

# **REQUEST FOR AMENDMENT BY THE REGULATORY AUTHORITIES IN CAPACITY CALCULATION REGION NORDIC**

**ON**

**The Nordic TSOs' proposal for the common  
coordinated capacity calculation methodology for  
Capacity Calculation Region Nordic in accordance  
with Article 20(2) of the Commission Regulation (EU)  
2015/1222**

**16 March 2018**

## **Request for amendment on the all TSOs' of the Nordic Capacity Calculation Region proposal for Capacity Calculation Methodology in accordance with Article 20 of the Commission Regulation (EU) 2015/1222**

- 1) On 17 September, the Regulatory Authorities (NRAs) of the Capacity Calculation Region Nordic<sup>1</sup> (CCR Nordic) and the Norwegian Regulatory Authority<sup>2</sup> (together the Nordic NRAs) received by the Transmission System Operators (TSOs) of the CCR Nordic<sup>3</sup> and the Norwegian TSO (together the Nordic TSOs) a proposal for Capacity Calculation Methodology (CCM) in accordance with Article 20 of the Commission Regulation (EU) 2015/1222 establishing a guideline on capacity calculation and congestions management (CACM GL).
- 2) According to Article 9 (7) (e) of the CACM GL, the proposal is subject to approval by all the NRAs of CCR Nordic<sup>4</sup>.
- 3) The Nordic NRAs have in cooperation analysed the proposal and have reached a common conclusion that the proposed CCM methodology needs to be amended before it can be approved at national level by each NRA. Therefore, according to Article 9 (12) of Regulation 2015/1222 the Nordic NRAs request the Nordic TSOs to submit an amended proposal that takes into account the comments given below.
- 4) Regulation (EC) No. 714/2009 with its Annex 1 on the [Guidelines on the Management and Allocation of Available Transfer Capacity of interconnections between national systems] and CACM GL constitute the main legal basis for the development and implementation of a common CCM. In particular, the CCM with its various components is subject to requirements set in CACM GL Section 3 and should after an overall assessment fulfil the objectives laid down in CACM GL Article 3.

### **Comments on the proposed Capacity Calculation Methodology**

- 5) The Nordic CCM proposal consist of a legal document accompanied by an explanatory document. The interaction between the two documents should be examined. The explanatory document should be structured as a commentary where explanations to the text in the legal document follow the same structure. It should supplement and support the legal text, article by article, in order to further explain and justify the rules and methodologies set out in the legal document.
- 6) The Nordic NRAs would like to point out that we will only approve the legal document, thus this piece should be a stand-alone product with no references to the supporting text.
- 7) The economic impact assessment should be updated following the amended methodology. This should include the estimated change in cost of remedial actions, and the estimated value of change in welfare and distributional effects. Based on the figures,

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<sup>1</sup> The Swedish Energy Markets Inspectorate (Ei), The Danish Energy Regulatory Authority (DERA) and The Finnish Energy Authority (EV)

<sup>2</sup> The Norwegian Water Resources and Energy Directorate (NVE)

<sup>3</sup> Svenska Kraftnät (SvK), Fingrid, and Energinet.dk (ENDK)

<sup>4</sup> Until Regulation 2015/1222 applies in Norway, NVE and Statnett are not formally part of the process. NVE, will however closely follow the process and may approve the proposed CCM procedures from Statnett according to national legislation.

TSOs should, in the legal document, conclude on the expected economic impact on the objectives as given in CACM Art. 3.

- 8) The Nordic NRAs request the Nordic TSOs to better clarify and/or amend the following issues:
- 9) The simulations performed by TSOs indicate a minor positive net contribution on overall Nordic level. However, to conclude that the change is to the benefit to all market participants and electricity end consumers is contradictory to the results presented.
- 10) The notation for PTDF matrix is also changing across the document which is confusing. The amended proposal should apply consistent notations.
- 11) In general, Nordic NRAs do not comment on the Whereas section, but assume that TSOs will update it accordingly.

#### Article 2 Definitions and interpretation.

- 12) The article shall, in addition to already included regulations, refer to and apply the definitions given in Regulation (EU) 2017/1485.
- 13) The definition on “Advanced Hybrid Coupling” should be supplemented by description and justification of the introduction of this solution in terms of operational security and economic efficiency at the EU level in the relevant article in the proposed method, with reference to CACM Art. 29.3 (c) explanatory document
- 14) The definition of “Base case” is a central concept and should be better explained. Preferably with reference to the relevant articles in CACM GL and to the CGM methodology.

“Participation factor” should also be defined.

#### Article 3 Methodology for determining reliability margin (RM)

- 15) According to CACM Article 21.1(a)(i), the CCM proposal shall include at least, for each capacity calculation time-frame, a methodology for determining the reliability margin in accordance with requirements set out in CACM Article 22.
- 16) CACM Article 22 reads as follows:
  1. *The proposal for a common capacity calculation methodology shall include a methodology to determine the reliability margin. The methodology to determine the reliability margin shall consist of two steps. First, the relevant TSOs shall estimate the probability distribution of deviations between the expected power flows at the time of the capacity calculation and realised power flows in real time. Second, the reliability margin shall be calculated by deriving a value from the probability distribution.*
  2. *The methodology to determine the reliability margin shall set out the principles for calculating the probability distribution of the deviations between the expected power flows at the time of the capacity calculation and realised power flows in real time, and specify the uncertainties to be taken into account in the calculation. To determine those uncertainties, the methodology shall in particular take into account:*

- (a) *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;*
  - (b) *uncertainties which could affect capacity calculation and which could occur between the capacity calculation time- frame and real time, for the market time unit being considered.*
3. *In the methodology to determine the reliability margin, TSOs shall also set out common harmonised principles for deriving the reliability margin from the probability distribution.*
  4. *On the basis of the methodology adopted in accordance with paragraph 1, TSOs shall determine the reliability margin respecting the operational security limits and taking into account uncertainties between the capacity calculation time-frame and real time, and the remedial actions available after capacity calculation.*
  5. *For each capacity calculation time-frame, the TSOs concerned 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.*

17) In the CCM proposal art 3.3, it is stated that the “*margin caused by the activation of the frequency control reserve (hereafter referred to as “FCR”) shall be modelled separately and merged with the RM,*” Nordic NRAs request TSOs to define the concept of the FCR margin with reference to the relevant article in SO GL and clarify how the merge with the RM will impact the total level of RM. Furthermore, the introduction of a separate modelling of the FCR should also be justified according to CACM Art. 22(2).

18) It should be stated in the legal document that RM is only calculated for AC lines.

19) The methodology is not sufficiently clear regarding several points of the reliability margin methodology: *with the contingency for the grid constraint tripped... and... realized flow observed in a snapshot modelled in the CGM.*

20) The principles for calculation need to be further elaborated. The method mixes different kinds of flows that may be interpreted as being created in the CGM, the DA or in real time. Thus, the terminology needs to be clear so that e.g. realized flows or net positions will not be mistaken to be established in the wrong time frame. Also, it is unclear whether the sample space of the probability distribution includes negative numbers and how such negative numbers are converted to a positive RM.

#### Article 4 Methodology for determining operational security analysis.

21) According to CACM Article 21.1(a)(ii), the CCM proposal shall include at least, for each capacity calculation time-frame, the methodologies for determining operational security limits in accordance with requirements set out in CACM Article 23. It follows from CACM Article 23.2 that TSOs shall describe the particular method if operational security limits used in capacity calculation are not the same as those used in operational security analysis. It is stated in the proposal that the “*TSOs shall apply the same operational security limits as in the operational security analysis.*” The statement should be supplemented by a reference to the relevant article in the SO GL.

- 22) CACM GL requires that the Coordinated Capacity Calculator (CCC) is setup no later than four months after the approval of CCM. If and when voltage and dynamic stability analyses should be considered in the capacity calculation, the data shall be provided to the CCC. This should be stated in the methodology.
- 23) It would be preferable to state explicitly that the lowest of the operational security limits leads to the Fmax (in the RAM calculation for each CNE) to better tie forthcoming articles together.
- 24) Please explain the application of the N-1 criteria in relation to this methodology in detail.

#### Article 5 Methodology for determining contingencies relevant to capacity calculation

- 25) According to CACM Article 21.1(a)(ii), the common CCM proposal shall at least include, for each capacity calculation time-frame, the methodologies for determining contingencies relevant to capacity calculation in accordance with requirements set out in CACM Article 23. It is required by CACM Article 23.2 to describe a particular method if the contingencies used in capacity calculation deviate from those used in operational security analysis.
- 26) It is stated in the proposal that the “TSOs shall apply the same contingencies as in the operational security analysis.” The statement should be supplemented by a reference to the relevant article in the SO GL.

#### Article 6 Methodology for determining allocation constraints

- 27) According to CACM Article 21.1(a)(ii), the CCM proposal shall at least include, for each capacity calculation time-frame, the methodologies for determining allocation constraints that may be applied in accordance with requirements set out in CACM Article 23.3.
- 28) CACM Article 23.3 reads as follows:
- 29) *If TSOs apply allocation constraints, they can only be determined using:*
  - (a) *constraints that are needed to maintain the transmission system within operational security limits and that cannot be transformed efficiently into maximum flows on critical network elements; or*
  - (b) *constraints intended to increase the economic surplus for single day-ahead or intraday coupling.*
- 30) The TSOs need to develop the method to determine the allocation constraints based on the CACM requirements set in Article 23.3 i.e. how the requirements are used to determine allocation constraints. The proposal should be amended so that each allocation constraint is clearly defined and justified, and it should be clear to which timeframes each constraint may be used.

#### Article 7 Methodology for determining generation shift keys (GSK)

- 31) According to CACM Article 21.1 (a)(iii), the CCM proposal shall at least include, for each capacity calculation time-frame, the methodology for determining the generation shift keys in accordance with requirements set out in CACM Article 24.
- 32) CACM Article 24 reads as follows:

- 33) *The proposal for a common capacity calculation methodology shall include a proposal for a methodology to determine a common generation shift key for each bidding zone and scenario developed in accordance with Article 18.*
- 34) *The generation shift keys shall represent the best forecast of the relation of a change in the net position of a bidding zone to a specific change of generation or load in the common grid model. That forecast shall notably take into account the information from the generation and load data provision methodology.*
- 35) The methodology is somewhat unclear on how Generation and load data provision (GLDP) will be used to select GSKs. "Participation factor" should be clearly defined. GSKs are required to be determined per scenario (market time unit), and should be stated clearly in the method.
- 36) It should be stated that the GSK-strategy also should be analysed and updated accordingly, whenever there is a significant update in the nodes (e.g. addition of new data centre (load) or wind farm (generation), as their participation factor might not be optimized with the current GSK-strategy.

Article 8 Methodology for determining remedial actions (RA) to be considered in capacity calculation

- 37) The TSOs should use a common set of remedial actions such as countertrading or redispatching to deal with internal congestion. In order to facilitate more efficient capacity allocation and to avoid unnecessary curtailments of cross-border capacities, TSOs should coordinate the use of remedial actions in capacity calculation (Preamble (10) of Regulation (EU) 2015/1222). Furthermore, Article 16(3) of Regulation (EC) No 714/2009 provides for an obligation to maximise interconnection capacity, requiring that 'the maximum capacity of the interconnections and/or the transmission networks affecting cross-border flows shall be made available to market participants, complying with safety standards of secure network operation'. This principle is complemented by point 1.7 of Annex I to the same Regulation, which provides that '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'. The methods adopted for congestion management shall give efficient economic signals to market participants and TSOs, promote competition and be suitable for regional and Union-wide application (Annex1, point 1.5 Regulation 714/2009).
- 38) According to CACM Article 21.1(a)(iv), the CCM proposal shall at least include, for each capacity calculation time-frame, the methodology for determining RA to be considered in capacity calculation in accordance with requirements set out in CACM Article 25.
- 39) CACM Article 25 reads as follows:

*Each TSO within each capacity calculation region shall individually define the available remedial actions to be taken into account in capacity calculation to meet the objectives of this Regulation.*

*Each TSO within each capacity calculation region shall coordinate with the other TSOs in that region the use of remedial actions to be taken into account in capacity calculation and their actual application in real time operation.*

*To enable remedial actions to be taken into account in capacity calculation, all TSOs in each capacity calculation region shall agree on the use of remedial actions that require the action of more than one TSO.*

*Each TSO shall ensure that remedial actions are taken into account in capacity calculation under the condition that the available remedial actions remaining after calculation, taken together with the reliability margin referred to in Article 22, are sufficient to ensure operational security.*

*Each TSO shall take into account remedial actions without costs in capacity calculation.*

*Each TSO shall ensure that the remedial actions to be taken into account in capacity calculation are the same for all capacity calculation time-frames, taking into account their technical availabilities for each capacity calculation time-frame.*

- 40) The wording in 8.2 makes it optional to apply costly remedial actions. The Article shall be revised to reflect that it is mandatory to include all available remedial actions (regardless if they are costly or not) when it does not compromise operational security and is not less economically efficient at the EU-level.
- 41) In article 8.3 of the proposal, TSOs have made a list of the RAs to be considered in the capacity calculation process. The description of each RA should include a brief generic outline of associated benefits and costs for the system and for the net economic surplus at the EU level. It should be outlined on a principle basis to which extent the associated costs and benefits refer to real figures or estimates values, the basis for estimation and the level of uncertainty. The availability and use of each RA in the capacity calculation process should also be clarified. However, it is specifically mentioned in the whereas (10) CACM GL and in CACM art. 35 and among the categories given in Article 22 in the SO GL. Nordic NRAs can hardly approve total omission of countertrading from the list of RA, but welcome relevant outline of the costs and benefits as indicated above.
- 42) Article 8.3 contains no explicit methodology for determining the use of remedial actions. More detailed methodology on the use of RA on CNEs in terms of rules, conditions, etc, must be described in the amended proposal. Moreover, the proposed methodology should also include justifications of the proposed methodology for determining the use of RA, addressing the impact on operational security as well as economic efficiency. Particular emphasis should be made on the rules for determination of redispatching and countertrading, when it comes to the basis for considerations of the operational security and economic efficiency at EU level, and the possible embedded uncertainties.

## **Detailed description of the capacity calculation approach for DA timeframe**

Article 9 Mathematical description of the applied capacity calculation approach with different capacity calculation inputs

43) The proposed mathematical description of the capacity calculation method in article 9 does not provide a clear, overall picture of what data are input to the capacity calculation process and what are the output data from the capacity calculation process that is sent to the single DA market algorithm. NRAs would welcome an amended description, aiming at clarifying what is input and output from the capacity calculation process, and the principal relationship between the variables in the DA capacity calculation approach.

#### Article 10 CNE selection

- 44) Regulation (EC) No 714/ 2009 states the following general principles; Article 16 (1) «Network congestion problems shall be addressed with non-discriminatory market-based solutions which give efficient economic signals to the market participants and transmission system operators involved» and Article 16 (3) «The maximum capacity of the interconnections and/or the transmission networks affecting cross-border flows shall be made available to market participants, complying with safety standards of secure network operation».
- 45) According to CACM Article 21.1(b)(ii), the CCM proposal shall at least include, for each capacity calculation time-frame, a detailed description of the capacity calculation approach which shall include “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”. Other CACM provisions on CCM are also relevant for the selection of CNEs to be included in capacity calculation, e.g. CACM Article 25 as regards determining remedial actions to be considered in capacity calculation for the adjustment of power flows on critical network elements.
- 46) In article 10, TSOs introduce a threshold approach for selecting CNEs to be included in the capacity calculation process. The threshold approach implies that each TSO shall define a minimum level of significant influence from any cross-zonal exchange of electricity (measured in terms of power). It is also stated that each TSOs shall initially apply a threshold value of 15% and above for significant influence.
- 47) The proposed approach of initially including all internal CNEs above a certain threshold is considered to be non-compliant with Regulation (EC) no 714/2009. The capacity calculation methodology for selection of CNEs should be amended so that it is based on individual considerations on the use of remedial actions. This amended methodology should be described and substantiated in terms of CACM art. 21.1 (b)(ii) and the HP 1 as set out in ACER Recommendation. The substantiations shall be based on the criteria for deviations in Regulation (EC) no. 714/2009 Annex 1.7, i.e. addressing explanations and justifications on operational security and economic efficiency at EU-wide level. The underlying assumptions and criteria for the estimations process should also be clearly described and justified.
- 48) The criteria for including CNEs in capacity calculation and allocation should not differ between TSOs. The CCM cannot include sub-methodologies or criteria to be developed at a later stage. Thus, criteria for selecting which CNEs to include should be developed and part of the amended method. The criteria shall be maximization of economic welfare at the EU-level to ensure coherence with Regulation (EC) No 714/2009.
- 49) The ACER recommendation p.4 states that bidding zones shall be defined so that *congestion appears only on the borders between bidding zones and there is no congestion inside bidding zones*. This is further elaborated in the ACER high level principle no 1. Any deviation from the general principle, by limiting cross-zonal capacity

in order to solve congestion inside bidding zones, *should only be temporarily applied* and only in those situations when it is:

1. (a) needed to ensure operational security; and
  2. (b) economically more efficient than other available remedies (taking into account the EU-wide welfare effects of the reduction of cross-zonal capacity) and minimizes the negative impacts on the internal market in electricity.
- 50) The method therefore should be further elaborated on how an internal CNE is to be included in the capacity calculation only on a temporary basis to comply with Regulation (EC) no. 714/2009 Annex I point 1.7. The ACER recommendation should be addressed in the amended proposal.

#### Article 11 Rules for avoiding undue discrimination between internal and cross-zonal exchanges

- 51) Regulation (EC) No 714/ 2009 Article 16 (1) and (2), as quoted above under Article 10, are also relevant legal basis for developing supplementing rules to avoid undue discrimination between internal and cross-zonal exchanges.
- 52) According to CACM Article 21.1(b)(ii), the CCM proposal shall at least include, for each capacity calculation time-frame, a detailed description of the capacity calculation approach which shall include “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”.
- 53) The TSOs must develop more detailed rules that ensure there will be no undue discrimination between internal flows and cross border flows. There is inconsistency between rules for avoiding undue discrimination and implications of the proposed methodology, e.g. deducting internal flows from  $F_{max}$ .
- 54) The TSOs should address and justify that the criteria for deviations are met, taking into account the four aspects listed on page 9 in ACER Recommendation. Reference should be made to the relevant proposed methods for RA, CNE selection and calculations of  $F'_{ref}$ . Further explanations and justifications should be stated accordingly in the explanatory document. Calculations of expected ranges of  $RAM/F_{max}$  and  $F'_{ref}/F_{max}$  should also be provided. In particular the proposed rules on undue discrimination regarding HP 1 should be further developed.
- 55) Article 11(3) describes review of bidding zones. Please clarify how this process works together with the ACER bidding zone review.

#### Article 12 Rules for taking into account previously allocated cross-zonal capacity

- 56) According to CACM Article 21.1(b)(iii), the CCM proposal shall at least include, for each capacity calculation time-frame, a detailed description of the capacity calculation approach which shall include “rules for taking into account, where appropriate, previously allocated cross-zonal capacity”.
- 57) The article contains a reference to CACM GL Art 22(2) that seems misplaced.

Article 14 A mathematical description of the calculation of power transfer distribution factors for the FB approach

- 58) According to CACM Article 21.1(b)(v), the CCM proposal shall at least include, for each capacity calculation time-frame, a detailed description of the capacity calculation approach which shall include *“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”*.
- 59) In article 7 the term GSK was a strategy and participation factor was the result. This is now confused by using GSK as the result.

Article 15 A mathematical description of available margins on critical network elements for the FB approach

- 60) According to CACM Article 21.1(b)(v), the CCM proposal shall at least include, for each capacity calculation time-frame, a detailed description of the capacity calculation approach which shall include *“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”*.
- 61) The methodology does not state which entity that is responsible for calculation of RAM for each CNE. It should be stated that it is the CCC, which calculates the RAM, Fref' and Fmax for each CNE. Please also relate and compare to the role of the RSC. The impact of the parameters related to RAMs should be explained further, also in terms of market impact. Additional explanation of Fmax (e.g. how often it is calculated) and reference to art. 4 are needed.
- 62) The TSOs must explain more in detail on Fref' and Fref and address its compliance with criteria of undue discrimination between internal and cross-zonal flows.
- 63) The inclusion of negative RAMs does not ensure maximization of welfare but instead risk lowering overall welfare. Thus, the possibility to include negative RAMs shall be excluded from the methodology.

Article 16 Rules for sharing the power flow capabilities of critical network elements among different capacity calculation regions (...)

- 64) According to CACM Article 21.1(b)(vii), the CCM proposal shall at least include, for each capacity calculation time-frame, a detailed description of the capacity calculation approach which shall include *“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.”*
- 65) It should be stated in the proposal what the process looks like for applying AHC and a detailed description of the AHC method as such.

Article 17 Methodology for the validation of cross-zonal capacity

66) According to CACM Article 21.1(c), the CCM proposal shall at least include, for each capacity calculation time-frame, “a methodology for the validation of cross-zonal capacity in accordance with Article 26».

67) CACM Article 26 reads as follows:

*Each TSO shall validate and have the right to correct cross-zonal capacity relevant to the TSO's bidding zone borders or critical network elements provided by the coordinated capacity calculators in accordance with Articles 27 to 31.*

*Where a coordinated net transmission capacity approach is applied, all TSOs in the capacity calculation region shall include in the capacity calculation methodology referred to in Article 21 a rule for splitting the correction of cross-zonal capacity between the different bidding zone borders.*

*Each TSO may reduce cross-zonal capacity during the validation of cross-zonal capacity referred to in paragraph 1 for reasons of operational security.*

*Each coordinated capacity calculator shall coordinate with the neighbouring coordinated capacity calculators during capacity calculation and validation.*

*Each coordinated capacity calculator shall, every three months, report all reductions made during the validation of cross-zonal capacity in accordance with paragraph 3 to all regulatory authorities of the capacity calculation region. This report shall include the location and amount of any reduction in cross-zonal capacity and shall give reasons for the reductions.*

*All the regulatory authorities of the capacity calculation region shall decide whether to publish all or part of the report referred to in paragraph 5.*

68) The TSOs must clarify Art. 17(2) to ensure alignment with wording of CACM Art. 26(1) which also include critical network elements.

69) The TSOs must address CACM Art. 26(4) on coordination between CCCs. Reporting according to CACM Art. 26(5) must be elaborated on in legal document.

70) The article is open-ended and gives the TSO the opportunity to consider e.g. additional constraints and other relevant information which needs to be specified for the validation of cross-zonal capacity and critical network elements. This is not understood since, all prior calculations and methods have taken operational security into consideration.

71) The method is unclear on the criteria for how the TSOs will be allowed to calculate and apply **FAV** to ensure operational security in an equal and consistent way. In addition, the type of operational security reason that motivated the reduction of cross-zonal capacity in each particular case is requested to be provided as part of the justification according to CACM GL Art. 26(5).

### **Detailed description of the capacity calculation approach for ID timeframe**

#### Article 19 Mathematical description of the applied capacity calculation approach with different capacity calculation inputs

72) TSO must include methodology for calculating reliability margin in Intraday time-frame.

Article 20 Rules for avoiding undue discrimination between internal and cross-zonal exchanges

- 73) Rules for avoiding undue discrimination should be equal as in the DA (Art. 11 in proposal).

Article 25 Rules for calculating cross-zonal capacity, including the rules for efficiently sharing the power flow capabilities of critical network elements among different bidding zone

- 74) The rules referred to in Art. 25(4b) in legal document should be part of the amended proposal. It should also be described and substantiated how the rules can be applied with the CNTC approach, which is based on a more formalised, automated calculation.
- 75) The TSOs should specify the exact methodology to evaluate on which bidding zone borders sharing rules may be applied, c.f. Art 25(4a) in legal proposal.
- 76) The TSOs state in Art. 25(5) that exchanges will be adjusted with reliability margin in accordance with Art. 3, but it should be clarified which reliability margin is referred to.

Article 28 Reassessment frequency of capacity for the intraday capacity calculation timeframe

- 77) Any increase in capacity due to a reassessment should be released to the intraday market without undue delay.
- 78) First reassessment of intraday capacity shall be done based on DA CGM and the results of the DA market coupling and the capacity shall be released to the intraday market without undue delay.

Article 29 Fallback procedure for the case where the initial capacity calculation does not lead to any results

- 79) The fallback procedures for capacity calculation is missing. The amended method shall detail the procedures that will be applied.

Article 30 monitoring data to the NRAs

- 80) Article 30 refers to "the Proposal" instead of to the "Methodology", thus to avoid any misconceptions it shall refer to the latter as given in Article 21 CACM.
- 81) Monitoring data shall be provided towards the Nordic NRAs as basis for supervising a non-discriminatory and efficient Nordic congestion management.
- 82) Unless otherwise provided, the following data related to the Nordic common capacity calculation shall be provided to the NRAs regularly and as soon as practically possible, for the period of parallel runs:
1. Information on the application of remedial actions and why remedial actions have not been used during capacity calculation.

2. For each included CNE and allocation constraint in the capacity calculation allocation the shadow price for each market time unit.
- 83) The NRAs can ask for additional data to be reported by the TSOs both during parallel runs and for the period after go-live of the Flow Based methodology.

New Article XX on publication of data

- 84) In accordance with Article 3(f) of the CACM Regulation aiming at ensuring and enhancing the transparency and reliability of information to the regulatory authorities and market participants, at least the following data items shall be published in addition to the data items and definitions of Commission Regulation (EU) No 543/2013 on submission and publication of data in electricity markets.
- 85) In compliance with national legislation, the following information shall be published on a regular basis and as soon as practically possible to market participants:
1. A list of all CNEs, uniquely defined, considered and used in capacity calculation for each market time unit allocation takes place. All CNEs should be presented with a unique identifier, and it should be clear on which bidding zone border or which bidding zone it is located (a unique identifier is a consistent identifier over time);
  2. All individual components of the RAM, i.e. FRM, Fmax, Fref', RA and FAV for each CNE included in market coupling, for each market time unit;
  3. The allocation constraints used by TSOs and information on whether they became binding for each market time unit;
  4. For each market time unit information about which internal CNEs have become binding and justifications for why these internal CNEs were allowed to restrict the market;
  5. The complete zone-to-zone PTDF matrices for each market time unit;
  6. Information on estimated and observed flows per bidding zone border for each market time unit;
  7. An analysis of the amount of loop flows and internal flows in the Nordic power system. In the simulation and parallel runs phases this analysis should be quarterly, thereafter yearly after go-live.
- 86) The TSOs are required to publish data to the market on a regular basis from the start of the parallel runs and onwards to help market participants to evaluate the capacity calculation process. The TSOs shall engage stakeholders in dialogue to specify necessary and useful data to this effect.
- 87) The above mentioned publication requirements are without prejudice to confidentiality requirements pursuant to national legislation.

New Article XY on indicators and metrics to be published

- 88) The TSOs are required to present relevant indicators and metrics to the market on a weekly basis from the start of the parallel runs and onwards to help market participants to evaluate the capacity calculation process. The TSOs shall engage stakeholders in dialogue to specify necessary and useful data to this effect.

- 89) As a minimum the TSOs shall publish indicators and metrics showing the difference between flow-based capacity calculations and NTC methods in terms of available capacity to the market.
- 90) Please write in updated proposal that the final, exhaustive and binding list of all publication items, metrics and indicators etc. can be adjusted by the Nordic NRAs based on dialogue with TSOs and other Nordic stakeholders and concluded in due time before go-live.

#### New article YY Capacity calculation description

- 91) The article should describe the calculation of capacities from inputs to outputs and validation.

#### Article YZ Publication and Implementation of the Proposal

- 92) The legal proposal does not discuss intuitive and non-intuitive flows and their respective effects and benefits. In the simulations prior to the parallel runs the TSOs are required also to include an intuitive patch to increase knowledge of the capacity calculation process.

#### Implementation timeline

- 93) The recital 7 in Regulation 2015/1225 sets some rules for the introduction of flow-based: *The flow-based approach should only be introduced after market participants have been consulted and given sufficient preparation time to allow for a smooth transition.* Stakeholder feedback indicates that they would like 18 to 24 months of parallel runs.
- 94) The methodology proposes minimum 6 months. It would be beneficial to extend the parallel runs to at least cover two winter seasons so that the method may be exposed to different weather conditions.
- 95) Regarding Table 2 which lists the implementation milestones. The table does not describe what happens if a milestone cannot be reached. The table could be read in such a way that if a milestone is not met, the project will continue in that phase until the milestone will be met. Thus, we would like to have contingency analysis for project delays.
- 96) The TSOs should include a timeline for when industrial tools will become available as this restricts start-up of parallel runs. The TSO should specify when the parallel runs will begin.