Branches-Critical Outages. These – so called – external constraints represent what TSOs explain to be a maximum import or export position for their system due to other aspects of secure system operation such as voltage stability. These constraints limit quite often the Flow-Based domain (42% of congested hours in 2013). The CWE NRAs therefore require that a justification of the external constraints principle and in their values/calculation mechanism is provided by each TSO to its NRA. These explanations will be shared among the CWE NRAs. On the basis of these studies, to be provided 9 months after go-live, it could be decided to adapt or remove these external constraints in the frame of the FB MC methodology.

Article 7(3) allows TSOs to use external constraints to avoid too large deviations from the reference flows. Such objective cannot be an acceptable criterion. Such issues should be covered by the reliability margin.

7. Article 9 does not provide a harmonized methodology for GSKs. Should TSOs think that local specificities prevent harmonization of principles and methodologies, these specificities should be clearly explained. Article 9(1.c) mentions a common methodology that translates a change in the net position to a specific change of generation or load. However, that method is not described in the CCM. The CCM as proposed for the CCR Nordic provides much more detail on the RM methodology.
8. Article 10 deals with the methodology for remedial actions. However, the method is not described. The CCM only stipulates that the calculation can take (preventive or curative) RAs into account. Secondly, it is unclear why CCR Core does not consider redispatching and countertrading as RAs. Article 10 only mentions changing the tap position of phase shifting transformers and topological measures as possible remedial actions. In addition, Article 10 of the binding document does not mention "changing generator in-feed" as a possible remedial action, while the article 2.1.4 of the explanatory note does.
9. Article 11 does not specify when inputs must be provided to the CCC.
10. Article 13 foresees the use of a "LTA inclusion" patch. Given the overall proposal (and in particular the lack of ambition with regards to remedial actions), we consider that requiring TSOs to deliver a minimal guaranteed DA and/or ID capacity (or FB domain) might be a pertinent manner to make TSOs facing internal constraints pay for their resolution instead of reducing congestion rent shared with the other TSOs. However, the fact that the DA domain violates the LT domain should not be the sole trigger for considering additional remedial actions. The level of cross-zonal capacity should be maximized in all timeframes, considering costly and non-costly remedial actions on an equal footing with reduction of cross-zonal capacity. Reduction of cross-zonal capacity should only be considered when economically efficient remedial actions from the overall welfare perspective have been exhausted.
11. Article 14 deals with the optimisation of remedial actions (RAO). The objective function for this optimisation is not given. Overall, the CCM merely repeats what is already laid down in Article 25 of the CACM Regulation without providing actual methods.
12. Article 15 is unclear. It refers to the Evolved Flow Based methodology however that method is not described. It is also unclear whether the "HVDC interconnectors" as mentioned in this article refer to actual tie lines between two bidding zones and/or whether these are HVDC-lines within a bidding zone.
13. Article 16 does not provide sufficient explanation on how the assumptions on what will be the possible non-Core exchanges will be determined. Moreover, article 16 mentions the impact of non-CORE CCR borders, but does not

provide explanation on the impact of external borders such as the Swiss borders.

14. Article 20 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 (either through a FAV or through an external constraint) without any transparent justification. Article 26 of the CACM Regulation requires a validation process, however in accordance with Articles 27 to 31 of the CACM regulation, which is not ensured by Article 20 of the CCM. Paragraph c mentions that TSO may request to launch the default FB parameters "in exceptional situations". What are these exceptional situations?

15. Article 23(3) mentions that monitoring data shall be treated confidential by the NRAs and shall not be disclosed to the public. This is unnecessary and undesirable. NRAs should have the possibility to disclose monitoring data if they feel that this can provide insights and thus improve the monitoring. NRAs should obviously assess which data should be treated confidential. Therefore, proposal to change 23(3) into: "Monitoring data shall be disclosed to the public, with the exception of confidential data."

16. Article 21 (b)(ii) of the CACM Regulation requires that the CCM include a detailed description of the rules to avoid undue discrimination between internal and cross-zonal exchanges. However, that description is missing.

17. The CCM does not contain a procedure to compare the calculated results with actual, metered flows. For example, TSOs should check whether active CNEs also carry high flows (at their N-1 maximum capacity) in actual operation. If not, it should be checked whether this can be explained by unforeseen events or whether there is a structural issue in which case the parameters should be adapted.

18. Minimum RAM: we took note of the proposed elements in the explanatory notes but given the fact that it has no binding aspect, we suggest clarifying TSO's intentions with regards to the concept of minimum RAM in the binding document.

19. Transparency: the methodology does not provide any clarity on the transparency that will be granted to the market. A clear view on the necessary publication is given in the introduction of this paper.

20. In **conclusion** the proposed CCM is in conflict with EU Regulations. Overall, methods are not well described with far too little detail. (The CCM for the Nordic region gives some more details). It does not give any method for the selection of critical network elements. Such method must be a core element of the CCM. And the Core TSOs also need to transparently justify the optimality of such method. The proposed CCM does not justify the use of external constraints nor does it explain how such constraints are calculated.

3.2 Comments on the intraday CCM of CCR Core

1. Article 5 does not specify the frequency of reassessment of capacity in the intraday timeframe. This is not compliant with Article 21(2). Article 5.5 mentions that the TSOs shall provide the NEMOs with the ATCs for each bidding-zone border in case the allocation mechanism expects ATCs. The article only mentions that "…TSOs shall derive these from the coordinated flow-based parameters" but there is no explanation on how this will be done.
2. The same shortcomings related to the selection of internal network elements as CNEs and the application of external constraints as identified in the day-ahead CCM also apply to the intraday CCM.
3. Article 7(d) allow for reduction of the admissible flow on a CNE (and thus on the cross-zonal capacities) for unclear reasons and without any method that could justify such reductions.
4. Article 9(1.a) mentions a risk level being applied yielding the FRM values. There is no method described nor criteria are given on how such risk levels are actually set.
5. Article 10(1.c) mentions a common methodology that translates a change in the net position to a specific change of generation or load. However, that method is not described in the CCM.
6. Article 11 deals with the methodology for remedial actions. However, the method is not described. The CCM only stipulates that the calculation can take (preventive or curative) RAs into account. Secondly, it is unclear why CCR Core does not consider redispatching and countertrading as remedial actions. Article 11 only mentions changing the tap position of phase shifting transformers and topological measures as possible remedial actions.
7. Article 12 does not specify when inputs must be provided to the CCC.
8. Article 14 deals with the optimisation of remedial actions (RAO). The objective function for this optimisation is not given. Overall, the CCM merely repeats what is already laid down in Article 25 of the CACM Regulation without providing actual methods.
9. Article 15 is unclear. It refers to the Evolved Flow Based methodology however that method is not described. It is also unclear whether the "HVDC interconnectors" as mentioned in this article refer to actual tie lines between two bidding zones and/or whether these are HVDC-lines within a bidding zone.
10. Article 17 (1.a) mentions "execution of the rules for the previously allocated capacity". It is unclear what these rules are.
11. Article 17 (b) can be deleted. It is unnecessary to mention that redundant constraints are removed, as they are anyhow respected.

12. Article 19 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 actions will result in reductions of the cross-zonal capacities (either through a FAV or through an external constraint) without any transparent justification. Article 16 of the CACM Regulation requires a validation process, however in accordance with Articles 27 to 31 of the CACM regulation, which is not ensured by Article 19 of the CCM.
13. Article 22(3) should be rephrased into: “ Monitoring data shall be disclosed to the public, with the exception of confidential data.”
14. Article 23.4 mentions that “Core TSOs are willing to work on a solution that fully takes into account the influence of the adjacent CCRs …”. This is not compliant with Article 20(5) of the CACM Regulation. It also mentions an “advanced hybrid coupling concept”, however that concept is not described.

4 Comments on the CCM of CCR Nordic

1. Article 2 should be completed as it does not contain all the terminology and abbreviations used in the rest of the document (like CZC).
2. Article 3(5): The last sentence of this article opens the possibility for TSOs to apply different risk levels for different constraints. Does that mean that TSOs may use different criteria for different congestions? Or does it mean that the resulting risk level may be different for different congestions, but that the method and criteria that are used are the same? (The risk level has an important impact on the RM and therefore on the available cross-zonal capacities.)
3. Article 9(5) is unclear. What is advanced hybrid coupling? What are virtual bidding zones? How does this affect the results of the capacity calculation?
4. Article 10(3) refers to the BZ review process. This article should be removed, as the scope of the CCM is to calculate capacities given a certain BZ configuration. Moreover, this article is biased towards splitting of zones, whereas absence of congestions could also be mentioned as an indication to merge bidding zones.
5. Article 10(4) mentions that "…. only those grid constraints that are significantly influenced by the cross-zonal exchanges, as defined in Article 5 of this Proposal, will be included in the capacity calculation." However Article 5 does not define what means "significant". Actually the proposed CCM does not contain a method for the selection of CNEs. Selection of CNEs, not being tie lines, could only be allowed if justified based on economic efficiency and in order to ensure operational security (as mentioned in article 10(1)). The CCM should contain a CNE selection method that explains how these conditions are being met.

   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 capacity calculation methods".

The CWE region applies a 5% criterion for identifying CNEs (or CBs) The 5% criterion means that a CB, to be selected, has to have at least one zone-to-zone PTDF that exceeds 5%. So, in the CWE region "significant" means that a line must affected with at least 5% of a cross-zonal transaction. However, although this 5% criterion apparently currently been applied in particular, it has never been approved. On the contrary, it was identified as one of the open issues that still need to be resolved. See "Position Paper of CWE NRAs on Flow-Based Market Coupling of March 2015". For example, the CWE NRAs write the following (in paragraph 9.12 CBCO selection):

> "The project has proposed the rule of 5% to identify a critical branch (the 5% criterion means that a CBCO, to be selected, has to have at least one zone-to-zone PTDF which exceeds 5%). It is stated in the Approval Package that this rule was assessed inside the project to be efficient. This has nevertheless not been demonstrated to CWE NRAs. If there is room for improving this CB selection rule, this could lead to a higher global welfare. As a matter of fact, a network element not considered as a CB in the Flow-Based methodology cannot limit cross-zonal exchanges. If an overload is expected on this line, the relevant TSO(s) may have to activate potentially costly remedial actions such as re-dispatching. Moreover, the current rule does not prevent the fact that constraints with very low PTDF are active and may have huge impact on prices. Therefore, CWE NRAs consider that the project has to demonstrate, at the latest when applying for a capacity calculation methodology in the frame of the CACM Regulation, whether the 5% rule is optimal, or what other rule could lead to such optimality. The Flow-Based methodology would have to be adapted consequently."

This demonstration of the optimality of the 5% criterion was never provided and is also not provided by the proposed CCM.

6. Article 15 is unclear. There is no description of what AHC means.
7. Article 16 is unclear. Article 16(1) suggests that validation is done to check whether additional capacity can be made available. However article 16(4) and 16(5) make it clear that cross-zonal capacity can also be reduced. In such case, there is no transparent justification. Article 26 of the CACM Regulation requires a validation process, however in accordance with Articles 27 to 31 of the CACM regulation, which is not ensured by this Article 16 of the CCM.
8. Article 18(2) should be removed as it is out of scope. The scope of the CCM is to calculate capacities given a certain BZ configuration. Moreover, this article is biased towards splitting of zones, whereas absence of congestions could also be mentioned as an indication to merge bidding zones.
9. The impact of Article 19 is unclear. What happens if previously allocated capacity is bigger than CZC on a bidding zone border and the CZC is set at zero? Does this mean that the TSOs expect a N-1 violation to happen? And if so, will remedial actions (including redispatch and countertrading) be taken? And if so, why are such remedial actions then not applied in other situations to increase CZC?
10. Article 24 mentions that capacities on bidding zone borders between CCR Nordic and neighbouring CCRs shall be calculated and these calculated capacities shall be taken into account in the capacity calculation in the CCR Nordic. However, it is unclear how this work. In particular, would it not make more sense to calculate expected flows (instead of capacities) on the bidding zone borders between CCR Nordic and neighbouring CCRs?
11. Article 26 does not give the frequency of reassessing of the intraday capacity, which is a requirement; see Article 21(2) of CACM Regulation.

5 Comments on the CCM of CCR Channel

1. Strong support for basic principle that capacity shall be equal to the technical capacity of the interconnector itself. This principle, should however not only be applied for the day-ahead but also for the intraday market. The explanatory note mentions that there would be a higher risk for overloads due to flow reversal. This is however incomprehensible. Obviously some input parameters may change when moving from day-ahead to the intraday stage. However, there is no reason to assume that this entails a higher risk of overloads.
2. Article 4(1.a) allows a reduction of the cross-zonal capacity in the day-ahead time frame in case of a planned or unplanned outage with significant impact on the interconnector in one of the bidding zones to which that interconnector is connected.
   - It should be added that a limited availability of the interconnector itself can result in a reduced cross-zonal capacity.
   - It should be added that “planned and unplanned outages” only refer to outages of network elements in the direct vicinity of the connection point of the interconnector.
3. Article 6 deals with selection of CNE. Apparently a network element is considered as CNE if the cross-zonal flow sensitivity is above a certain threshold (in %).
   - The application of any threshold, and in particular a generic threshold for all possible CNEC, is not acceptable unless such threshold is justified based on assessment of economic efficiency. Such justification is missing.
   - In any case, CNE can only be the network elements that were directly affected by the outage that caused to deviate from the basic rule, namely that the capacity is set at the MPTC.
   - Moreover, it is unclear why different thresholds are being applied for day-ahead and for intraday.
4. Article 11 stipulates that each TSO may decide to make available costly remedial actions. This is insufficient. There should be a clearly described method for the application of costly and non-costly remedial actions.
5. The explanatory note mentions the Channel TSOs are committed to investigate the future application of Advanced Hybrid Coupling, which means that Core flow-based constraints are imposed on the Channel interconnectors. Such approach is not acceptable, as congestions inside the Core region should not be managed by limiting trade across the Channel interconnectors. Instead the Standard Hybrid Coupling should be kept.

6 Comments on the CCM of CCR SWE

1. Generally, the binding proposal by the TSOs does not provide adequate level of detail on the future capacity calculation methodology. Going through the explanatory note, we see that some aspects such as the sensitivity factor (see section 2.2.2.2.) or the intraday capacity calculation project are not yet defined.
2. The few elements at hand suggest that TSOs will rather rely on status quo. We refer to our general comments with regard to the various missing justifications of the TSOs for deviating from the principles of the CACM Regulation, and the absence of appropriate transparency.
3. Article 6.3 foresees that the RAM will not be defined according to article 22 CACM for a transitory period and presents the alternative method. However, article 22 CACM does not foresee such deviation. Should this deviation be nonetheless compliant with the CACM Regulation, we request a justification in the binding document for deviating from article 22 CACM.
4. We welcome that article 7 foresees that the TSOs of SWE region shall not apply allocation constraints in the capacity calculation within the SWE region.
5. Article 11 and 12 are supposed to detail the capacity calculation methodology for respectively the day-ahead and intraday timeframes but the articles are rather a description of the process that follows the capacity calculation. 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.

6. Article 12 is supposed to detail the capacity calculation methodology for the intraday timeframe, but fails to do so. The article is rather a description of the process that follows the capacity calculation. This is a major flaw of this methodology whose purpose is to describe the capacity calculation methodology in detail. Article 12 states the frequency at which intraday capacity will be calculated once at D-1. Section 5 of the explanatory note gives more detail, but disclaiming that the intraday capacity calculation project is not yet defined. Article 12.8 foresees that the TSOs shall review the recalculation frequency two years after the implementation. We think that it is important to foster the intraday recalculation project and to analyse higher frequencies as soon as possible and in a coordinated manner with the rest of the CCR.
7. Article 14.2 and 14.3 foresee that the capacity calculation methodologies should be applicable as of S1 2019 and S2 2020 for day-ahead and intraday, respectively. The commitment to more precise go-live dates, especially for the day-ahead capacity calculation methodology, would be welcome.
8. Article 14.7 foresees that the implementation of the capacity calculation methodology can be postponed upon request of the TSOs to their regulators. We request that the TSOs and NRAs provide appropriate information and justification to market participants when such a postponement occurs. Periodic regional workshops explaining the status of the methodology implementation and testing to stakeholders would be well advised.