Energimarknadsinspektionen
Swedish Energy Markets Inspectorate

Energy
Regulatory Office

Bundesnetzagentur

Authority for
Consumers & Markets

Forsyningstilsynet

APPROVAL BY
CAPACITY CALCULATION REGION
HANSA REGULATORY AUTHORITIES

OF

THE AMENDED CCR HANSA COMMON COORDINATED CAPACITY CALCULATION METHODOLOGY IN ACCORDANCE WITH ARTICLE 10(1) OF COMMISSION REGULATION (EU) 2016/1719 OF 26 SEPTEMBER 2016 ESTABLISHING A GUIDELINE ON FORWARD CAPACITY ALLOCATION

22 September 2021

I. Introduction and legal context

This document elaborates an agreement of all relevant Capacity Calculation Region ("CCR") Hansa Regulatory Authorities, reached on 22 September 2021, on the Hansa TSOs' proposal for amending the CCR Hansa Common Coordinated Capacity Calculation Methodology, hereafter referred to as "LT CCM", being the abbreviation of "Capacity Calculation Methodology for Long-term Time Frames".

The all CCR Hansa TSOs ("Hansa TSOs") are therefore the German TSOs, TenneT TSO GmbH and 50Hertz Transmission GmbH, the Dutch TSO, TenneT TSO NL B.V., the Danish TSO, Energinet, the Swedish TSO, Svenska kraftnät, and the Polish TSO, Polskie Sieci Elektroenergetyczne S.A. The Hansa TSOs cooperate with the Norwegian TSO, Statnett, on the development of the regional terms, conditions, and methodologies, which the Hansa TSOs are obliged to submit for regulatory approval. On 10 May 2021, after the submission of the proposal, the bidding zone border between Germany/Luxembourg and Sweden 4 was assigned to the Hansa Capacity Calculation Region by ACER decision No. 04/2021. As a result, the German TSO, Baltic Cable A.B., became a Hansa TSO. Baltic Cable has not yet submitted the proposal to the German regulatory authority, but is requested to do so until 28.02.2022. The other Hansa TSOs cooperate with Baltic Cable A.B. on the development of the regional terms, conditions, and methodologies.

The all CCR Hansa Regulatory Authorities ("Hansa NRAs") are therefore Bundesnetzagentur ("BNetzA"), Autoriteit Consument & Markt ("ACM"), Danish Utility Regulator ("DUR"), Energimarknadsinspektionen ("Ei"), and Urząd Regulacji Energetyki ("URE"). However, the views of Reguleringsmyndigheten for energi ("NVE-RME") have been acknowledged in the process.

The proposal aims at amending the current LT CCM which was approved by the last Hansa NRA on 21 December 2020. According to Article 19 of the approved LT CCM the methodology will be amended, following the outcome of the European Commission ("EC") derogation decision for Krieger's Flak combined grid solution ("KF CGS"). If the derogation is granted, the Hansa TSOs will amend the methodology pursuant to Article 4(12) of Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation as amended by Commission implementing regulation (EU) 2021/280 of 22 February 2021 amending Regulations (EU) 2015/1222, (EU) 2016/1719, (EU) 2017/2195 and (EU) 2017/1485 in order to align them with Regulation (EU) 2019/943 ("FCA Regulation").

The EC decision (EU) 2020/2123 of 11 November 2020, on KF CGS, was eventually published on 17 December 2020 in the Official Journal of the European Union, and in all language versions of the EU Member States[1]. In this decision the EC grants a derogation to KF CGS. Therefore, the Hansa TSOs propose an amended methodology.

Article 4(9) of FCA Regulation requires Regulatory Authorities of the region to consult and closely cooperate and coordinate with each other in order to reach an agreement. A decision is required by each Hansa NRA by 12 October 2021, six months after receipt of the proposal by the last Hansa NRA.

[1] English language version of the decision, https://eur-lex.europa.eu/legalcontent/EN/TXT/HTML/?uri=CELEX:32020D2123&from=EN

This agreement of the Hansa NRAs is intended to constitute the basis on which they will each subsequently make national decisions pursuant to Article 4(7)(a) of the FCA Regulation to approve the proposal submitted by CCR Hansa TSOs.

The legal provisions relevant to the submission and approval of the proposal, and this CCR Hansa NRA agreed opinion, can be found in the Articles 3, 4, 6, 9, and 10 of the FCA Regulation and Article 5 of the Regulation (EU) 2019/942 of the European Parliament and of the Council of 5 June 2019 establishing a European Union Agency for the Cooperation of Energy Regulators ("ACER Regulation"). They are quoted here for reference:

Article 3 of the FCA Regulation:

This Regulation aims at:
(a) promoting effective long-term cross-zonal trade with long-term cross-zonal hedging opportunities for market participants;
(b) optimising the calculation and allocation of long-term cross-zonal capacity;
(c) providing non-discriminatory access to long-term cross-zonal capacity;
(d) ensuring fair and non-discriminatory treatment of TSOs, the Agency, regulatory authorities and market participants;
(e) respecting the need for a fair and orderly forward capacity allocation and orderly price formation;
(f) ensuring and enhancing the transparency and reliability of information on forward capacity allocation;
(g) contributing to the efficient long-term operation and development of the electricity transmission system and electricity sector in the Union.

Article 4 of the FCA Regulation:

1. TSOs shall develop the terms and conditions or methodologies required by this Regulation and submit them for approval to the Agency or the competent regulatory authorities within the respective deadlines set out in this Regulation. In exceptional circumstances, notably in cases where a deadline cannot be met due to circumstances external to the sphere of TSOs, the deadlines for terms and conditions or methodologies may be prolonged by the Agency in procedures pursuant to paragraph 6, and jointly by all competent regulatory authorities in procedures pursuant to paragraph 7. Where a proposal for terms and conditions or methodologies pursuant to this Regulation needs to be developed and agreed by more than one TSO, the participating TSOs shall closely cooperate. TSOs, with the assistance of the ENTSO for Electricity, shall regularly inform the competent regulatory authorities and the Agency about the progress of the development of those terms and conditions or methodologies.

….

5. Each regulatory authority or where applicable the Agency, as the case may be, shall be responsible for approving the terms and conditions or methodologies referred to in paragraphs 6 and 7. Before approving the terms and conditions or methodologies, the Agency or the competent regulatory authorities shall revise the proposals where necessary, after consulting the respective TSOs, in order to ensure that they are in line with the purpose of this Regulation and contribute to

market integration, non-discrimination, effective competition and the proper functioning of the market.

….

7. The proposals for the following terms and conditions or methodologies and any amendments thereof shall be subject to approval by all regulatory authorities of the concerned region:

(a) the capacity calculation methodology pursuant to Article 10;

….

9. Where the approval of the terms and conditions or methodologies in accordance with paragraph 7 or the amendment in accordance with paragraph 11 requires a decision by more than one regulatory authority, the competent regulatory authorities shall consult and closely cooperate and coordinate with each other in order to reach an agreement. Where applicable, the competent regulatory authorities shall take into account the opinion of the Agency. Regulatory authorities or, where competent, the Agency shall take decisions concerning the submitted terms and conditions or methodologies in accordance with paragraphs 6 and 7, within 6 months following the receipt of the terms and conditions or methodologies by the Agency or, where applicable, by the last regulatory authority concerned. The period shall begin on the day following that on which the proposal was submitted to the Agency in accordance with paragraph 6 or to the last regulatory authority concerned in accordance with paragraph 7.

10. Where the regulatory authorities have not been able to reach an agreement within the period referred to in paragraph 9, or upon their joint request, or upon the Agency's request according to the third subparagraph of Article 5(3) of Regulation (EU) 2019/942, the Agency shall adopt a decision concerning the submitted proposals for terms and conditions or methodologies within 6 months, in accordance with Article 5(3) and the second subparagraph of Article 6(10) of Regulation (EU) 2019/942.

…

12. The Agency or the regulatory authorities jointly, where they are responsible for the adoption of terms and conditions or methodologies in accordance with paragraphs 6 and 7, may respectively request proposals for amendments of those terms and conditions or methodologies and determine a deadline for the submission of those proposals. TSOs responsible for developing a proposal for terms and conditions or methodologies may propose amendments to regulatory authorities and the Agency.

The proposals for amendment to the terms and conditions or methodologies shall be submitted to consultation in accordance with the procedure set out in Article 6 and approved in accordance with the procedure set out in this Article.

13. TSOs responsible for establishing the terms and conditions or methodologies in accordance with this Regulation shall publish them on the internet after approval by the Agency or the competent

regulatory authorities or, if no such approval is required, after their establishment, except where such information is considered as confidential in accordance with Article 7.'

Article 6 of the FCA Regulation:

1. TSOs responsible for submitting proposals for terms and conditions or methodologies or their amendments in accordance with this Regulation shall consult stakeholders, including the relevant authorities of each Member State, on the draft proposals for terms and conditions or methodologies where explicitly set out in this Regulation. The consultation shall last for a period of not less than one month.
2. The proposals for terms and conditions or methodologies submitted by the TSOs at Union level shall be published and submitted to consultation at Union level. Proposals submitted by the TSOs at regional level shall be submitted to consultation at least at regional level. Parties submitting proposals at bilateral or at multilateral level shall consult at least the Member States concerned.
3. The entities responsible for the proposal for terms and conditions or methodologies shall duly consider the views of stakeholders resulting from the consultations undertaken in accordance with paragraph 1, prior to its submission for regulatory approval if required in accordance with Article 4 or prior to publication in all other cases. In all cases, a clear and robust justification for including or not the views resulting from the consultation shall be developed and published in a timely manner before or simultaneously with the publication of the proposal for terms and conditions or methodologies.

Article 9 of the FCA Regulation:

1. All TSOs in each capacity calculation region shall ensure that long-term cross-zonal capacity is calculated for each forward capacity allocation and at least on annual and monthly time frames.

Article 10 of the FCA Regulation:

1. No later than six months after the approval of the common coordinated capacity calculation methodology referred to in Article 9(7) of Regulation (EU) 2015/1222, all TSOs in each capacity calculation region shall submit a proposal for a common capacity calculation methodology for longterm time frames within the respective region. The proposal shall be subject to consultation in accordance with Article 6.
2. The approach used in the common capacity calculation methodology shall be either a coordinated net transmission capacity approach or a flow-based approach.

Article 5 of the ACER Regulation

(…)

3. Where one of the following legal acts provides for the development of proposals for terms and conditions or methodologies for the implementation of network codes and guidelines which require the approval of all the regulatory authorities of the region concerned, those regulatory authorities shall agree unanimously on the common terms and conditions or methodologies to be approved by each of those regulatory authorities:

(a) a legislative act of the Union adopted under the ordinary legislative procedure;

(b) network codes and guidelines that were adopted before 4 July 2019 and subsequent revisions of those network codes and guidelines; or

(c) network codes and guidelines adopted as implementing acts pursuant to Article 5 of Regulation (EU) No 182/2011.

(…)

6. Before approving the terms and conditions or methodologies referred to in paragraphs 2 and 3, the regulatory authorities, or, where competent, ACER, shall revise them where necessary, after consulting the ENTSO for Electricity, the ENTSO for Gas or the EU DSO entity, in order to ensure that they are in line with the purpose of the network code or guideline and contribute to market integration, non-discrimination, effective competition and the proper functioning of the market. ACER shall take a decision on the approval within the period specified in the relevant network codes and guidelines. That period shall begin on the day following that on which the proposal was referred to ACER.

II. Hansa TSOs' proposal for amendment of LT CCM, and enclosed annexes thereto

The Hansa TSOs' proposal for amendment of LT CCM

The proposal continues the basic and principal characteristics of the current LT CCM for CCR Hansa but adds provisions specifically applying to KF CGS.

The proposal for amendment adds a reference to the EC (EU) 2020/2123 decision of 11 November 2020 on the derogation for KF CGS in Recital (2) and article 1(2) of the LT CCM.

The proposal for amendment adds a new Recital (25) which refers to the requirement in Article 16 (8) of Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity ("Electricity Regulation") that at least 70% of the transmission capacity respecting operational security limits after deduction of contingencies is available for cross-zonal trade. The recital continues explaining that the EC derogation decision states that this 70% minimum percentage shall apply to the capacity remaining after all capacity expected to be required for the transmission of production from the wind farms connected to the KF CGS to shore has been deducted ('residual capacity').

Article 9(1) to (4) of the current LT CCM contain mathematical descriptions for calculation of Available Transfer Capacity ("ATC"), in the long term timeframes, on DC and AC lines, between Hansa bidding zones. The proposal for amendment introduces an Article 9(5) with a mathematical description for calculation of ATC, in the long term timeframes, on KF CGS. This mathematical description takes account of the CE derogation decision.

Article 19, which introduced the requirement for an amendment in the case of a derogation for KF CGS, has been deleted since it is now obsolete.

The Hansa TSOs' amended Explanatory Document to the LT CCM

The Hansa TSOs' explanatory document to the proposal for amendment of the LT CCM implies the following notably amendments compared to the previous explanatory document,

On page 10, the explanatory document explains the background for adding the capacity calculation specific for KF CGS.

The Hansa TSOs' Consultation Report on the public consultation of the proposal for amendment

The Hansa TSOs' specific Consultation Report summarizes the views resulting from the TSOs' public consultation between 19 January 2021 and 19 February 2021, of the draft proposal for amendment, and the TSOs' comments on those views.

In reply to the view of a stakeholder that the amendment would not ensure optimal long-term capacity to be made available to the market, the Hansa TSOs explain in the Consultation Report that with the introduction of the KF CGS, the LTTRs on the DK2-DE/LU border effectively increase.

III. Agreed Hansa NRAs' position

When assessing the currently valid Hansa LT CCM, Hansa NRAs considered that the EC's then pending decision on a derogation for KF CGS would have an effect on the capacity calculation concerning this interconnector. Given the deadline for approving the currently valid Hansa LT CCM and the timeline of the EC's derogation decision, it was not possible to take the outcome of the derogation procedure into account. Instead, article 19 of the Hansa LT CCM required Hansa TSOs to submit a proposal for amendment of the Hansa LT CCM if the derogation is granted for KF CGS.

The Hansa NRAs note that the EC adopted the decision on a derogation for KF CGS on 11 November 2020, which was then officially published and numbered as "(EU) 2020/2123" on 17 December 2020.

The Hansa NRAs consider that it is in accordance with the requirements set in Article 19 of the current Hansa LT CCM that the proposal for amendment of the Hansa LT CCM should,

- introduce provisions in the LT CCM on capacity calculation applying for KF CGS;
- refer to the EC`s decision as the legal basis for the LT CCM in respect of KF CGS; and
- include explanations on the implications of EC's decision on KF CGS, in the Recital (18) of the LT CCM.

On 2 July 2021, the Hansa NRAs engaged the process of revising the proposal for amendment of LT CCM in the CCR Hansa before approving it pursuant to Article 5(6) of the ACER Regulation and Article 4(5) of the FCA Regulation.

The NRAs agreed to clarify the formula in Article 9(5) of the methodology. The formula was incomplete. It stated:

"When KF CGS is not in operation ($\mathrm{P}_{\max\,\mathrm{thermal,DK}}$, $\mathrm{P}_{\max\,\mathrm{thermal,DE}}$ or $\mathrm{P}_{\max\,\mathrm{thermal,XB}}$ is equal to zero) due to a planned or unplanned outage: $\mathrm{ATC}_{\mathrm{KF\ CGS,DE\rightarrow DK}} = 0$"

This formula was solely covering the Available Transfer Capacity on KF CGS in direction DE/LU→DK2 provided to the day-ahead respective intraday market and not the Available Transfer Capacity on KF CGS in direction DK2→DE/LU provided to the day-ahead respective intraday market. Hence, NRAs added: "$\mathrm{ATC}_{\mathrm{KF\ CGS,DK\rightarrow DE}} = 0$"

Now it is complete and reads as follows:

"When KF CGS is not in operation ($\mathrm{P}_{\mathrm{max\,thermal,DK}}$, $\mathrm{P}_{\mathrm{max\,thermal,DE}}$ or $\mathrm{P}_{\mathrm{max\,thermal,XB}}$ is equal to zero) due to a planned or unplanned outage:

$$\mathrm{ATC}_{\mathrm{KF\ CGS,DE\rightarrow DK}} = 0$$
$$\mathrm{ATC}_{\mathrm{KF\ CGS,DK\rightarrow DE}} = 0"$$

Furthermore, Hansa NRAs agreed to revise incorrect references in Article 19(2) to (4) in Hansa TSO's proposal for amendment of LT CCM in the CCR Hansa, referring to Article 20(1)(b) to (d), and Article 20(2) of Hansa LT CCM, instead of Article 19 (1)(b) to (d), and Article 19(2).

In accordance with Article 5(6) of the ACER Regulation and Article 4(5) of the FCA Regulation Hansa NRAs have consulted respectively ENTSO-E, the regional security coordinators, and the Hansa TSOs. The proposal including revisions was sent to ENTSO-E, regional security coordinators and Hansa TSOs on 2 July 2021 with a deadline for comments until 15 August 2021. The Hansa NRAs did not receive any comments from ENTSO-E and the regional safety coordinators. On 14 July 2021, the Hansa TSOs stated that content wise they do not have any concerns. On 22 September 2021 the Hansa NRA's agreed on the final version of the revised methodology.

The Hansa NRAs have closely cooperated and coordinated with each other in order to reach an agreement on the Hansa TSOs' proposal for the amended LT CCM for CCR Hansa and the revision described above.

Hansa NRAs view that the proposal for amendment including the revisions by Hansa NRAs meets the requirements of the FCA Regulation.

IV. Conclusion

The Hansa NRAs have assessed, consulted, coordinated, and closely cooperated with each other, to reach an agreement that they shall revise the proposal for amendment of LT CCM Hansa (in accordance with the concrete amendments as presented in the document attached to this position paper) before approving it.

The Hansa TSOs' proposal for amendment of the FCA CCM was received by the last Hansa NRA on 12 April 2021.

On the basis of the actual common agreement among the Hansa NRAs, a decision on approval of the Hansa TSOs' proposal for amending the LT CCM is required by each of the Hansa NRAs by 12 October 2021 at the latest, pursuant to the 6-months deadline, following from Article 4(9) of the FCA Regulation.

Following national decisions on approval, adopted by each of the Hansa NRAs, each of the Hansa TSOs is then required to publish the amended LT CCM for CCR Hansa pursuant to Article 4(13) of the FCA Regulation.

~~All TSOs' of the Hansa~~ Common Coordinated Capacity Calculation Methodology for Capacity Calculation Region ~~Hansa TSOs' proposal for capacity calculation methodology~~ in accordance with Article 10(1) of Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation

~~16 March~~ 22 September 2021

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All TSOs of the Hansa Capacity Calculation Region, taking into account the following:

Whereas

1. This document describes a common methodology developed by all Transmission System Operators (hereafter referred to as "TSOs") of the Hansa Capacity Calculation Region (hereafter referred to as "CCR Hansa") as defined in accordance with Article 15 of Commission Regulation (EU) 2015/1222 establishing a guideline on Capacity Allocation and Congestion Management (hereafter referred to as "the "CACM Regulation") regarding a methodology for Capacity Calculation (hereafter referred to as "CCM") in accordance with Article 10 of the Commission Regulation 2016/1719 (hereafter referred to as "the "FCA Regulation").

2. This CCM takes into account the general principles, goalsobjectives, and other methodologies, set in the FCA Regulation, the CACM Regulation, Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as "the SO Regulation"), Regulation (EU) 2019/943 of the European Parliament and of the Council of 13 July 20095 June 2019 on conditions for access to the network for cross-border exchanges inthe internal market for electricity (hereafter referred to as "Regulation (EU) 2019/943","), and the Commission Decision (EU) 2020/2123 of 11 November 2020 on the derogation for Kriegers Flak Combined Grid FacilitySolution (hereafter referred to as "KF CGS") following Article 64 of Regulation (EU) 2019/943. —

3. The goalobjective of the FCA Regulation is the coordination and harmonisation of cross-zonal capacity calculation and capacity allocation in the forward markets, and it sets requirements for the TSOs to cooperate on the level of capacity calculation regions (hereinafter referred to as "CCRs"), on a Pan-European level and across bidding-zone borders. The FCA Regulation also sets rules for establishing capacity calculation methodologies based on the coordinated net transmission capacity approach (hereafter referred to as "CNTC approach").

4. This CCM is the concrete methodology for calculating capacity up to one year ahead, so-called long-term capacity calculation (LT CC). The objective of providing LT capacity is twofold. Firstly, the calculation of LT capacity will act as input to the issuing of LT transmission rights (LTTRs) on bidding-zone borders where LTTRs are implemented. Thus, the calculation of LT capacity will also provide capacity for hedging purposes. Secondly, market participants in the power market aim at forecasting future DA pricing of the different bidding zones, acting as an input to the strategies for operation and investment decisions. The goal of LT CC is to provide the market participants with the information of expected capacity between bidding zones, as this information has an impact on demand and supply of electricity and hence the DA pricing.

5. LTTRs issued based on this CCM results and allocated via Single Allocation Platform established in accordance with Article 49 of the FCA Regulation are to be considered in the capacity calculation methodology approved under Article 21 of CACM Regulation.

6. This CCM takes into account the Common Grid Model (hereafter referred to as "CGM") methodology established in accordance with Article 18 of the FCA Regulation and assumes that the CGM developed accordingly is available in order to execute capacity calculation for the long-term time frame. As the case may be, the availability of the IGM, to be merged into the CGM, presupposes that requirements in national legislation on information security are taken into account. Thus, the frequency of the reassessment of long-term capacity depends on the availability of the CGM for the long-term time frame. Eight scenarios shall be created within the CGM for the year-ahead capacity calculation, and two scenarios for the month-ahead capacity calculation.

7. This CCM follows the definitions for the CNTC approach according to Article 2(8) in the CACM Regulation.

8. This CCM takes into account that not all bidding-zone borders in CCR Hansa apply LTTRs, implying that a separate legal document covering the methodology for splitting of long-term cross-zonal capacity, in a coordinated manner between different long-term time frames, shall be developed by the affected TSOs. The legal status of the separate methodology for splitting of long-term cross-zonal capacity shall be distinguished from the legal status of this methodology. The methodology for splitting of long-term cross-zonal capacity only applies to the bidding-zone borders where LTTRs have been introduced.

9. The CCM for the CCR Hansa is based on a CNTC approach with a strong link to adjacent CCRs, i.e. CCR Nordic and CCR Core.

10. The CCM for the CCR Hansa ensures optimal use of the transmission capacity as it takes advantage of the capacity calculation methodologies being developed simultaneously in CCR Nordic and CCR Core in order to represent the constraints in the AC grid. The use of CCR Hansa interconnector capacity and AC grid capacity is fully integrated in this way, thereby providing a fair competition for the scarce capacities in the system and an optimal system use.

11. The CCM for the CCR Hansa treats all bidding-zone borders in the CCR Hansa and adjacent CCRs equally and provides non-discriminatory access to cross-zonal capacity. It creates a basis for a fair and orderly market and a fair and orderly price format by implementing a pragmatic CCM solution which is to be integrated with the methodologies of the adjacent CCRs.

12. The CCM for the CCR Hansa will be fully implemented in a situation when CCR Nordic and CCR Core will take into account the influences of the CCR Hansa bidding-zone borders completely (particularly AC grid restrictions) during the capacity calculation according to the respective CCMs of these two regions.

13. The CCM for the CCR Hansa foresees a stepwise implementation to the situation where both the CCR Nordic and CCR Core fully take into account the influences of the CCR Hansa bidding-zone borders (particularly AC grid restrictions). Until then, the current capacity calculation processes for the CCR Hansa bidding-zone borders will continue. This implies that the current capacity calculation processes will also continue on the CCR Hansa bidding-zone borders when the CCR Core will implement a temporary methodology in which CCR Hansa influence is taken into CCR Core calculation process as fixed. Those fixed values can be taken as provided in scenarios developed in accordance to the common grid model methodology pursuant to Article 18 of the FCA Regulation or estimated solely by CCR Core but will still not be considered in CCR Hansa calculations. In such an approach, the anticipated flows on CCR Hansa bidding-zone borders are taken into account in the available margins of critical network elements in the methodology of CCR Core which is less efficient than taking fully into account the influences of the CCR Hansa during the capacity calculation process.

14. With the CCM for the CCR Hansa, the CCR Hansa TSOs are preconditioning the complete consideration of CCR Hansa influence in the adjacent CCRs Nordic and Core CCMs, and when implemented there will be no undue discrimination between cross-zonal flows within CCR Hansa and adjacent CCRs. It will also ensure no undue discrimination between bidding-zone borders within CCR Hansa.

15. The CCM for the CCR Hansa has no negative consequences on the development of CCMs in adjacent CCRs. The CCM for the CCR Hansa therefore does not hinder an efficient long-term operation in CCR Hansa and/or adjacent CCRs, and the development of the transmission system in the European Union.

16. With the CCM for the CCR Hansa being aligned with the CCMs of adjacent CCRs, the selection, inclusion and justification of relevant critical network elements and contingencies, the handling of adjustment of power flows on critical network elements due to remedial actions as well as the mathematical description for the calculation of power transfer distribution factors and the calculation of available margins on critical network elements for the adjacent AC grids are handled by the adjacent CCRs' CCMs.

17. Article 4(8) of the FCA Regulation requires that the expected impact of the CCM on the objectives of the FCA Regulation is described. The impact is presented below (points (19 to (23) of this Whereas section).

18. The CCM contributes to and does not in any way hamper the achievement of the objectives of Article 3 of the FCA Regulation. In particular, the CCM serves the objectives of optimising the calculation and allocation of long-term cross-zonal capacity (Article 3(b) of the FCA Regulation), providing non-discriminatory access to long-term cross-zonal capacity (Article 3(c) of the FCA Regulation), respecting the need for a fair and orderly forward capacity allocation and orderly price formation (Article 3(e) of the FCA Regulation), ensuring and enhancing the transparency and reliability of information on forward capacity allocation (Article 3(f) of the FCA Regulation) and contributing to the efficient long-term operation and development of the electricity transmission system and electricity sector in the Union (Article 3(g) of the FCA Regulation).

19. The CCM serves the objective of optimising the calculation and allocation of long-term cross-zonal capacity in accordance with Article 3(b) of the FCA Regulation since the CCM is using the CNTC approach to provide cross-zonal capacities that are calculated in a more coordinated manner, to market participants. Moreover, optimisation of capacity calculation is secured based on coordination between CCR Hansa TSOs and adjacent CCRs hereby applying CGM and a Coordinated Capacity Calculator (CCC).

20. The CCM serves the objective of transparency and reliability of information (Article 3(f) of the FCA Regulation) as the CCM determines the main principles and main processes for the long-term time frame. The CCM enables TSOs to provide market participants with the same reliable information on cross-zonal capacities for long-term allocation and for forecasting, and cross-zonal risk hedging purposes in a transparent way. To facilitate transparency, the TSOs should publish data to the market on a regular basis to help market participants evaluate the capacity calculation process and long-term capacity forecasts. The TSOs should engage stakeholders in dialogue to specify necessary and useful data to this effect. The publication requirements are without prejudice to confidentiality requirements pursuant to national legislation.

21. The CCM does not hinder an efficient long-term operation in CCR Hansa and adjacent CCRs and the development of the transmission system in the European Union (Article 3(g) of the FCA Regulation). The CCM, by taking most important grid constraints into consideration, will support efficient pricing in the forward markets and forecasts of long-term cross-zonal capacity, providing the right signals from a long-term perspective.

22. The CCM contributes to the objective of respecting the need for a fair and orderly forward capacity allocation and price formation (Article 3(e) of the FCA Regulation) by making available in due time the cross-zonal capacity to be released in the long-term time frame and forward markets, where appropriate.

23. The CCM contributes to non-discriminatory access to long-term cross-zonal capacity (Article 3(c) of the FCA Regulation) by not applying barriers for access to the auction of LTTRs and consequently its full compliance with Harmonised Allocation Rules for long-term transmission rights (hereafter referred to as “Harmonised Allocation Rules”).

24. Rules for avoiding undue discrimination are only relevant when allocation of cross-zonal capacity in a long-term time frame takes place, hence this is considered only relevant for TSOs allocating LTTRs.

25. Article 16 (8) of Regulation (EU) 2019/943 sets out that transmission system operators shall not limit the volume of interconnection capacity to be made available to market participants as a means of solving congestion inside their own bidding zone or as a means of managing flows resulting from transactions internal to bidding zones. This shall be considered to be complied when at least 70 % of the transmission capacity respecting operational security limits after deduction of contingencies, as determined in accordance with the CACM Regulation, are available for cross-zonal trade.
~~The~~ Commission Decision (EU) 2020/2123 of 11 November 2020 on the derogation for ~~Kriegers Flak Combined Grid Facility~~KF CGS following ~~article~~Article 64 of Regulation (EU) 2019/943 specifies that this minimum percentage should not apply to the overall transmission capacity respecting operational security limits after deduction of contingencies for ~~Kriegers Flak Combined Grid Facility.~~KF CGS. Instead, it should apply only to the capacity remaining after all capacity expected to be required for the transmission of production from the wind farms connected to ~~the Kriegers Flak Combined Grid Facility~~KF CGS to shore has been deducted ('residual capacity'). The exception for ~~Kriegers Flak Combined Grid Facility~~KF CGS is addressed throughout this CCM.

SUBMIT THE FOLLOWING CCM TO ALL REGULATORY AUTHORITIES OF THE CCR HANSA:

TITLE I
General

Article 1
Subject matter and scope

1. The CCM is the common methodology of TSOs in CCR Hansa in accordance with Article 10(1) of the FCA Regulation.

2. This CCM applies solely to the CCR Hansa as defined in accordance with Article 15 of the CACM Regulation.

3. This CCM covers the capacity calculation methodologies for the long-term time frame, where cross-zonal capacity shall be calculated for each forward capacity allocation time frame, and at least on annual and monthly time frames.

Article 2
Definitions and interpretation

1. For the purposes of the Proposal, the terms used shall have the meaning given to them in Article 2 Regulation (EU) 2019/943, Article 2 of the FCA Regulation, Article 2 of the CACM Regulation, Article 3 of the SO Regulation, Article 2 of ~~the~~ Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing (hereafter referred to as "the Balancing Regulation"), and Article 2 of Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council (hereafter referred to as "the Transparency Regulation"), Article 2 of the capacity calculation methodology developed in CCR Hansa in accordance with Article 20(2) of the CACM Regulation, and Commission Decision (EU) 2020/2123 of 11 November 2020~~.~~ on the derogation for KF CGS following Article 64 of Regulation (EU) 2019/943.

   In addition, in this CCM the following definitions shall apply:

   a) The Net Transfer Capacity (NTC) is the maximum total exchange programme between two adjacent bidding zones complying with security standards and taking into account the technical uncertainties on future network conditions: NTC = TTC - TRM. In case the Transmission Reliability Margin (TRM) equals zero, the NTC equals the Total Transfer Capacity (TTC).
   b) The Available Transfer Capacity (ATC) is a measure of the transfer capability remaining in the physical transmission network for further commercial activity after already committed uses: ATC = NTC - AAC. In case the Already Allocated Capacity (AAC) equals zero, the ATC equals the NTC.
   c) A CCR Hansa interconnector is either a radial DC line(s) or the combination of radial AC lines between the meshed AC grids on either side of the bidding-zone border.
   d) A critical network element (CNE) is a network element which is significantly impacted by cross-zonal trades. This element can be an overhead line, an underground cable or a transformer.

~~1.~~2. In this CCM, unless the context requires otherwise:
   a) The singular indicates the plural and vice versa;
   b) headings are inserted for convenience only and do not affect the interpretation of this CCM; and
   c) references to an "Article" are, unless otherwise stated, referring to an article of this CCM document.

d) Any reference to legislation, regulations, directives, orders, instruments, codes or any other enactment shall include any modification, extension or re-enactment of it when in force.

~~2.~~3. For the sake of clarity, this CCM does not affect TSOs' right to delegate their task in accordance with the Article 62 of the FCA Regulation. In this CCM "TSO" shall refer to Transmission System Operator or to a third party whom the TSO has delegated task(s) to in accordance with the FCA Regulation, where applicable. However, the delegating TSO shall remain responsible for ensuring compliance with the obligations under the FCA Regulation.

TITLE 2
Calculation of the inputs to capacity calculation for the long-term time frame

Article 3
Methodology for determining transmission reliability margin

1. The methodology for determining the Transmission Reliability Margin (TRM) applies solely to a border connected by AC lines in the CCR Hansa.

2. The methodology for the TRM pursuant to Article 11 of the FCA Regulation is founded on 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 subsequently specifies the uncertainties to be considered in the capacity calculation.

3. Following Article 11 of the FCA Regulation, the methodology for the TRM takes into account unintended deviations of physical electricity flows caused by the adjustment of electricity flows within and between control areas and unintended deviations of flows which could occur between the capacity calculation time frame and real time. The activation of remedial actions is not regarded as a source of uncertainty which needs to be considered in the TRM.

4. The TRM calculation consists of the following steps:
    a) Identification of sources of uncertainty for each TTC calculation. The TTC calculation is based on the CGM which includes assumptions of cross-border exchanges between third parties and forecasts for wind and solar infeed which impact the generation and load pattern as well as the grid topology;
    b) Derivation of independent time series for each uncertainty and determination of probability distributions (PD) of each time series. Generic time series from an already existing database are used as a starting point. The time series cover an appropriate timespan from the past in order to get a significant and representative amount of data;
    c) Convolution of the individual PDs and derivation of the TRM value from the convoluted PD. From the convoluted PD the 90th percentile is taken.

5. The inputs for the TRM calculation shall be coordinated and commonly agreed by the involved CCR Hansa TSOs to ensure a harmonised approach for deriving the reliability margin from the probability distribution.

6. The TRM shall be updated regularly and at least once a year by the relevant CCR Hansa TSOs.

Article 4
Methodology for determining operational security limits

1. The CCR Hansa TSOs shall respect the same operational security limits as in the operational security analysis in accordance with Article 12 of the FCA Regulation. These limits shall be

defined in accordance with Article 25 of the SO Regulation. Each CCR Hansa TSO shall provide relevant operational security limits to the CCC to be used in the capacity calculation.

2. Thermal limits of the CCR Hansa CNEs are considered in the TTC as described in the calculation process in Article 9.

3. Operational security limits and contingencies of AC grid elements adjacent to the CCR Hansa CNEs, reflecting the flow interactions between the CCR Hansa interconnectors and the AC grids, are to be considered in the flow-based parameters of CCR Nordic and CCR Core.

4. CCR Hansa TSOs can assess individually the operational security limits which cannot be reflected in the flow-based parameters of adjacent CCRs, including but not limited to: voltage stability limits, short-circuit limits and dynamic stability limits.

Article 5
Methodology for Allocation Constraints

1. CCR Hansa TSOs may, besides active power-flow limits on CCR Hansa interconnectors, apply allocation constraints during the capacity allocation phase that are needed to maintain the transmission system within operational security limits which cannot be transformed efficiently into maximum flows on critical network elements or constraints intended to increase economic surplus, to take into account:
    a. The production in a bidding zone shall be above a given minimum production level;
    b. The combined import or export from one bidding zone to other adjacent bidding zones shall be limited in order to ensure adequate level of generation reserves required for secure system operation;
    c. Maximum flow change per bidding zone border, connected with DC lines, between MTUs (ramping restrictions);
    d. Implicit loss factors on DC lines.

2. Following Article 5(1)(a), a minimum production level may need to be assured in a bidding zone in order to guarantee a minimum number of generators running in the system that are able to supply reactive power needed for voltage support or to safeguard sufficient inertia to ensure dynamic stability.

3. Following Article 5(1)(b), a CCR Hansa TSO may use allocation constraints to ensure a minimum level of operational reserve for balancing in case of a central dispatch model. The allocation constraints introduced are bi-directional, with independent values for directions of import and export, depending on the foreseen balancing situation. The details, justifications for use, and the methodology for the calculation of this kind of allocation constraints are set forth in Annex 1.

4. Following Article 5(1)(c), a ramping restriction is an instrument of system operation to maintain system security for frequency management purposes. This sets the maximum change in power flows between MTUs (max. MW/MTU per CCR Hansa bidding zone border).

5. Following Article 5(1)(d), in case of implicit loss handling an implicit loss factor on DC lines during capacity allocation ensures that the DC line will not carry a flow unless the welfare gain exceeds the costs of the corresponding losses.

6. Each CCR Hansa TSO applying one or more allocation constraints of Article 5(1) shall describe the allocation constraint(s) with the applied limits and communicate these transparently to the market participants together with a justification

7. CCR Hansa TSOs report on statistical indicators of cross-zonal capacity, including allocation constraints where appropriate for each capacity calculation time frame as a part of a biennial report on capacity calculation and allocation according to Article 31 of the CACM Regulation. Upon request of the CCR Hansa National Regulatory Authorities (hereafter referred to as "CCR Hansa NRAs~~,~~"), CCR Hansa TSOs shall provide additional information about allocation constraints.

8. The shadow prices of the applied allocation constraints in the capacity allocation shall be recorded and reported by the NEMOs to the CCR Hansa TSOs and CCR Hansa NRAs.

Article 6
Methodology for determining contingencies relevant to capacity calculation

1. The CCR Hansa TSOs shall respect the same contingencies as in the operational security analysis in accordance with Article 12 of the FCA Regulation and Article 72 of the SO Regulation. These contingencies are to be considered in respective CCMs developed by adjacent CCRs.

Article 7
Methodology for determining generation shift keys (GSKs)

1. For the TTC calculation of the radial AC lines, as described in Article 9, the GSKs of the relevant bidding zones are to be defined in the CCMs of adjacent CCRs and shall be in accordance with Article 13 of the FCA Regulation. These GSKs are applied to represent the distribution of the power flow on the interconnectors in CCR Hansa.

2. Flow interactions between the CCR Hansa interconnectors and the adjacent AC grids are to be reflected in the corresponding LT CCM parameters of adjacent CCRs.

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

1. Costly RAs shall not be considered in capacity calculation.

2. Each CCR Hansa TSO shall define if non-costly RAs are available to be applied in capacity calculation in accordance with Article 25(1) of the FCA Regulation.

3. If non-costly RAs are available, each CCR Hansa TSO shall take them into account in the capacity calculation to allow for an increase in cross-zonal capacity in line with the equation in Article 9

4. Available RAs shall be coordinated between CCR Hansa TSOs in the same way as regulated in Coordinated Redispatching and Countertrading Methodology established in accordance with Article 35 of the CACM Regulation, clearly described, and communicated to other TSOs and the CCC.

5. If RAs are used in the capacity calculation, their application shall regularly and at least once a year be reviewed by the CCR Hansa TSOs the in accordance with Article 27(4)(c) of the CACM Regulation.

TITLE 3
Detailed description of the capacity calculation approach for the long-term time frame

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

1. The following mathematical description applies for the calculation of ATC on the DC lines between bidding zones.

   The $\mathrm{ATC}_{\mathrm{DC,A\rightarrow B}}$ on a bidding-zone border that is connected by DC lines in the direction A→B is calculated as follows:

$$\mathrm{ATC}_{\mathrm{DC,A\rightarrow B}} = \mathrm{TTC}_{\mathrm{A\rightarrow B}} - \mathrm{AAC}_{\mathrm{A\rightarrow B}}$$

2. If adjacent CCR CCM is based on cNTC approach the capacity shall be calculated in three steps for both directions, A→B and B→A.

   Step 1: The $\mathrm{ATC}_{\mathrm{i,DC,A\rightarrow B}}$ on a DC line i in the direction A→B is calculated as follows:

$$\mathrm{ATC}_{\mathrm{i,DC,A\rightarrow B}} = \mathrm{TTC}_{\mathrm{i,A\rightarrow B}} - \mathrm{AAC}_{\mathrm{i,A\rightarrow B}}$$

   Step 2: In addition, ATC values are collected from CCR Core and CCR Nordic being the ATC values for the connection between the AC grids and the relevant nodes for the interconnector:

$$\mathrm{ATC}^{\mathrm{Core}}{}_{\mathrm{i,A\rightarrow B}} = \text{Defined by the CCM of CCR Core}$$

$$\mathrm{ATC}^{\mathrm{Nordic}}{}_{\mathrm{i,A\rightarrow B}} = \text{Defined by the CCM of CCR Nordic}$$

Step 3: The capacity on the bidding-zone border is then calculated by selecting the lowest of the three values from the previous steps:

$$\mathrm{ATC}_{A_{\rightarrow}B} = \mathrm{Min}\ \{\mathrm{ATC}^{\mathrm{Hansa}}, \mathrm{ATC}^{\mathrm{Core}}, \mathrm{ATC}^{\mathrm{Nordic}}\}$$

If an interconnector is out of operation for certain period, then the available capacity of that interconnector in that period is set to zero, i.e. $ATC_i=0$.

Where

A	:=	Bidding zone A.
B	:=	Bidding zone B.
$\mathrm{ATC}_{i,DC,A\rightarrow B}$	:=	Available Transfer Capacity on a DC line i in direction A→B provided to the long-term market.
$\mathrm{TTC}_{i,A\rightarrow B}$	:=	Total Transfer Capacity (TTC) of a DC line i in direction A→B. The TTC corresponds only to the full capacity of the DC line, in case of no failure on the CCR Hansa interconnector, including converter stations. The TTC for a DC line i is defined as follows: $\mathrm{TTC}_{i,A\rightarrow B} = \alpha_i \cdot P_{i,\mathrm{max\,thermal}} * \left(1 - \beta_{i,\mathrm{Loss},A\rightarrow B}\right)$
$\mathrm{AAC}_{i,A\rightarrow B}$	:=	Already Allocated including also nominated Capacity for a DC line i in direction A→B in accordance with Article 10.
α_i	:=	Availability factor of equipment defined through scheduled and unscheduled outages, α_i, being a real number in between and including 0 and 1.
$P_{i,\mathrm{max\,thermal}}$	:=	Thermal capacity for a DC line i.
$\beta_{i.\mathrm{Loss},A\rightarrow B}$	:=	Loss factor in case of explicit grid loss handling on a DC line i in direction A→B, can be a different value depending on α_i. In case of implicit loss handling, the loss factor is set to zero but considered as an import/export limit in accordance with Article 5.

3. The following mathematical description applies for the calculation of ATC on the AC lines between bidding zones.

The $\mathrm{ATC}_{\mathrm{AC,A\rightarrow B}}$ on a bidding-zone border that is connected by AC lines in the direction A→B is calculated as follows:

$$\mathrm{ATC}_{\mathrm{AC,A\rightarrow B}} = \mathrm{TTC}_{\mathrm{A\rightarrow B}} - \mathrm{TRM}_{\mathrm{A\rightarrow B}} - \mathrm{AAC}_{\mathrm{A\rightarrow B}}$$

4. If adjacent CCR CCM is based on cNTC approach the capacity shall be calculated in three steps for both directions, A→B and B→A.

Step 1: The $\mathrm{ATC}_{\mathrm{i,AC,A\rightarrow B}}$ on an AC line i in the direction A→B is calculated as follows:

$$\mathrm{ATC}_{\mathrm{i,AC,A\rightarrow B}} = \mathrm{TTC}_{\mathrm{i,A\rightarrow B}} - \mathrm{TRM}_{\mathrm{i,A\rightarrow B}} - \mathrm{AAC}_{\mathrm{i,A\rightarrow B}}$$

Step 2: In addition, ATC values are collected from CCR Core and CCR Nordic representing the value for the node relevant for the interconnector:

$$\mathrm{ATC}^{\mathrm{Core}}{}_{\mathrm{i,A\rightarrow B}} = \text{Defined by the CCM of CCR Core}$$

$$\mathrm{ATC}^{\mathrm{Nordic}}{}_{\mathrm{i,A\rightarrow B}} = \text{Defined by the CCM of CCR Nordic}$$

Step 3: The capacity on the bidding-zone border is then calculated by selecting the lowest of the three values from the previous steps:

$$\mathrm{ATC}_{\mathrm{i,A\rightarrow B}} = \mathrm{Min}\ \{\mathrm{ATC}^{\mathrm{Hansa}}, \mathrm{ATC}^{\mathrm{Core}}, \mathrm{ATC}^{\mathrm{Nordic}}\}$$

If an interconnector is out of operation for certain period, then the available capacity of the interconnector in that period is set to zero, i.e. $\mathrm{ATC}_{\mathrm{i}}=0$.

Where

A	:=	Bidding zone A.
B	:=	Bidding zone B.
$\mathrm{ATC}_{\mathrm{AC,A\rightarrow B}}$	:=	Available Transfer Capacity on an AC line of a bidding-zone border in direction A→B, provided to the long-term market.

$TTC_{A\rightarrow B}$:= Total Transfer Capacity of a bidding-zone border in direction A→B.

The TTC is determined according to the following steps:

1. Performing load-flow calculation using the CGM and the GSKs according to Article 7.
2. When assessing the loading of the individual circuits of the CCR Hansa interconnector, and to take N-1 security criterion into account, the processes of point 3 and 4 are repeated with the outage of each of the individual circuits on the CCR Hansa interconnector where the minimum TTC for each CCR Hansa interconnector and in each direction is set as TTC in the given direction.
3. Using the GSK to increase the net position of bidding zone A while decreasing the net position of bidding zone B at equal amounts until a circuit or multiple circuits of the CCR Hansa interconnector reach their permanent admissible thermal loading. The TTC is then equal to the maximum exchange between the bidding zones.
4. The process of point 3 is repeated in the opposite direction to determine the TTC in the direction B to A.

$TRM_{A\rightarrow B}$:= Transmission Reliability Margin for a bidding-zone border in direction A→B, in accordance with Article 3.

$AAC_{A\rightarrow B}$:= Already Allocated Capacity for a bidding-zone border in direction A→B, in accordance with Article 10.

5. The following mathematical description applies solely to the calculation of ATC on ~~the Kriegers Flak Combined Grid Solution (~~KF CGS~~),~~ being a hybrid interconnector and offshore wind farm (hereafter referred to as "OWF~~)~~") grid connection between DK2-DE/LU and in accordance with Commission Decision (EU) 2020/2123 of 11 November 2020:

The $ATC_{KF\ CGS,DE\rightarrow DK}$ on KF CGS, in direction from DE/LU→DK2 is calculated as follows:

$$ATC_{KF\ CGS,\ DE\rightarrow DK} = \alpha_i \cdot \min\left(\frac{P_{max\ thermal,DE}}{1+Loss_{DE}+Loss_{XB}}, \frac{P_{max\ thermal,XB}}{1+Loss_{XB}}, P_{max\ thermal,DK} - InstC_{DK}^{Wind}\right) - AAC_{KF\ CGS,DE\rightarrow DK}$$

The $ATC_{KF\ CGS,DK\rightarrow DE}$ on KF CGS, in direction from DK2 → DE/LU is calculated as follows:

$$ATC_{KF\ CGS,DK\rightarrow DE} = \alpha_i \cdot \min\left(\frac{P_{max\ thermal,DK}}{1+Loss_{DK}}, P_{max\ thermal,XB}, \frac{P_{max\ thermal,DE}-InstC_{DE}^{Wind}}{1-Loss_{XB}}, \frac{P_{max\ thermal,DE}-InstC_{DE}^{Wind}(1-Loss_{DE})}{1-Loss_{XB}-Loss_{DE}}\right) - AAC_{KF\ CGS,DK\rightarrow DE}$$

When KF CGS is not in operation ($P_{max\,thermal,DK}$, $P_{max\,thermal,DE}$ or $P_{max\,thermal,XB}$ is equal to zero) due to a planned or unplanned outage:

$$ATC_{KF\,CGS,DE\rightarrow DK} = 0$$

$$ATC_{KF\,CGS,DK\rightarrow DE} = 0$$

Where:

DE	:= Bidding zone DE/LU.
DK	:= Bidding zone DK2.
$ATC_{KF\,CGS,DE\rightarrow DK}$	:= Transfer Capacity on KF CGS in direction DE/LU→DK2 available for long term capacity allocation.
$ATC_{KF\,CGS,DK\rightarrow DE}$	:= Transfer Capacity on KF CGS in direction DK2→DE/LU available for long term capacity allocation.
$AAC_{KF\,CGS,DE\rightarrow DK}$	:= Already Allocated Capacity for KF CGS in direction DE/LU→DK2.
$AAC_{KF\,CGS,DK\rightarrow DE}$	:= Already Allocated Capacity for KF CGS in direction DK2→DE/LU.
$InstC_{DE}^{Wind}$	:= Installed generation capacities of the OWF(s) that is a part of bidding zone DE/LU and connected to the KF CGS.
$InstC_{DK}^{Wind}$	:= Installed generation capacities of the OWF(s) that is a part of bidding zone DK2 and connected to the KF CGS.
$Loss_{DE}$	:= Electrical losses between the connection point of KF CGS in bidding zone DE/LU and $CP_{OWF,\,DE}$
$Loss_{XB}$	:= Electrical losses between the connection point in $CP_{OWF,\,DK}$ and $CP_{OWF,\,DE}$
$Loss_{DK}$	:= Electrical losses between the connection point of KF CGS in bidding zone DK2 and $CP_{OWF,\,DK}$
α_i	:= Availability factor of equipment defined through scheduled and unscheduled outages, α_i, being a real number in between and including 0 and 1.
$P_{max\,thermal,DE}$	:= Thermal capacity for line section from bidding zone DE/LU to $CP_{OWF,\,DE}$
$P_{max\,thermal,XB}$	:= Thermal capacity for line section from $CP_{OWF,\,DK}$ to $CP_{OWF,\,DE}$
$P_{max\,thermal,DK}$	:= Thermal capacity for line section from bidding zone DK2 to $CP_{OWF,\,DK}$

Article 10
Rules for taking into account previously allocated cross-zonal capacity

Cross-zonal capacities shall be reduced, where appropriate, by the amount of previously allocated capacities for already allocated transmission rights. In case previously allocated capacities are bigger than cross-zonal capacities on a bidding-zone border, defined in accordance with Article 9, the relevant CCR Hansa TSO(s) shall provide zero cross-zonal capacity for the capacity allocation and use RAs to ensure operational security.

Article 11
Rules on the adjustment of power flows of cross-zonal capacity due to RAs

CCR Hansa TSOs shall take into account the capacity calculation RAs as defined in Article 8 to increase the cross-zonal capacity for the long-term time frame.

Article 12
Rules for calculating cross-zonal capacity, including rules for efficiently sharing power-flow capabilities of CNEs among different bidding-zone borders

CCR Hansa interconnectors are the only CNEs considered in the capacity calculation. None of these elements or their power-flow capabilities are shared between CCR Hansa bidding-zone borders, following ~~CACM Regulation~~ Article 21(1)(b)(vi~~).~~) of the CACM Regulation.

Article 13
Rules for sharing the power flow capabilities of CNEs among different CCRs

With the CCM for the CCR Hansa being aligned with the CCMs of adjacent CCRs, the selection of CNEs and the calculation of available margins is handled by the adjacent CCRs' CCMs. All selected CNEs, including CNEs jointly relevant for different CCRs, are treated equally in the calculation process ensuring proper sharing of power-flow capacities of CNEs among different CCRs.

Article 14
Scenarios to be used in a security analysis

1. Scenarios to be used in a security analysis for long-term capacity calculation time frames associated with AC grid of adjacent CCRs shall be considered by applying in CCMs of adjacent CCRs Core and Nordic scenarios as defined in Article 3 of the CGM methodology developed in accordance with Article 18 of the FCA regulation.

2. Relevant maintenance plans shall be considered when applying security analysis for long-term capacity calculation time frames associated with CCR Hansa bidding-zone borders.

3. The capacity values, resulting from the capacity calculation for each scenario, shall be published.

TITLE 4
Methodology for the validation of cross-zonal capacity for long-term time frame

Article 15
Methodology for the validation of cross-zonal capacity

1. Each CCR Hansa TSO shall perform the validation of cross-zonal capacities on its bidding-zone border(s) to ensure that the results of regional calculation of cross-zonal capacity will comply with operational security limits. When performing the validation, the CCR Hansa TSOs shall consider operational security, considering new and relevant information obtained during or after the most recent capacity calculation.

2. If CCR Hansa TSOs find errors in cross-zonal capacity provided for validation, the relevant CCR Hansa TSOs provide new information to the CCC for recalculation. The CCC shall redo the calculation and send the recalculated cross-zonal capacities for revalidation. Recalculations are executed until no errors are found.

3. Each CCC shall report all reductions made during the validation of cross-zonal capacity to all NRAs of the Hansa CCR. This report shall include the location and amount of any reduction in cross-zonal capacity and shall give reasons for the reductions.

4. The CCC shall coordinate with the neighbouring CCCs during the capacity calculation and validation.

TITLE 5
Miscellaneous

Article 16
Fallback procedure if the initial capacity calculation does not lead to any results

1. In case the initial capacity calculation does not lead to any results, the CCC shall try to solve the problem and perform long-term capacity calculation again, if time allows making such calculation.

2. If the CCC is not able to perform long-term capacity calculation in accordance with Article 16(1), CCR Hansa TSOs shall contact the single allocation platform (SAP) and ask for possible auction postponement.

3. If the CCC is not able to perform long-term capacity calculation in accordance with Article 16(1), and if postponement of allocation process in accordance with Article 16(2) is not possible, each CCR Hansa TSO shall individually calculate the cross-zonal capacity for relevant long-term time frames for its bidding-zone borders, and the lowest value calculated for each bidding-zone border by neighbouring CCR Hansa TSOs shall be applied.

Article 17
Monitoring data to the national regulatory authorities

1. All technical and statistical information related to this CCM shall be made available upon request to the NRAs in the CCR Hansa.

2. Monitoring data shall be provided to the NRAs in the CCR Hansa as a basis for supervising a non-discriminatory and efficient capacity calculation in CCR Hansa.

3. Any data requirements mentioned above should be managed in line with confidentiality requirements pursuant to national legislation.

Article 18
Publication of data

1. The CCR Hansa TSOs shall, in compliance with national legislation and in accordance with Article 3(f) of the FCA Regulation, and in addition to the data items and definitions of the Transparency Regulation, publish the following on a regular basis and as soon as possible:

   Information for each forward capacity calculation, and in accordance with article 9 of the FCA Regulation, at least on annual and monthly time frames, which shall include the following:
   a) cross-zonal capacity for each bidding-zone border;
   b) all components of the cross-zonal capacity, i.e. TTC, AAC, and RM, for each bidding-zone border.

2. The data shall be published for annual capacity calculation, one week before the yearly allocation process but no later than 15 December, for all months of the following year.
3. The data shall be published for monthly capacity calculation, two working days before the monthly allocation process for all days of the following month.
4. The data, obtained from the capacity calculation on a time frame different than referred to in Article 18(2) and 18(3), shall be published in due time.
5. The above-mentioned publication requirements are without prejudice to confidentiality requirements pursuant to national legislation.

TITLE 6
Final Provisions

Article 19
Publication and Implementation

1. Implementation of this CCM will be a stepwise process with the following milestones:
   a) The SAP in accordance with Article 48 of the FCA Regulation is established and in operation.
   b) The CCR Hansa CCC is appointed and in operation pursuant to Article 21(2) of the FCA Regulation.
   c) The CGM methodology is implemented in accordance with Article 18 of the FCA Regulation.
   d) The LT CCMs of CCR Core and of CCR Nordic have been implemented and take fully into account the influences of the CCR Hansa interconnectors during the capacity calculation according to the respective CCMs of these two regions.

2. Following Article ~~20~~19(1)(b), ~~with~~when the CCR Hansa CCC ~~appointment~~is appointed and ~~its entry into~~in operation, the CCR Hansa CCC will calculate the cross-zonal capacity, while the CCR Hansa TSOs will send the results from their capacity calculations on the AC grid to the CCR Hansa CCC, based on current methodologies. The minimum capacity calculated will prevail and will be applied by the CCR Hansa CCC. The resulting cross-zonal capacities are subject to validation by each CCR Hansa TSO for its bidding-zone borders. The CCR Hansa CCC provides the validated cross-zonal capacities to the allocation mechanism.

3. Following Article ~~20~~19(1)(c), ~~with the implementation of~~when the long term CGMs~~,~~ are implemented, the CCR Hansa TSOs will use the same CGM input in their CCR Hansa related capacity calculation processes. This will ensure that the forecast of demand, generation, and line availability are the same, thus increasing the coordination of the capacity calculation.

4. Following Article ~~20~~19(1)(d), when LT CCMs of CCR Core and of CCR Nordic will take fully into consideration the influences of the CCR Hansa interconnectors, the influence of the CCR Hansa interconnectors on the AC grid will be market driven, ensuring equal treatment of the CCR Hansa bidding-zone borders and bidding-zone borders in the adjacent CCRs. Until that time, the CCR Hansa TSOs will follow the capacity calculation, as described in Article ~~20~~19(2) towards this adjacent CCR. This implies that the capacity calculation process will continue on the CCR Hansa bidding-zone borders even when the CCR Core is considering CCR Hansa influence as fixed and provided in scenarios developed in accordance to the common grid model methodology pursuant to Article 18 of the FCA Regulation.

Article 20
Language

The reference language for this CCM shall be English. For the avoidance of doubt, where CCR Hansa TSOs need to translate this CCM into their national languages, in the event of inconsistencies between the English version published by CCR Hansa TSOs in accordance with Article 4(13) of the FCA Regulation and any version in another language, the relevant CCR Hansa TSOs shall be obliged to dispel any inconsistencies by providing a revised translation of this CCM to their relevant national regulatory authorities.

Annex 1: Justification of the Methodology for Calculation of Allocation Constraints (Article 5) and its Application

The following section depicts in detail the justification of usage and methodology currently used ~~BYT~~ by PSE to design and implement allocation constraints, if applicable. The legal interpretation on eligibility of using allocation constraints and the description of their contribution to the objectives of the FCA Regulation is included in the Explanatory Document.

PSE may use an allocation constraint to limit the import and export of the Polish bidding zone.

Technical and legal justification

Implementation of allocation constraints as applied by PSE is related to integrated scheduling process applied in Poland (also called central dispatching model) and the way how reserve capacity is being procured by PSE. In a central dispatching model, in order to balance generation and demand and ensure secure energy delivery, the TSO dispatches generating units taking into account their operational constraints, transmission constraints and reserve capacity requirements. This is realised in an integrated scheduling process as a single optimisation problem called security constrained unit commitment (SCUC) and economic dispatch (SCED).

The integrated scheduling process starts after the day-ahead capacity calculation and SDAC and continues until real-time. This means that reserve capacity is not blocked by TSO in advance of SDAC and in effect not removed from the wholesale market and SDAC. However, if balancing service providers (generating units) would already sold too much energy in the day-ahead market because of high exports, they may not be able to provide sufficient upward reserve capacity within the integrated scheduling process[1]. Therefore, one way to ensure sufficient reserve capacity within integrated scheduling process is to set a limit to how much electricity can be imported or exported in the SDAC.

Allocation constraints are determined for the whole Polish power system, meaning that they are applicable simultaneously for all CCRs in which PSE has at least one bidding zone border (i.e. Core, Baltic and Hansa). This solution is the most efficient. Considering such constraints separately in each CCR would require PSE to split global constraints into CCR-related sub-values, which would be less efficient than maintaining the global value. Moreover, in the hours when Poland is unable to absorb any more power from outside due to violated minimal downward reserve capacity requirements, or when Poland is unable to export any more power due to insufficient upward reserve capacity requirements, Polish transmission infrastructure is still available for cross-border trading between other bidding zones and between different CCRs.

Methodology to calculate the value of allocation constraints

When determining the allocation constraints, PSE takes into account the most recent information on the technical characteristics of generation units, forecasted power system load as well as minimum reserve margins required in the whole Polish power system to ensure secure operation and forward import/export contracts that need to be respected from previous capacity allocation time frames.

[1] This conclusion equally applies for the case of lack of downward balancing capacity, which would be endangered if balancing service providers (generating units) sell too little energy in the day-ahead market, because of too high imports.

The constraints are calculated according to the below equations:

$$EXPORT_{constraint} = P_{CD} - (P_{NA} + P_{ER}) + P_{NCD} - (P_L + P_{UPres}) \quad (1)$$

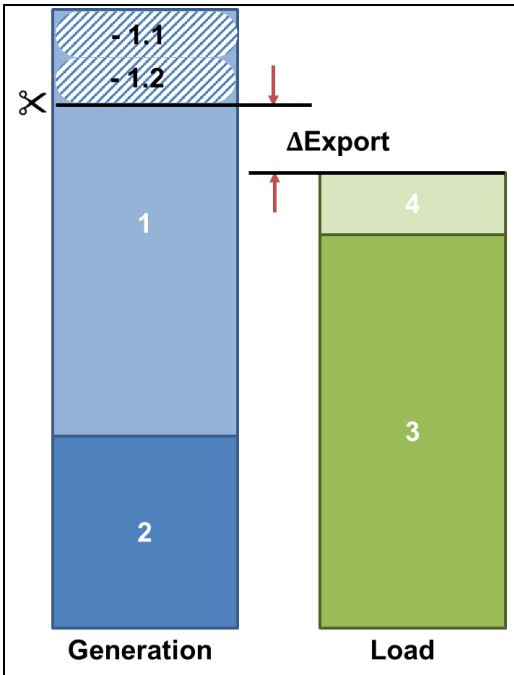
$$IMPORT_{constraint} = P_L - P_{DOWNres} - P_{CD_{min}} - P_{NCD} \quad (2)$$

Where:

P_{CD}	Sum of available generating capacities of centrally dispatched units as declared by generators
$P_{CD_{min}}$	Sum of technical minima of available centrally dispatched generating units
P_{NCD}	Sum of schedules of generating units that are not centrally dispatched, as provided by generators (for wind farms: forecasted by PSE)
P_{NA}	Generation not available due to grid constraints (both planned outage and/or anticipated congestions)
P_{ER}	Generation unavailability's adjustment resulting from issues not declared by generators, forecasted by PSE due to exceptional circumstances (e.g. cooling conditions or prolonged overhauls)
P_L	Demand forecasted by PSE
P_{UPres}	Minimum reserve for upward regulation
$P_{DOWNres}$	Minimum reserve for downward regulation

For illustrative purposes, the process of practical determination of allocation constraints in export direction in the framework of the long-term capacity calculation is illustrated below in Figure 1. The figure illustrate how a forecast of the Polish power balance for the delivery period is developed by PSE in order to determine reserves in generating capacities available for potential exports, for the long-term market.

Allocation constraint in export direction is applicable if □Export is lower than the sum of cross-zonal capacities on all Polish interconnections in export direction.



1. Sum of available generating capacities of centrally dispatched units as declared by generators, reduced by:
   - 1.1 Generation not available due to grid constraints
   - 1.2 Generation unavailability's adjustment resulting from issues not declared by generators, forecasted by PSE due to exceptional circumstances (e.g. cooling conditions or prolonged overhauls)
2. Sum of schedules of generating units that are not centrally dispatched, as provided by generators (for wind farms: forecasted by PSE)
3. Demand forecasted by PSE
4. Minimum necessary reserve for up regulation

Figure 1: Determination of Allocation constraint in export direction (generating capacities available for potential exports) in the framework of the long-term capacity calculation.

Frequency of review

Allocation constraints are determined in a continuous process based on the most recent information, for each capacity allocation time frame.