DECISION No 03/2024
OF THE EUROPEAN UNION AGENCY
FOR THE COOPERATION OF ENERGY REGULATORS

of 14 March 2024

on the second and third amendment of the intraday capacity calculation methodology of the Core capacity calculation region

THE EUROPEAN UNION AGENCY FOR THE COOPERATION OF ENERGY REGULATORS,

Having regard to the Treaty on the Functioning of the European Union,

Having regard to 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,[1] and, in particular, Article 5(3) and Article 6(10) thereof,

Having regard to Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management,[2] and, in particular, Article 9(5), (7)(a), (11) and (13) and Article 20(2) thereof,

Having regard to the outcome of the consultation with the concerned regulatory authorities and transmission system operators,

Having regard to the outcome of the consultation with ACER's Electricity Working Group,

Having regard to the favourable opinion of the Board of Regulators of 7 March 2024, delivered pursuant to Article 22(5)(a) of Regulation (EU) 2019/942,

Whereas:

[1] OJ L 158, 14.6.2019, p. 22.
[2] OJ L 197, 25.7.2015, p. 24.

1 INTRODUCTION

(1) Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (the 'CACM Regulation') laid down a range of requirements for cross-zonal capacity allocation and congestion management in the day-ahead and intraday markets in electricity. These requirements also include the development of the capacity calculation methodology ('CCM') in each of the capacity calculation regions ('CCR') in accordance with Article 20 et seq. of the CACM Regulation.

(2) On 21 February 2019, ACER issued its Decision No 02/2019[3] approving the proposals of the transmission system operators ('TSOs') of the Core region for a regional design of the day-ahead and intraday common capacity calculation methodologies according to Article 20(2) of the CACM Regulation. That Decision included annexes setting out the day-ahead capacity calculation methodology ('DA CCM' in Annex I) and the intraday capacity calculation methodology ('ID CCM' in Annex II).

(3) According to Article 9(13) of the CACM Regulation, the TSOs responsible for developing a proposal for terms and conditions or methodologies may propose amendments to the competent regulatory authorities, which are to be approved in accordance with the procedure set out in said Article 9. Where the regulatory authorities have not been able to reach an agreement on such amendment proposal within six months, or upon their joint request, ACER is to decide on the proposal in accordance with Article 9(11) of the CACM Regulation as well as Article 5(3) and the second subparagraph of Article 6(10) of Regulation (EU) 2019/942.

(4) On 19 April 2022, ACER issued its Decision No 06/2022[4] on the on the first amendment of the Core ID CCM, following from the Core regulatory authorities' request that ACER adopts a decision on the amendment given that the Core regulatory authorities could not reach an agreement.

(5) The present Decision follows from the Core regulatory authorities' request that ACER adopts a decision on the Core TSOs' proposal for the second and third amendment of the ID CCM (collectively referred to as the '**Proposal**'[5]) given that the regulatory authorities could not reach an agreement to approve it. Annex I and Annex II to this Decision set out the Proposal as amended and approved by ACER (henceforth referred to as the '**Core ID CCM Amendment**').[6] For information, Annex III provides an informal consolidated version of the amended Core ID CCM.

[3] ACER Decision No 02/2019.
[4] ACER Decision No 06/2022.
[5] Core TSOs' proposals for the second and the third amendment of the Core ID CCM are referred to in this Decision as 'the Proposal'. The Proposal includes the official versions of the second and third amendment proposals as submitted to the Core regulatory authorities and referred to ACER. For information, the referral also included consolidated versions of the Core ID CCM with the proposed amendments integrated in track changes.
[6] Annex Ia and Annex IIa provide the Core ID CCM Amendment in track changes.

2 PROCEDURE

2.1 Proceedings before the Core regulatory authorities

(6) The Core TSOs submitted the second and the third amendment proposal concerning the Core ID CCM to the Core regulatory by 24 October 2022 and by 15 March 2023 respectively, pursuant to Article 9(6) of the CACM Regulation. Each amendment proposal was publicly consulted by the Core TSOs before their submission for regulatory approval: the second amendment between 4 March and 4 April 2022 and the third amendment between 30 November and 30 December 2022.

(7) Article 9(10) of the CACM Regulation requires the Core regulatory authorities to consult and closely cooperate and coordinate with each other to reach an agreement and decide on the proposal within six months following its receipt by the last Core regulatory authority.

(8) The two amendment proposals submitted by the Core TSOs concerned:

(a) as the second amendment, the alignment of the Core ID CCM with Core Regional Operational Security Coordination ('ROSC') methodology pursuant to Article 76 of Commission Regulation (EU) 2017/1485 establishing a guideline on electricity transmission system operation ('the SO Regulation'), and more specifically with the coordinated regional operational security analyses ('CROSA') foreseen to be implemented in the last quarter of 2025. Aligning Core ID CCM and CROSA process aims to improve the robustness of the intraday capacities calculated on the basis of the CROSA outputs; and

(b) as the third amendment, the application of the validation approach based on Available Transfer Capacity ('ATC').

(9) During the proceedings before the Core regulatory authorities, the Belgian regulatory authority ('CREG'), expressed its concerns regarding both amendment proposals, and suggested revisions which, however, were not accepted by all Core regulatory authorities. The initial views and disagreements between the Core regulatory authorities are listed in the table in section 6.1.

(10) The Core regulatory authorities did not issue a shadow opinion on these amendment proposals.

2.2 Proceedings before ACER

(11) By letter of 3 April 2023,[7] the Chair of the Core Energy Regulators' Regional Forum (CERRF)[8], acting on behalf of the Core regulatory authorities, referred the Proposal to

[7] Received by ACER on 4 April 2023.
[8] CERRF is a platform of the Core regulatory authorities to consult and cooperate for reaching a unanimous agreement on the proposals by the NEMOs or the TSOs of the Core region.

ACER for a decision pursuant to Article 9(11) of the CACM Regulation. According to this letter, the Core regulatory authorities jointly concluded that they were not able to find a common agreement on the key aspects of the Proposal. As such, they were not in a position to approve the Proposal, or request further amendments, in time for the expected go-live of the first Core intraday capacity calculation in July 2023.

(12) In their letter, all Core regulatory authorities asked ACER to consider the urgency of a timely decision and expressed readiness to assist and fully support ACER in its decision process.

(13) On 4 July 2023, ACER launched a public consultation on the Proposal, inviting all interested parties to submit their comments by 31 July 2023. A summary of stakeholders' responses is provided in section 5, and a more detailed evaluation is in Annex IV to this Decision.

(14) Between April 2023 and February 2024, ACER engaged in extensive discussions with the Core TSOs and the Core regulatory authorities, through working meetings, oral hearings and exchanges of documents.

(15) In particular, the following key steps have been taken:

5 May 2023	Kick-off meeting (teleconference) with the Core TSOs and the Core regulatory authorities[9];
26 May 2023	Working meeting (teleconference) with the Core TSOs and the Core regulatory authorities;
6 June 2023	Information on the decision-making procedure provided to the CACM Task Force;
21 June 2023	Working meeting (teleconference) with the Core TSOs and the Core regulatory authorities;
23 June 2023	Information on the decision provided to the AEWG;
9 August 2023	Working meeting (teleconference) with the Core TSOs and the Core regulatory authorities
16 August 2023	Start of the first hearing phase ACER's preliminary position: Draft Core ID CCM Amendment, including ACER's reasoning for amendments, provided to the Core TSOs and the Core regulatory authorities
24 August 2023	Oral hearing with CREG

[9] The representatives of the European Commission and ENTSO-E were involved in the meetings. Also, with consent of Core TSOs and Core regulatory authorities, the meetings involved the Italian regulatory authority ARERA.

25 August 2023	Oral hearing with 50Hertz, Amprion, TenneT GER and TransnetBW (hereinafter collectively referred to as 'German TSOs')
25 August 2023	Oral hearing with the Polish TSO ('PSE')
25 August 2023	Oral hearing with the Hungarian TSO ('MAVIR'), and the Hungarian regulatory authority ('MEKH')
28 August 2023	Oral hearing with the Core TSOs
28 August 2023	Oral hearing with the Belgian TSO ('ELIA')
29 August 2023	Orientation discussion at the AEWG
4 September 2023	Extension of the hearing phase ACER's revised preliminary position: Draft Core ID CCM Amendment, including ACER's reasoning for amendments, provided to the Core TSOs and the Core regulatory authorities
7 September 2023	Oral hearing with the Core TSOs and the Core regulatory authorities
15 September 2023	Oral hearing with the German TSOs
20 September 2023	Orientation discussion at the BoR
22 September 2023	Closure of the first hearing phase
6 October 2023	First AEWG consultation and advice
10 November 2023	Workshop/Working meeting (teleconference) on the legal interpretation of Article 16(8) of the Electricity Regulation
20 November 2023	Orientation discussion at the AEWG
1 December 2023	Start of the second hearing phase ACER's revised preliminary position: Draft Core ID CCM Amendment, including ACER's reasoning for amendments, provided to the Core TSOs and the Core regulatory authorities
8 December 2023	Oral hearing with the Core TSOs and Core regulatory authorities
13 December 2023	Orientation discussion at the BoR
15 December 2023	Oral hearing with the German TSOs
15 December 2023	Oral hearing with CREG and the regulatory authorities of the Netherlands ('ACM') and Luxembourg ('ILR')
18 December 2023	Closure of the second hearing phase
10 January 2024	Orientation discussion at the AEWG
15 January 2024	Working meeting with the Core TSOs and the Core regulatory authorities. Other regulatory authorities were also invited.

23 January 2024	Start of the third hearing phase ACER's revised preliminary position: Draft Core ID CCM Amendment, including ACER's reasoning for amendments, provided to the Core TSOs and the Core regulatory authorities;
24 January 2024	Orientation discussion at the BoR
2 February 2024	Oral hearing with PSE
2 February 2024	Oral hearing with the German TSOs and the TSOs of Austria ('APG') and the Netherlands ('TenneT TSO')
2 February 2024	Oral hearing with the Core TSOs and the Core regulatory authorities. Other regulatory authorities were also invited.
2 February 2024	Closure of the third hearing phase
15 February 2024	Second AEWG consultation and advice
7 March 2024	BoR's opinion

3 ACER'S COMPETENCE TO DECIDE ON THE PROPOSAL

(16) Pursuant to point (b) of the first subparagraph of Article 5(3) of Regulation (EU) 2019/942, all regulatory authorities of the region concerned shall unanimously agree on proposals for terms and condition or methodologies for the implementation of those network codes or guidelines that were adopted before 4 July 2019 and require the approval of all the regulatory authorities of the region concerned; as provided in the second subparagraph of Article 5(3) of Regulation (EU) 2019/942, those regulatory authorities may refer the proposals to ACER for approval pursuant to point (b) of the second subparagraph of Article 6(10) of Regulation (EU) 2019/942, and they shall do so pursuant to point (a) of the second subparagraph of Article 6(10) of that Regulation where they did not reach a unanimous agreement.

(17) Pursuant to Article 9(5) and (7)(a) of the CACM Regulation, which has been adopted as a guideline before 4 July 2019, the proposal for a common capacity calculation methodology pursuant to Article 20(2) of the same Regulation shall be subject to approval by all regulatory authorities of the concerned region.

(18) Pursuant to Article 9(11) of the CACM Regulation, where the regulatory authorities have not been able to reach agreement within six months, or upon their joint request, or upon ACER's request according to the third subparagraph of Article 5(3) of Regulation (EU) 2019/942, ACER 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.

(19) Pursuant to Article 9(13) of the CACM Regulation, where the TSOs propose amendments of terms and conditions or methodologies to the regulatory authorities, those proposals shall be approved in accordance with the procedure set out in Article 9 of the CACM Regulation.

(20) Pursuant to Article 9(5) of the CACM Regulation, ACER, before approving the terms and conditions or methodologies, shall revise the submitted proposals where necessary, after consulting the respective TSOs, in order to ensure that they are in line with the purpose of the CACM Regulation and contribute to market integration, non-discrimination, effective competition and the proper functioning of the market.

(21) On 4 April 2023, the Core regulatory authorities informed ACER that they were not able to reach an agreement on the Proposal, and jointly requested ACER to take a decision on the Proposal.

(22) Therefore, ACER is competent to decide on the Proposal based on Article 9(5), (7)(a), (11) and (13) of the CACM Regulation, and Article 5(3) and point (b) of the second subparagraph of Article 6(10) of Regulation (EU) 2019/942.

4 SUMMARY OF THE PROPOSAL

(23) The Proposal referred to ACER includes the following documents:

(a) Documents related to the second amendment, dated 9 August 2022:

(i) Second amendment of the Intraday Capacity Calculation Methodology of the Core Capacity Calculation Region in accordance with Articles 20ff. of the Commission Regulation (EU) 2015/1222 of 24th July 2015 establishing a guideline on capacity allocation and congestion management (‘second amendment proposal’);

(ii) Explanatory document to the second amendment of the Intraday Capacity Calculation Methodology of the Core Capacity Calculation Region in accordance with article 20ff. of the Commission Regulation (EU) 2015/1222 of 24th July 2015 establishing a guideline on capacity allocation and congestion management (‘explanatory document on the second amendment proposal’);

(iii) Public Consultation Report to the second amendment of the Intraday Capacity Calculation Methodology of the Core Capacity Calculation Region in accordance with article 20ff. of the Commission Regulation (EU) 2015/1222 of 24th July 2015 establishing a guideline on capacity allocation and congestion management” (‘PC report on the second amendment proposal’);

(b) Documents related to the third amendment, dated 19 January 2023:

(i) Third amendment of the Intraday Capacity Calculation Methodology of the Core Capacity Calculation Region in accordance with Articles 20ff. of the Commission Regulation (EU) 2015/1222 of 24th July 2015 establishing a guideline on capacity allocation and congestion management (‘third amendment proposal’);

(ii) Explanatory Document to Annex 6 (3rd ID CCM amendment) of the Intraday Capacity Calculation Methodology of the Core Capacity Calculation Region in accordance with article 20ff. of the Commission Regulation (EU) 2015/1222 of 24th July 2015 establishing a guideline on capacity allocation and congestion management ('explanatory document on the third amendment proposal');

(iii) Public Consultation Report to the third amendment of the Intraday Capacity Calculation Methodology of the Core Capacity Calculation Region in accordance with article 20ff. of the Commission Regulation (EU) 2015/1222 of 24th July 2015 establishing a guideline on capacity allocation and congestion management ('PC report on the third amendment proposal').

(24) The Proposal consists of the following amendments to the Core ID CCM. For clarity and completeness, the sections of the Core ID CCM where no amendments were proposed by the TSOs are also listed below. Amendments concerning the third amendment proposal are underlined.

Whereas	Recitals 1 to 22	**'Whereas' section** explains how the methodology considers the general principles and objectives of the CACM Regulation and Regulation (EU) 2019/943 ('Electricity Regulation') and where required, provides additional reasoning supporting the articles of the methodology. *No amendments were proposed by the Core TSOs.*
Title 1	Articles 1 to 3	**General provisions** covering the subject matter and the scope of the methodology, definitions and the application of the methodology; *The Core TSOs amended the definitions, primarily in relation to the removal of non-costly remedial action optimisation ('nRAO')*
Title 2	Article 4	**General description of the capacity calculation methodology** with intraday capacity calculation process; *The Core TSOs amended Article 4 by:* – adding paragraph 8 related to the delivery of common grid models – removing step 4 in paragraph 9 (nRAO) – adding paragraph 11 on the TSOs' right to reduce the capacities submitted to the intraday allocation process – adding paragraph 12 on the TSOs' right to delay the capacity calculation in the case of late delivery of input data from the ROSC process
Title 3	Articles 5 to 10	**Capacity calculation inputs** include methodologies for the calculation of the following inputs: selection of critical network elements with contingencies ('CNECs'), operational

		security limits, calculation of the final adjustment value, allocation constraints, reliability margin, generation shift keys and remedial actions in capacity calculation; *The Core TSOs amended Article 5 by:* – removing the reference to monitored network elements to contingency ('MNEC') – adding an exception to include the cross-border relevant network elements with contingency ('XNEC') to the list of CNECs *The Core TSOs amended Article 8 by:* – adding the provision that flow reliability margin ('FRM') at the intraday level should be equal "or lower" than the FRM used in previous flow-based initiatives, or equal "or lower" than 10% for the newly included CNECs *The Core TSOs amended Article 10 by:* – adding the provision of alignment the intraday capacity calculation with the most recent outcome of CROSA process – removing the reference to the nRAO process
Title 4	Article 11	**Update of intraday cross-zonal capacities** includes a description of the update of intraday cross-zonal capacities remaining after the Single Day Ahead Coupling (SDAC) *The Core TSOs adapted the nomenclature in the equations of Article 11*
Title 5	Articles 12 to 20	**Description of the intraday capacity calculation process**, provides a step-by-step mathematical description of the capacity calculation, followed by further details, including the rules on adjustment of power flows on CNECs, the consideration of non-Core CCR borders, the calculation of the final flow-based domain, capacity validation methodology and the intraday capacity calculation fallback procedure; *The Core TSOs amended Articles 12-20 as follows:* – improved the equation for calculating maximal zone-to-zone PTDF in Article 12(5) – added a reference to the constraint of the HVDC interconnectors in Article 13(1) – added a provision on consideration the additional elements of the CNEC list in Article 15(3) and Article 16(2) to (4) – deleted provisions concerning nRAO – extended the equations in Article 18(1) to cope with the calculation of the Remaining Available Margin ('RAM') for additionally added elements

		– added the PTDF calculation principle for additionally added elements in Article 19(3) – extended Article 19(7) to cover the influence of already allocated capacities from earlier intraday allocation phases – deleted the paragraph (10)(e) from Article 19 referring to the previous origin of common grid models used for the capacity calculation – added reference to the local validation process in Article 20
Title 5	Article 21	**Calculation of ATCs for SIDC fallback procedure** includes a description of the calculation of available transfer capacities (ATC) for single intraday coupling (SIDC) fallback procedure; *The Core TSOs amended Article 21 by:* – introducing the ATC limitation from the ATC-based validation pursuant to the 3rd amendment, paragraph 3(d) – including the ATC limitation in the conversion procedure, in paragraph 5(c)v) (the 3rd amendment) – introducing the PTDF relevance threshold for the conversion of flow-based parameters into ATC values, in paragraph 4 – adjusted the conversion procedure, in particular for the negative capacities, in paragraph 5(c)
Title 6	Articles 22 to 25	**Updates and data provision** includes the requirements concerning the necessary updates, publication of data, monitoring and reporting to the regulatory authorities *The Core TSOs amended Articles 22 to 25 as follows:* – adjusted the relations to CROSA process in Article 22(4) – removed the reporting obligation for omitted values in Article 23(2) – converted the obligation to report on the flows resulting from intraday net positions, to quarterly report, in Article 23(2)(f) – added the reporting obligation in to Core regulatory authorities on a monthly basis in Article 23(7) – removed paragraph 25(4)(c) related to the monitoring of nRAO efficiency – added the obligation to report on the flows resulting from intraday net positions, in Article 25(5)(d)

Title 7	Article 26	**Implementation** sets out a timeline for implementing Core ID CCM; *No amendments were proposed by the Core TSOs.*
Title 8	Article 27	**Final provisions**, i.e. language; *No amendments were proposed by the Core TSOs.*
Annex 1		Annex 1 includes the justification of usage and methodology for calculation of external constraints. *No amendments were proposed by the Core TSOs.*
Annex 2		Annex 2 includes the requirements for calculation of intraday cross-zonal capacities before full implementation of intraday capacity calculation; *No amendments were proposed by the Core TSOs.*
Annex 3		Annex 3 includes the requirements on update of intraday cross-zonal capacities remaining after the SDAC in the transition period. *No amendments were proposed by the Core TSOs.*
Annex 4		Annex 4 includes the requirements on Calculation of ATCs for SIDC fallback procedure in the transition period. *No amendments were proposed by the Core TSOs.*
Annex 5		Annex 5 includes other transitional arrangements. *No amendments were proposed by the Core TSOs.*
Annex 6		*Annex 6 was added by Core TSOs in the scope of the 3rd amendment and sets out provisions on ATC-based validation*

5 STAKEHOLDERS' RESPONSES TO ACER'S PUBLIC CONSULTATION

(25) Responses to ACER's public consultation are summarised in Annex IV to this Decision. A short summary of stakeholders' views is provided below:

(a) Most stakeholders were in favour of the proposed alignment of the ROSC and IDCC processes, stating that it would allow to enhance operational coordination, and thus ensure reliable operation of the interconnected power system. One stakeholder raised concerns about the low availability of cross-zonal capacities during the interim period until the implementation of the ROSC process, and suggested the usage of day-ahead leftovers, rather than calculated cross-zonal capacities, until such implementation.

(b) No arguments were made against the recalculation of IDCC once the completed CROSA results are available, with a large majority of responders stating that such recalculation would provide added value specially during the interim period. After the implementation of ROSC, no additional capacity is foreseen to be freed up, as the optimisation of remedial actions will lead to a loading of 100% in the most congested elements.

(c) Mixed views were received concerning the conversion of the overloaded XNECs from the ROSC process into CNECs. While most responders agree with ACER's view that allowing for the XNEC into CNEC conversion, without defining a sensitivity threshold, may result in undue discrimination of cross-zonal trade, a few stakeholders retain that this provision is necessary to ensure that remedial actions coordinated within ROSC are not counteracted by additional capacity.

(d) Regarding ACER's question on the minimum capacity values and flow-based domain extension, most of the TSO respondents opposed to the application of any 'virtual' capacities in the intraday timeframe. On the other hand, the majority of market participants responding to the consultation were in favour of some of the proposed solutions for enlarging the flow-based domain.

(e) All but one respondent were in favour of the ATC-based validation proposal made by the Core TSOs, with most of them specifying that this would be acceptable either as a temporary solution, until the go-live of flow-based allocation in the intraday timeframe, or as a fallback, in case the primary flow-based validation cannot be performed. The respondent opposing this possibility calls for a strictly proportional and justified use of validation, linking with the practice of the excessive use of the validation adjustment in the day-ahead capacity calculation.

6 ENGAGEMENT WITH THE PARTIES AND SUMMARY OF VIEWS

6.1 Initial views of the Core regulatory authorities

(26) The Core regulatory authorities provided their initial views regarding the proposed two amendments to the Core ID CCM at the related Core Implementation Group (Core IG)[10] explanatory session of 13 March 2023.

(27) The Core regulatory authorities prepared a survey of the TSOs' proposals provided in the two amendments, CREG's counterproposals and raised 'red flags', and the position of other regulatory authorities. ACER's summary of CREG's and other regulatory authorities' views is provided in the table:

Aspect of the ID CCM	Summary of CREG's comments	Summary of views from other regulatory authorities
Removal of adjustment of minimum RAM (AMR) from the day-ahead leftovers:	AMR removal is the source of many problems of non-compliance. AMR, if used in day-ahead, must be kept for the intraday timeframe as well.	ACM and the regulatory authorities of Austria ('E-Control'), France ('CRE') and Germany ('BNetzA') disagreed with CREG on guaranteeing AMR at the intraday level.
Negative RAM and negative ATC values:	TSOs are expected to guarantee firmness of the day-ahead market clearing result.	ACM, BNetzA, CRE and E-Control disagreed with CREG and accepted the concept of defining negative ATC values.
Removal of nRAO due to timing issues or inconsistencies with a ROSC methodology:	The concept of optimising cross-border capacities in intraday capacity calculation should be maintained. The impact of nRAO could be translated into a default capacity freed up around the day-ahead market corner.	ACM, BNetzA, CRE and E-Control were against considering default lump capacity. CRE was opened to reintroduce nRAO.
Turning XNECs into CNECs in intraday level:	The set of CNECs should be the same in DA and in ID.	ACM, BNetzA, CRE and E-Control were in favour of providing the TSOs with a possibility of converting XNECs to CNECs.
Cases where Individual Validation	IVA shall be restricted to cases of contingencies or forced	ACM, BNetzA, CRE and E-Control disagreed with CREG.

[10] The Core Implementation Group oversees the implementation processes in Core CCR and consists of representatives from the Core regulatory authorities and Core TSOs.

Adjustment (IVA) may be applied:	outages affecting the system security on CNECs, having monitoring requirements maintained;	
Imposing ATC-based validation (third amendment proposal)	Imposing ATC limits prior to or after the ATC-extraction process, is not in line with a flow-based capacity calculation methodology, which ensures transparency on the limiting CNECs and the capacity provided. Flow-based approach therefore allows to monitor the 70% target and to monitor non-discrimination between internal and cross-zonal trade.	Most of the Core regulatory authorities were open to accept the third amendment proposal, with some modifications.

(28) At the Core IG meeting on 13 March 2023, the Core TSOs highlighted the need to implement both amendments according to the scheduled timeline (June 2023). ACER informed the Core IG that shortening the six-month decision-making timeframe would not be feasible, considering the complex and contentious nature of the proposed amendments (multiple 'red flags' and disagreements between the Core regulatory authorities on fundamental issues such as the scope of the CNEC list or ensuring minimum capacities at intraday level).

6.2 Engagement with the Core TSOs and regulatory authorities

6.2.1 Working meetings

(29) The working meetings (listed in section 2.2) served to discuss the Proposal with the Core TSOs and the Core regulatory authorities, clarify issues, collect additional information, explore different solutions and find common ground between diverging positions of the parties, where possible. Beyond discussing the Proposal, further related amendments were considered, such as the revision of the deadline to provide the methodology for advanced hybrid coupling ('AHC') on intraday level, additional capacity calculation phases in relation to the issue of occurrence of negative capacities, and proposals for increasing intraday capacities in relation to the issue of occurrence of negative capacities and isolation of certain TSOs with currently estimated intraday ATC values. The parties also discussed a feasible implementation timeframe and sequence which would take into account the required development of processes and tools and, at the same time, would not compromise the planned go-live of the Core ID capacity calculation.

6.2.2 ACER's preliminary position of 16 August 2023

(30) ACER' preliminary position, shared with the parties on 16 August 2023 for the first hearing phase, included the following amendments proposed by ACER:[11]

(a) to allow the TSOs for a negative Individual Validation Adjustment ('IVA') value in the capacity validation phase, as one of the possible solutions to implement the minimum capacity requirement of 70% specified in Article 16(8) of the Electricity Regulation;

(b) not to accept the Core TSOs' proposal to allow for exceptional inclusion of cross-border relevant network elements with contingency ('XNECs') in the list of critical network elements with contingency ('CNECs'), because such an exception is de facto provided in the validation procedure for XNECs with the zone-to-zone PTDF equal or above 5%, under conditions specified in Article 19. ACER considered that the 5% threshold is in line with Article 29(3)(b) of the CACM Regulation, which requires that network elements with low sensitivity are ignored in the capacity calculation process. For the same reason, ACER also proposed to limit the application of the IVA value only for congestions on the CNECs, without the possibility to mirror potential congestions on non-CNECs through IVA on CNECs;

(c) to apply a fixed flow reliability margin ('FRM') value of 5% at the intraday level, as long as fixed FRM value of 10% would be applied on the day-ahead level;

(d) to introduce intraday capacity calculation rounds, including an additional recalculation of intraday capacities allocated at 4:00 ('IDCC c)'), and the related implementation schedule of capacity calculation rounds ('IDCC a)' to '(IDCC d)') in accordance with the Core TSOs' estimation of a plausible implementation timeline.

(31) Summary of the Core TSOs' and the Core regulatory authorities' views on ACER's preliminary position of 16 August 2023, submitted to ACER in writing and/or orally, during the first hearing phase:

(a) All Core TSOs and the majority of Core regulatory authorities[12] disagreed with implementing the minimum capacity requirement in the intraday timeframe, in particular through IVA, for the following reasons:

(i) it pre-empts the discussions on the issue of 'virtual' capacities and minimum RAM in the intraday timeframe which are to take place in the context of the

[11] This section reports only the proposals which, following the input from the parties concerned, were subsequently revised by ACER in the revised preliminary position of 4 September 2023. A comprehensive list of all the proposals consulted with the parties during the hearing phase, including revised and non-revised proposals, is provided in section 6.2.

[12] Except CREG and ILR.

expected amendments to the CACM Regulation ('CACM 2.0'), foreseen in 2024;

(ii) it would result in intraday capacities which cannot be reconciled with the operational security, as the necessary short-term application of remedial actions might not be available nor applicable;

(iii) if implemented as proposed by ACER, i.e. through IVA, it would jeopardise the full capacity calculation process and be a clear step back in terms of TSO coordination and transparency in the Core region;

(iv) if implemented as proposed by ACER, i.e. through IVA, it would endanger network security, as there is no possibility for a TSO to validate the entire flow-based domain if another TSO is allowed to extend it through IVA in an uncoordinated manner;

(v) it neither considers the extensive exchanges between the TSOs, the regulatory authorities and ACER nor the clear position of a vast majority of Core regulatory authorities regarding 'virtual' capacities and minimum RAM in intraday, as expressed during the decision procedure in the past months.

(b) ILR, while not questioning the application of the 70% requirement to the intraday timeframe as such, expressed reservations about implementing the requirement before the expected amendment of the CACM Regulation. If the 70% requirement was to be implemented at this stage, it should be implemented via a minimum RAM in the capacity calculation process (as at the DA) and not through the IVA value as proposed by ACER.

(c) Regarding the consideration of non-CNECs in the intraday capacity calculation:

(i) Core TSOs and the majority of Core regulatory authorities[13] disagreed with ACER's proposal to keep the PTDF threshold of 5% as one of the preconditions for the conversion of XNECs to CNECs. According to the parties, all network elements considered in the ROSC process should be able to be considered in the capacity calculation, if necessary. Ignoring some network elements from the ROSC process could lead to situations where actions to relieve congestions in ROSC would be counteracted by subsequent intraday trade;

(ii) The German TSOs also disagreed with limiting the application of the IVA value solely due to congestions on CNECs;

[13] Except CREG, ILR, CRE and the regulatory authority of the Czech Republic ('ERU').

(iii) ELIA proposed to apply the PTDF threshold of 3% for the XNEC to CNEC conversion as well as the IVA application on CNECs due to congestions on non-CNECs. For the application of IVA, ELIA proposed the floor of RAM on a CNEC to be set to 20% of maximum flow (Fmax).

(d) Regarding the FRM:

(i) The German TSOs and ELIA proposed to remove the FRM calculation methodology from the Proposal, permanently replacing it with a fixed FRM value. In their view, the calculation process is too resource demanding, and the results might only lead to higher FRM values than the actual ones;

(ii) PSE proposed to specify that the fixed FRM value of 5% at intraday will be applied only if all Core TSOs agree to apply fixed FRM value of 10% at day-ahead level; otherwise, the only limitation for the FRM on intraday level should be that it is lower or equal than the FRM on day-ahead level.

(e) Regarding the intraday capacity calculation rounds and their implementation timeline:

(i) All Core TSOs and most Core regulatory authorities, except CREG and ILR, raised concerns about the feasibility of proposed implementation timeline. The Core TSOs were of the view that the previously agreed timeline did not consider any changes of the process, such as those required to implement the 70% capacity requirement;

(ii) PSE proposed to consider the fifth calculation phase, in the afternoon of day D as a possible future development.

6.2.3 ACER's revised preliminary position of 4 September 2023

(32) On 4 September 2023, having considered the views of the Core TSOs and the Core regulatory authorities on the preliminary position of 16 August 2023, ACER shared with the parties its revised preliminary position, and extended the hearing phase until 15 September 2023. Following the concerns of the parties[14] that this timeframe might be too short, ACER further extended the hearing phase until 22 September 2023.

(33) ACER's revised preliminary position included the following main changes:

(a) Regarding the implementation of the 70% requirement in the intraday timeframe:

(i) to remove the possibility for the TSO to increase capacity through IVA (i.e. the negative IVA value) as the operational security concerns expressed by

[14] Comments of the Core TSOs and the Core regulatory authorities during the joint oral hearing of 7 September 2023.

the Core TSOs and the Core regulatory authorities were warranted, in ACER's view; and

(ii) instead, to introduce the adjustment for minimum RAM value ('AMR') in the capacity calculation phase, to nevertheless ensure that the Core ID CCM provides means to implement the 70% requirement in the intraday timeframe, in order to cater for the principle of non-discrimination between internal and cross-zonal flows. To address concerns with respect to the immediate implementation of the minimum RAM, ACER proposed that the adjustment for minimum RAM is subject to a transitory period until 1 January 2026 to provide the TSOs with additional time to develop the related functionalities.

(b) Regarding the consideration of XNECs in the intraday capacity calculation, ACER proposed a compromise solution of the PTDF threshold of 3%, while requiring the TSOs to take all other precautionary measures to prevent any additional flows on such XNEC, including stopping any additional trade within a given bidding zone in a given MTU, or at least any trade within a concerned bidding zone causing flows in the burdening direction of such XNEC;

(c) Regarding the FRM, ACER did not follow the German TSOs' and ELIA's proposal to remove the FRM calculation. ACER accepted the PSE's proposal to specify the conditions of applying the fixed FRM percentage, as explained in section 7.2.2.3.

(34) The views of the Core TSOs and the Core regulatory authorities on ACER's revised preliminary position of 4 September 2023, submitted to ACER in writing and/or orally, during the extension of the first hearing phase, are summarised below:

(a) The Core TSOs and BNetzA still pointed at doubts whether Article 16(8) of the Electricity Regulation has to be interpreted in a manner according to which the TSOs must meet the 70% requirement also fully in the intraday timeframe (but considering capacity allocated in day-ahead). ACER addresses some of these considerations in section 7.2.2.7.1.

(b) A majority[15] of the Core regulatory authorities still had questions concerning the content and the implementation of ACER's revised preliminary position, and reiterated their previous concerns about implementing the minimum RAM;

(c) ACM supported the consideration of 70% requirement at the intraday level, pointing out that introducing this requirement in the ID CCM requires fundamental discussions amongst ACER, the regulatory authorities and the TSOs on the details of the necessary changes in the capacity calculation process and their timing, and on how to deal with the increasing operational risks. In ACM's view, the methodology should leave enough room to incorporate the outcomes of these

[15] Except CREG (Belgium), ILR (Luxembourg) and ACM (The Netherlands).

discussions. In addition, ACM disagreed with removing the possibility to apply IVAs on CNECs for the congestions on non-CNECs, while at the same time introducing minimum RAM.

(d) MEKH provided a compromise proposal which included the minimum RAM in intraday, provided that:

(i) it would not generate a need to revise existing action plans or adopting new derogations (systematically and *en masse*);

(ii) it would be implemented after a transition period linked to the implementation of the intraday flow-based allocation and the expiry of action plans, optimally by end of 2025;

(iii) it would be aligned with CACM 2.0. once adopted, and still before the expiry of the transition period, otherwise the transition period should be extended to allow for such alignment; and

(iv) the option to set aside a portion of capacity for shorter timeframe markets (intraday, balancing) should be investigated and actively promoted to prevent the drying up of those cross-border markets.

(e) The German TSOs provided the following views on the XNEC to CNEC conversion:

(i) It may not be feasible to take all precautionary measures to stop internal trade, from both legal and technical perspective. The proposed requirement has to be evaluated first in terms of tooling possibility and would be highly challenging;

(ii) The TSOs aim to prevent that the effect of the activated cross-border redispatch or countertrading on operational security is diminished by additional cross-zonal trade in accordance with Article 31(3a) of the Core ROSC methodology.[16] It is not the aim of the TSOs to convert to CNECs all the XNECs which have been relieved by remedial actions applied during the ROSC process. At this stage of the ROSC implementation, a lack of reliable data renders it impossible for the TSOs to make a specific proposal in that regard. Therefore, the German TSOs proposed to conduct an analysis of the data which will be available in the future, and which can inform an appropriate proposal;

(iii) According to the German TSOs, the conversion should ensure that capacity is limited only by those elements which have been relieved by the cross-

[16] Annex I to ACER Decision No 33/2020 on the Core ROSC methodology.

border remedial actions by the CROSA. This would also ensure that the effect of activated XRAs on operational security is not diminished by additional cross-zonal trade (cf. Article 31(3) of the Core ROSC methodology). Further, the German TSOs noted that such conversions would be subject to reporting obligations as set out in Article 19(10) of Core ID CCM;

(iv) If the Core ID CCM does not allow the TSOs to protect cross-border redispatch and countertrading measures in a coordinated and transparent manner during the IDCC process, the TSOs will be forced to use measures according to Article 31(3b) of the Core ROSC methodology to ensure network security;

(v) The German TSOs proposed a twelve-month implementation period after the ROSC implementation, with no PTDF threshold in place, in order to have time to analyse the need for exceptional inclusion of the XNECs in the CNEC list as well as the need for, and the size of, a potential threshold which could be applied, and propose a potential amendment in this respect;

(vi) Regarding the minimum RAM calculation, the German TSOs proposed to remove the portion of the day-ahead Core net position resulting from cross-zonal redispatching, in order not to counteract these measures.

(f) CREG reacted to ACER's revised preliminary position by:

(i) supporting the implementation of the 70% requirement in intraday through the adjustment for minimum RAM, as a measurable indicator for non-discriminatory access to capacity for cross-zonal trade. CREG indicated that there was no reason to differentiate between the day-ahead and intraday timeframes. CREG also pointed out that the Core TSOs' concerns about operational security could be tackled by different solutions, namely network investments, bidding zone reviews, redispatch if needed, transitory period or derogations.

(ii) reiterating its concerns on the removal of nRAO with no other measures to ensure that margins are freed up around the day-ahead market clearing point. CREG asked ACER to foresee a minimum RAM of X% around the market clearing point to ensure the ATC-extraction can deliver acceptable results to the market;

(iii) asking ACER to remove all references to negative RAM and negative ATC as a basis for ID CCM, in view of its concerns regarding the possibility to translate a non-completed ROSC process into zero RAM and – *a fortiori* – negative RAM and negative ATC; and

(iv) opposing the proposal to include network elements with PTDF less than 5% as additional CNECs in the intraday capacity calculation.

6.3 First AEWG consultation and advice of 4 October 2023

(35) During the AEWG consultation period, including the AEWG meeting of 4 October, the regulatory authorities displayed different views on the proposed implementation of the minimum RAM in the intraday timeframe. In particular, the following comments were provided:

(a) Minimum RAM in intraday may have unclear impacts on operational security (ACM, E-Control and the regulatory authorities of Romania ('ANRE'), Czech Republic ('ERU'), Croatia ('HERA') and Slovakia ('URSO')). In relation to this, ILR stated that it can support ACER's proposed solution (with the transitory period until January 2026) which gives time and opportunities to the TSOs to adjust and react to potential operational security concerns they may have with the minimum RAM. According to ACM, this longer transitory period might not be enough to ensure operational security. ACM reiterated its concern that the ID CCM should appropriately consider these risks, and that the Core TSOs should propose how to apply the derogation criteria for the intraday timeframe, to guarantee this to be an effective and operable measure to ensure operational security.

(b) Minimum RAM in intraday may have unclear financial consequences due to potentially substantial redispatch costs (ANRE, E-Control, URSO, HERA, ERU).

(c) Minimum RAM in intraday has not been properly processed or technically assessed in terms of feasibility or necessary framework conditions (E-Control, URSO, ERU).

(d) The requirements for intraday capacities should be equally applicable across all CCRs (E-Control, ANRE, HERA, ERU, URSO)

(e) The 70% requirement should be discussed in the context of CACM 2.0 (BNetzA, E-Control, HERA, URSO, ERU) or the Electricity Regulation (HERA).

(f) The task to analyse and deliver a proper feasibility study for the 70% requirement in the intraday timeframe should be mandated to the TSOs (E-Control, URSO, ERU, HERA). HERA stated that only network investments and a new bidding zone configuration can substantially increase cross-zonal capacities. For ANRE, it is unclear whether a bidding zone review and small bidding zones is sufficient for meeting the 70% requirement in the intraday timeframe, without an appropriate study conducted by ENTSO-E.

(g) Minimum RAM in intraday does not provide for a possibility to distribute the 70% between the day-ahead and intraday timeframes, nor consider Article 17(2) of the Regulation as a solution (BNetzA, E-Control, ANRE, URSO, ERU). Related to this, URSO stated that the TSOs should propose a structure for a reasonable, technically verified/proven and efficient allocation of capacity across different timeframes, to be considered and approved by the regulatory authorities.

(h) ANRE stated that the minimum RAM in intraday would trigger a 'massive amount' of derogations due to delays in the implementation of network investments and other Core methodologies. HERA stated that derogations (subject to conditions specified in Article 16(9) of the Electricity Regulation) or action plans (which

expire by the end of 2025) are not appropriate solutions for compliance with the 70% requirement in intraday.

(i) CRE stated the urgent need for an amended Core ID CCM regarding several adapted provisions, which should not be postponed because of the dispute on one specific provision, namely the 70% requirement.

(j) CREG reiterated its strong support for the implementation of the 70% requirement to the intraday timeframe but noted that the possibility to grant derogations may lead to a deterioration of the intraday capacities if no strict compliance with CACM is ensured.

(k) MEKH presented its proposal for the minimum RAM in intraday under specific conditions (see above, recital(34)(d)) and proposed a longer transition period linked to the CACM 2.0 developments. MEKH's proposal received mixed support from the other regulatory authorities. In particular, CRE, BNetzA and E-Control raised 'red flags'. HERA saw benefit in MEKH's proposal and stated that additional guarantees can be implemented in the Core ID CCM to secure that CACM 2.0 would trigger the subsequent amendment of the methodology.

(l) ILR stated that it can support the solution proposed by ACER (with delayed implementation) which gives time and opportunities to the TSOs to adjust and react to potential operational security concerns they may have with the minimum RAM.

(m) BNetzA provided additional input concerning the applicable legal framework.

(36) Regarding other aspects of the methodology, the following views were provided:

(a) BNetzA was concerned about not having the possibility to apply IVAs on CNECs to mirror the congestions on non-CNECs, because this would allow, or even oblige, the TSOs to risk operational security on non-CNECs and in general. This, in BNetzA's view, is not compatible with the CACM Regulation and the SO Regulation, and detrimental to the procedure determined for the TSOs using the established iDAVinCy tool.

(b) ACM also reiterated its concern about the removal of the possibility to apply IVAs on CNECs to solve congestions on non-CNECs in combination with the introduction of virtual capacities. ACM suggested to exclude non-CNECs-related reasons for the IVA application only if there are still sufficient costly and non-costly remedial actions available to ensure operational security.

(c) CREG reiterated its concerns about removing nRAO without providing measures to ensure that margins are freed up around the DA market clearing point, to ensure that the extracted ATC-capacities have significant values.

(d) CREG reiterated its opposition to translating a non-completed ROSC process into zero RAM and – *a fortiori* – negative RAM and negative NTC, noting that even with the additional calculation, ACER's proposal would not mitigate all the risks.

(e) CREG maintained its opposition to the option of converting XNECs with PTDF <5% into CNECs since, in CREG's view, it would not be consistent with Article 29(3)(b) of the CACM Regulation. According to CREG, the proposed compromise solution, which considers the Core TSOs' concerns, would be burdensome to implement and monitor. In addition, the difference in scope of the capacity calculation and validation processes in DA and ID may introduce inconsistencies and would worsen the results of the parallel runs.

(f) ILR noted that setting day-ahead FRM values on the Core CNECs to 10% (and to 5% for intraday) is a step back because in many cases day-ahead FRMs are lower than 10% (ILR referred to a recent study by CREG). ILR proposed to set the FRM value for intraday as being equal or lower to the minimum between 5% of Fmax and the day ahead FRM, so that all CNECs would have an intraday FRM equal or lower to 5%.

(37) Generally, the AEWG stressed the importance of increasing capacities for cross-border trade especially in the short-term timeframe for the integration of intermittent generation from renewable sources in the European electricity system while maintaining the operational security of the system.

(38) Considering the discussion at the AEWG meeting and the comments received, the AEWG did not reach an agreement on ACER's draft decision in relation to the 70% requirement for several key reasons, including differences in the interpretation of the applicable legal framework, severe concerns on the consequences of the minimum RAM (including derogations) and the need for proper analyses by the TSOs.

(39) AEWG invited ACER to further look for a compromise solution which could be broadly accepted and potentially avoid a large number of derogations being submitted when the ID CCM is implemented. AEWG noted that the consequences of the minimum RAM in intraday should be investigated anyway, to clarify the conditions, potential risks and benefits. The AEWG concluded that it could endorse many agreed elements but identified significant remaining concerns by several regulatory authorities regarding ACER's draft decision.

6.4 Engagement with the Core TSOs and regulatory authorities following AEWG's advice of 4 October

(40) In light of the AEWG advice, and in order to achieve a compromise, ACER decided to postpone the submission of the draft Decision for the BoR's favourable opinion, and further engaged with the regulatory authorities and the Core TSOs to discuss different positions and proposals for the way forward, and to work out a solution which could be broadly supported and consistent with the legal framework.

(41) A workshop was organised on 10 November 2023 to identify possible compromise lines. Eight of the Core regulatory authorities[17] highlighted the already existing five months delay of the IDCC go-live and presented a joint proposal for a way forward, which was to immediately apply ACER's amendments to the Core ID CCM without the 70% minimum RAM requirement and, in parallel, request the TSOs to, in the course of six to eight months, assess and introduce short-term measures towards higher intraday capacities and point out directions for further, long-term developments. Eight regulatory authorities argued that a minimum RAM in intraday is too complex and too important subject to be dealt with in a regional methodology, and that it should be rather handled on a European level and on level of CACM 2.0. The discussion focused on the scope and elements of the proposed assessment by the TSOs, and also the possibility of starting with a test phase before amending the methodology in that respect.

6.4.1 ACER's revised preliminary position of 1 December 2023

(42) Following the workshop of 10 November, and further discussions, on 1 December 2023, ACER shared its third revised preliminary position with the Core TSOs and the regulatory authorities, and opened the second hearing phase. While maintaining in the methodology the 70% minimum RAM, to be implemented by 1 January 2026, ACER proposed to request each Core TSO to analyse potential measures for reaching the 70% threshold in the intraday timeframe. Each TSO was required to consider in their respective assessments at least remedial actions, targeted investments, refinements to capacity calculation principles and data and alternative bidding zone configurations. The Core TSOs were requested to submit their assessments to their respective regulatory authorities and ACER, so that ACER can assist the regulatory authorities in evaluating potential derogation requests for the intraday timeframe, stemming out from these analyses. The preliminary position also envisaged a revision of the methodology, if required following the outcomes of the CACM 2.0 process.

(43) Regarding the exceptional conversion of XNECs to CNECs, ACER provided a compromise proposal based on the proposal of the German TSOs. The compromise allowed for a temporary one-year conversion of XNECs to CNECs, regardless of their PTDF, but under other conditions, including that the TSOs would analyse and propose appropriate specifications for this conversion, if it was considered necessary to keep it for longer than one year.

(44) Regarding other aspects of the methodology, ACER proposed to amend the following articles[18]:

(a) Article 8, by taking into account the ILR proposal on the calculation of flow reliability margin;

[17] ANRE, BNetzA, CRE, E-Control, ERU, HERA, URSO and the regulatory authority of Slovenia ('AGEN').
[18] Numbering of articles refers to the preliminary position of 1 December 2023.

(b) Article 17, by taking into account the proposal provided by the German TSOs on the consideration of net positions in the minimum RAM calculation;

(45) The views of the Core TSOs and the Core regulatory authorities on ACER's revised preliminary position of 1 December 2023, submitted to ACER during the second hearing phase in writing and/or orally, are summarised below:

(a) The Core TSOs reiterated their concerns that the implementation of the 70% requirement in intraday through 'virtual' margins is not feasible. They pointed to the limited availability of remedial actions and insufficient time for the activation of remedial actions and for capacity validation in the intraday timeframe. According to the Core TSOs, systemic measures such as network investments and bidding zone reconfigurations are not available soon enough to mitigate this problem. The TSOs proposed therefore to remove the proposed 70% minimum RAM from the Core ID CCM;

(b) The Core TSOs were also against the proposed requirement to carry out individual TSO assessments as the basis for ACER's recommendations on potential derogation requests. The Core TSOs considered the individual assessments approach as ineffective, irrelevant, and inappropriate, and proposed to replace it with a coordinated assessment to identify measures to improve intraday capacities and then formalise them through amendments to ID CCM or other relevant methodologies. The TSOs also proposed to adopt a monitoring approach on the level of capacity in ID allowing for better understanding of the underlying issues behind the obtained level of intraday capacities, for which the details are to be further aligned and harmonised on pan-EU level;

(c) Eight of the Core regulatory authorities[19] were against ACER's proposed approach for several reasons. In particular, in their view, the proposed approach would not solve the issue of 'virtual' capacities in the coordinated capacity calculation, leading to operational security risks signalled by the TSOs. The eight regulatory authorities further considered that ACER's proposal would conflict and unnecessarily complicate the process for derogations under the Electricity Regulation. The regulatory authorities reiterated their proposal to remove the minimum RAM from the methodology and require the TSOs to carry out a coordinated assessment, as presented at the workshop of 10 November.

(d) Core TSOs also requested the inclusion of the recalculation of capacities IDCC(e), in the afternoon of day D, for update of the capacities 19-24h;

(e) Regarding the conversion of XNECs, Core TSOs welcomed the proposed stepwise approach allowing the TSOs to first gain experience, following the implementation of ROSC, prior to proposing a PTDF threshold for XNECs which could be exceptionally added to the final FB domain;

[19] AGEN, ANRE, BNetzA, CRE, E-Control, ERU, HERA and URSO.

(f) At the oral hearing of 15 December 2023, the German TSOs raised their concerns on the proposed restriction of the IVA application to operational security reasons on considered CNECs, without allowing the possibility to mirror congestions from non-CNECs to CNECs by applying IVA on CNECs. According to the German TSOs, ACER's proposal was not in line with Article 26 of the CACM Regulation, which does not restrict operational security reasons to CNECs only;

(g) At the oral hearing of 18 December 2024, ACM, CREG, ILR and MEKH supported ACER's preliminary position regarding the implementation of the 70% requirement.

6.4.2 ACER's revised preliminary position of 23 January 2024

(46) Further discussions with the regulatory authorities and the Core TSOs, with the facilitation of the European Commission, ultimately resulted in a compromise solution on the implementation of the 70% requirement in intraday, presented as ACER's fourth revised preliminary position, shared with the Core TSOs and the regulatory authorities on 23 January 2024. ACER considered that the resulting delay in adopting the amended methodology would not jeopardise the implementation of Core IDCC and intraday auctions, expected to go live in June 2024.

(47) This compromise solution was based on the idea that the immediate implementation of the non-discrimination principle as expressed in the 70% requirement in the intraday timeframe would lead to serious problems considering the current state of progress under Articles 14-16 of the Electricity Regulation. ACER recognised that not only a transition time is required but also a further review of the methodology must be envisaged, to appropriately assess all the underlying implementation problems and potential ways to overcome them. To inform this future revision, the compromise solution still included the TSOs' analyses (as proposed in the previous preliminary position) but further expanded their scope to require, next to individual assessments, a common assessment by all TSOs to explore all the coordinated measures for increasing ID capacities and possible ways to respect the 70% requirement in the future. The solution also integrated the Core TSOs' proposal to monitor the level of intraday capacities, specifying the related data to be provided to ACER for this purpose.[20]

(48) ACER also included the capacity calculation phase IDCC(e) in the methodology, based on the Core TSOs proposal, as explained in section 7.2.2.2.

(49) The views of the Core TSOs and the Core regulatory authorities on ACER's revised preliminary position of 23 January 2024, submitted to ACER during the third hearing phase in writing and/or orally, are summarised below.

(50) At the oral hearing of 2 February 2024, PSE provided the following views:

[20] This section only provides a summary of the preliminary position of 4 September 2023. All aspects of the compromise solution are further discussed in detail in section 7.2.2.7.1.

(a) Article 1(2) would benefit further clarification;

(b) IDCC(a), providing leftover capacities, should also include the possibility of validation;

(c) Updates of the internal CNEC list should be simplified and accompanied by more frequent updates of this list to reflect network development;

(d) Non-CNECs should be considered in the IVA-based validation as a last resort solution;

(e) The XNEC to CNEC conversion should be able to consider all network elements overloaded after the first daily CROSA run, not only XNECs overloaded after the latest CROSA.

(51) At the oral hearing of 2 February 2024 and in their written input of the same date, APG, TenneT TSO and the German TSOs provided the following views:

(a) Non-CNECs should be considered in the IVA-based validation as a last resort solution;

(b) The exceptional XNEC to CNEC conversion should be able to consider network elements overloaded before the CROSA run, and not only those loaded 100% or more after the CROSA run. Also, the related provision does not belong to the validation process and should be placed earlier in the intraday capacity calculation process.

(52) At the oral hearing of 2 February 2024 and in their written input of the same date, the Core TSOs provided the following views:

(a) The current wording of Article 11(2) of the Core ID CCM concerning leftover capacities should be amended because it may imply immediate implementation of the 70% requirement and therefore appears inconsistent with the proposed compromise solution for the intraday timeframe.

(b) The exceptional XNEC to CNEC conversion should be able to consider the elements which were overloaded before the CROSA run, not only those loaded 100% or more after the CROSA run. Also, the reference should be the first daily CROSA run (not only the latest CROSA).

(c) Before the expected go-live date of the Core ROSC process, there would be no possibility for the TSOs to include the relevant XNECs with the PTDF lower than 5% in the final capacity computation. The Core TSOs therefore proposed to allow for exceptional conversion of the XNECs from the current Core ICS process prior to Core ROSC go-live, also without a PTDF threshold.

(d) The new data items requested under Article 24(3) would require an implementation period. According to the current IT planning, such data could be provided on the JAO website by the end of 2024.

(e) At the oral hearing, the Core TSOs stated that they would be able to complete the analyses on how to increase intraday capacities by April 2025.[21] The Core TSOs stressed that any study on capacity improvements should focus on the TSOs' harmonised assessment. Including individual assessments in the scope of the TSOs' analyses would, in their view, unnecessarily shift the TSOs' resources to analyse measures which cannot be coordinated with the other TSOs.

(f) The Core TSOs also stated that studying bidding zone reconfigurations may not be appropriate in the context of the Core ID CCM, as this exercise has a dedicated process under the Electricity Regulation, and such overlaps with the ongoing bidding zone review and potential duplication of work are not efficient and should be avoided.

(g) Implementing IDCC(c) only six months after IDCC(b) would not be possible in practice since the Core TSO must update the current central and local tools, perform tests with new configurations and publish the results during an external parallel run of at least six months. The Core TSOs therefore requested ACER to extend the deadline to implement IDCC(c) to spring 2025.

(53) In its written input of 2 February 2024, E-Control provided the following views:

(a) E-Control strongly supported the proposal to remove the minimum RAM from the Core ID CCM while maintaining a constructive process towards higher intraday capacities. E-Control pointed to CACM 2.0 as an appropriate process to address this aspect because, in their view, the topic should not be pre-empted by individual methodologies. In this context, E-Control expressed concerns about references to "threshold of 70%" in Article 25(1) and the "minimum capacity requirement" in Article 25(3)(b).

(b) E-Control suggested requesting the Core TSOs, in the context of Article 28(2)(d), to jointly explore other measures which would maximise the infrastructure utilisation and enable higher intraday capacities in the short-term as well as to examine the current and estimate upcoming market needs, in order to identify the most urgent projects and define further development steps, in line with the objective specified in Article 3(g) of the CACM Regulation.

[21] The Core TSOs stated that the deadline of September 2025 in their written input was inserted by mistake.

(c) The aim, scope and processing of individual analyses of Core TSOs were not clear to E-Control, as well as their evaluation and gathering of results into one coordinated regional methodology.

(d) E-Control was not clear which concrete amendments to the ID CCM could result from assessing network investment or bidding zone reconfiguration and proposed to delete the related provision on the expected Core ID CCM amendment (Article 26(8)).

6.5 Second AEWG consultation and advice of 15 February 2024

(54) On 15 February 2024, the AEWG broadly endorsed ACER's draft decision on the Proposal, subject to potential 'red flags' from DUR and URE raised at the AEWG meeting of 13 February. DUR's position was that the proposed compromise solution does not properly reflect the legal requirement of reaching the minimum 70% target. URE raised concerns regarding the references to the minimum capacity in the draft decision documents and the proposed timelines which, in URE's view, are too ambitious.

(55) Regarding potential impacts of the Core compromise solution on other capacity calculation regions, it was concluded that the approach agreed for Core would be relevant for all regions.

(56) Five regulatory authorities submitted their views both orally at the AEWG meeting and in writing during the commenting phase:

(a) MEKH, ACM, CREG and ILR reiterated their joint position presented at the BoR's meeting of 24 January 2024. The four regulatory authorities highlighted the importance of meeting renewable energy sources' needs for intraday capacities by 2026 and ensuring firm cross-border capacities in all timeframes for electricity market integration. The regulatory authorities supported the compromise solution on the 70% threshold in intraday, noting that a clear target is needed, with a requirement on the TSOs to investigate how to make its implementation feasible for all. In their view, options targeting 70% would not compromise operational security as the TSOs can reduce capacities when grid security is at stake, and that these short-term safeguards should be complemented with structural solutions.

(b) E-Control suggested edits to the draft Decision documents, regarding the amended wording of Article 25 of the Core ID CCM as well as several recitals of the draft Decision summarising ACER's decision process, public consultation and engagement with the parties. E-Control noted that the proposed TSOs' analyses focus on long-term measures, whereas additional intraday capacities are already urgently needed. E-Control thus suggested, in line with the proposal of the eight Core regulatory authorities, to request the Core TSOs to jointly explore other measures which would maximise the infrastructure utilisation and enable higher intraday capacities in the short term.

7 ASSESSMENT OF THE PROPOSAL

7.1 Legal framework

(57) Article 9(7)(a) and (13) of the CACM Regulation provides that TSOs' proposals of amendments to the common CCM in accordance with Article 20(2) of the CACM Regulation are to be submitted by all TSOs of the concerned CCR to all regulatory authorities of that CCR for their approval; such proposals are to be submitted to consultation in accordance with the procedure set out in Article 12 of the CACM Regulation.

(58) Article 20 of the CACM Regulation sets general requirements regarding the development of a proposal for a common coordinated CCM and its implementation.

(59) Article 21 of the CACM Regulation specifies various requirements for the content of the proposal for a CCM, referring to further specifications in Articles 22, 23, 24 and 25 of the same Regulation. It also includes a provision for the inclusion of a fallback procedure for the case where the initial capacity calculation does not lead to any results.

(60) Article 22 of the CACM Regulation sets out requirements related to the reliability margin methodology to be necessarily included in the CCM.

(61) Article 23 of the CACM Regulation lays down requirements related to operational security limits, contingencies and allocation constraints.

(62) Article 24 of the CACM Regulation stipulates requirements related to the generation shift keys methodology.

(63) Article 25 of the CACM Regulation specifies requirements related to the methodology for remedial actions in capacity calculation.

(64) Article 26 of the CACM Regulation sets requirements related to the methodology for the validation of cross-zonal capacity.

(65) Article 27 of the CACM Regulation defines general requirements related to the capacity calculation process.

(66) Article 28 of the CACM Regulation provides for requirements related to the creation of a common grid model. However, these are not directly relevant for the capacity calculation methodology.

(67) Article 29 of the CACM Regulation sets requirements related to the regional calculation of cross-zonal capacity.

(68) Article 30 of the CACM Regulation sets requirements related to the validation and delivery of cross-zonal capacity.

(69) As a general requirement, Article 9(9) of the CACM Regulation provides for that the proposal for terms and conditions or methodologies include a proposed timescale for their

implementation and a description of their expected impact on the objectives of the same Regulation.

(70) Article 16 of the Electricity Regulation sets out the general principles of capacity allocation and congestion management.

(71) Article 17(1) of the Electricity Regulation sets out principles for the allocation of capacities between different timeframes.

(72) Article 34 and 35 of the Treaty Functioning of the European Union (TFEU) prohibit unjustified import or export restrictions for goods.

7.2 Assessment of the legal requirements

7.2.1 Assessment of the procedural requirements

7.2.1.1 Development and submission of the Proposal

(73) The Proposal fulfils the procedural requirements of Articles 9(7)(a), 9(13) and 9(11) of the CACM Regulation as all Core TSOs submitted the Proposal to all Core regulatory authorities, which then referred it to ACER.

(74) The Proposal fulfils the requirement of consultation according to the second subparagraph of Article 9(13) and Article 12 of the CACM Regulation as the Core TSOs publicly consulted the second amendment of the Core ID CCM from 4 March 2022 to 4 April 2022, and the third amendment of the Core ID CCM from 30 November 2022 to 30 December 2022.

7.2.1.2 Required elements of the Proposal

(75) The Proposal provides a description of the expected impact of the TSOs' proposed amendments on the objectives of the CACM Regulation, in the respective "Whereas" sections included in the second and the third amendment proposals, as well as a proposed timescale for the implementation of these amendments, in the explanatory document to the second amendment. Therefore, the Proposal complies with Article 9(9) of the CACM Regulation in this respect.

7.2.2 Amendments to the Proposal[22]

7.2.2.1 Amendments to the general provisions

(76) ACER has added paragraph 2 in Article 1 of the Proposal to clarify that the methodology does not affect the Core TSOs' actions pursuant to the SO Regulation, and further clarified it in accordance with PSE's comments (see recital (50)). This amendment relates to the Core TSOs' amendment specifying the so-called 'right to reduce' in Article 11 of the Proposal. ACER considers that the TSOs' actions in accordance with the SO Regulation are performed outside the capacity calculation process and are therefore outside the scope of the Core ID CCM.

(77) Article 2 of the Proposal provides amendments to Definitions. ACER has amended this Article as follows:

(a) definitions are linked to the Core ROSC methodology;

(b) definitions referring to the nRAO process are removed; and

(c) definitions related to the mathematical formulation of the capacity calculation are added or adapted.

7.2.2.2 Intraday capacity calculation process (Article 4)

(78) During the working meetings, there was a wide consensus among the Core TSOs and the Core regulatory authorities that introducing an additional intraday capacity calculation round in the early morning of day D, after CROSA completed at 2:00, would decrease occurrence of low or negative capacities, resulting partially from the fact that the evening capacity calculation (by 22h of day D-1) would be based on an incomplete D-1 CROSA results. Further on, the Core TSOs proposed to include the recalculation of the intraday capacities in the afternoon of day D. Based on this, ACER has included the following intraday capacity calculation rounds in Article 4 of the Proposal:

(a) IDCC(a): updating of cross-zonal capacities remaining after the SDAC for all ID CC MTUs between 00:00 and 24:00 of day D and providing them as intraday cross-zonal capacities to the relevant NEMOs no later than 15 minutes before the intraday cross-zonal gate opening time, at 15:00 market time of day D-1;

(b) IDCC(b): calculation of intraday cross-zonal capacities for all ID CC MTUs between 00:00 and 24:00 of day D. The cross-zonal capacities resulting from this calculation shall be published and submitted to the NEMOs no later than 15 minutes before the target start of allocation at 22:00 market time of day D-1; and

[22] Unless stated otherwise, numbering of the articles and paragraphs in this section corresponds to the final renumbered articles and paragraphs of the Core ID CCM.

(c) IDCC(c): re-calculation of intraday cross-zonal capacities for all ID CC MTUs between 06:00 and 24:00 of day D. The cross-zonal capacities resulting from this calculation shall be published and submitted to the NEMOs no later than 15 minutes before the target start of allocation at 04:00 market time of day D;

(d) IDCC(d): re-calculation of intraday cross-zonal capacities for all ID CC MTUs between 12:00 and 24:00 of day D. The cross-zonal capacities resulting from this re-calculation shall be published and submitted to NEMOs no later than 15 minutes before the target start of allocation at 10:00 market time of day D; and

(e) IDCC(e): re-calculation of intraday cross-zonal capacities for all ID CC MTUs between 18:00 and 24:00 of day D. The cross-zonal capacities resulting from this re-calculation shall be published and submitted to NEMOs no later than 15 minutes before the target start of allocation at 16:00 market time of day D.

ACER has defined that the capacities are to be calculated for 6 hours (18:00-24:00), instead for 5 hours (19:00-24:00), as proposed by the Core TSOs, in order to maintain the 6-hours update windows for all IDCC phases. Accordingly, the capacities would be delivered by 16:00 (instead by 17:00).

(79) In line with PSE proposal (see recital (50)), ACER has specified in paragraph 3(4) that the capacity validation may also be applied for the leftovers.

(80) ACER has also added point (b) in Article 4(5) to specify an additional input of Core net positions from previous SIDC rounds, required for the calculation of the adjustment of minimum RAM.

(81) ACER has deleted paragraph 11 proposed by the TSOs, specifying the TSOs' 'right to reduce' after the delivery of the capacities for the allocation. The deletion of paragraph 11 is explained in recital (76).

(82) ACER has amended paragraph 12, proposed by the TSOs and specifying their right to delay the delivery of intraday capacities in case the ROSC ICS/CROSA process cannot be finalised within the foreseen timeframe and more time is necessary to manage grid security. The (renumbered) paragraph 9 in the ID CCM Amendment still allows the Core TSOs to delay the delivery of intraday capacities in case of delay of the ROSC/CROSA outputs, however, as long as the delay in delivery of capacities does not affect the allocation process. ACER has also specified that the fallback procedure provided in Article 20 would apply if the target start of allocation becomes affected by such a delay.

7.2.2.3 Capacity calculation inputs (Title 3 - Articles 5-10 and Annex 1)

(83) In line with the PSE's proposal to accommodate more frequent updates of the internal CNEC list, ACER specified in Article 5(6) that its frequency of update is 'at least' every two years.

(84) The TSOs proposed to delete Article 5(4) referring to the list of monitored network elements with contingencies (MNECs). Since such a list becomes irrelevant after the

removal of the non-costly remedial action optimization process, ACER has agreed to delete Article 5(4).

(85) The TSOs proposed no further amendments to Title 3. However, ACER has amended two additional provisions under Title 3 in order to align them with amendments introduced in Title 5. These latter amendments are discussed in detail in section 6.2.2.5 and required that:

(a) Article 5(7) is amended to allow for inclusion of exceptionally added CNECs to the list of internal CNECs, in accordance with Article 16, paragraphs (2)-(4);

(b) Article 5(10), requiring the TSOs to assess the possibility of including an adjustment for minimum RAM, is deleted as obsolete.

(86) ACER has updated Article 7 on allocation constraints and corresponding Annex 1 of the Core ID CCM, in accordance with the fact that ELIA and TenneT Netherlands stopped the usage of allocation constraints.

(87) Regarding Article 8 on the FRM values, ACER:

(a) has not accepted the proposal of the German TSOs and ELIA to remove the FRM calculation methodology. ACER sees the FRM values as an important input to the capacity calculation process, which needs to be supported by the calculation. Hence the fixed FRM application is a transitional solution. Finally, the FRM calculation methodology is a clear requirement pursuant to Article 22 of the CACM Regulation;

(b) has accepted the PSE's proposal to specify that the fixed FRM value of 5% at the intraday level is applied only if all Core TSOs agree to apply a fixed FRM value of 10% at the day-ahead level.

(c) has accepted ILR's proposed refinement of the fixed FRM value approach provided in the AEWG consultation (see recital(36)(f)) and specified that during the period of application of the day-ahead FRM values equal or lower than 10%, the intraday FRM value shall be the minimum between the day-ahead FRM value and the 5% value.

7.2.2.4 Update of intraday cross-zonal capacities (Article 11)

(88) ACER has amended paragraph 4 in accordance with the conclusions of the Core IG meeting held on 21.06.2023. At that meeting, the Core regulatory authorities, the Core TSOs and ACER agreed that, due to the current expected timing of the implementation of the first intraday auction ('IDA1') in the first quarter of 2024, it is not necessary to prolong the derogation for providing the leftovers of day-ahead capacities at 15:00 of D-1. Accordingly, paragraph 4 has been amended to limit the possibility to provide the non-zero ID capacities in period 15-22h of D-1 until the implementation of IDA1.

(89) As proposed by the Core TSOs during the third hearing phase, and in consistency with the compromise solution for the intraday timeframe (see recital (120)), ACER has deleted the relevant wording implying the need for immediate implementation of the 70% requirement, for the leftovers, in Article 11(2).

7.2.2.5 Description of the intraday capacity calculation process (Articles 12-20)

7.2.2.5.1 Consideration of non-CNECs

(90) ACER has carefully considered the Core TSOs' proposal to allow for an exceptional inclusion of XNECs from CROSA in the final list of CNECs, regardless of their PTDF threshold.

(91) In principle, if there was a security issue on a XNEC with low sensitivity to cross-zonal transactions (and hence with a maximum zone-to-zone PTDF below 5%), this would be primarily due to internal transactions causing internal flows on that XNEC. Therefore, reducing cross-zonal transactions (which cause allocated flows) in order to slightly decrease the loading of an XNEC with low sensitivity to cross-zonal exchanges would be disproportionate and discriminatory towards cross-zonal exchanges, which is not allowed under the legislative framework. First of all, Article 16 of the Electricity Regulation requires the TSOs to maximise cross-zonal capacities and ensure that at least a minimum amount of cross-zonal capacity is offered for capacity allocation. Article 21(1)(b)(ii) of the CACM Regulation requires that the capacity calculation approach include rules for avoiding undue discrimination between internal and cross-zonal exchanges. Article 29(3)(b) of the CACM Regulation explicitly provides that elements with low sensitivity to cross-zonal exchanges should be ignored in the capacity calculation.

(92) At the working meeting of 21 June 2023, ACER asked the Core TSOs to provide concrete examples with network models, including the flow decomposition per those XNECs with a maximum zone-to-zone PTDF below 5%. The Core TSOs were not able to provide such examples, stating that they cannot be easily delivered without ROSC in place. Without such examples, ACER fails to see that the proposed conversion of XNECs with low PTDF is necessary for an efficient removal of congestions. Rather, ACER expects that the flow decomposition would show that such XNECs are largely congested by flows resulting from internal transactions.

(93) ACER considers that the conversion is not the only way to relieve congestion on such network elements. Instead of including it in the list of CNECs, the TSOs should step out of the coordinated part of ROSC and use the ROSC's Fast Activation Process ('FAP'). Such approach is expected to perform well even before the ROSC (and FAP) implementation, since a similar approach has already been efficiently applied in the Core region.

(94) During the hearings, the German TSOs maintained their position on the necessity of the XNEC-CNEC conversion, pointing out that otherwise, each cross-border relevant remedial action applied in the ROSC for an XNEC which is not a CNEC, is inefficient. This is because the IDCC outcome again allows for a likely (due to market direction) overload of the XNEC. As this must be solved again afterwards with remedial actions, the resulting overall process is less efficient and a threat to system security as the lead times and remedial actions' potential for solving the overloads after IDCC are reduced.

(95) It is unclear to ACER how the TSOs can have redispatch potential and possibility to manage uncertainties caused by the internal trade (and which would have much higher influence on the internal XNECs in question) and, at the same time, lack sufficient redispatch potential

to manage uncertainties caused by events/schedules beyond the bidding zone (with rather small influence on the internal XNECs in question).

(96) The current Core ID CCM[23] already provides for a possibility to exceptionally add internal XNECs to the CNEC list, with a maximum zone-to-zone PTDF equal to or above 5%. In its revised preliminary position of 4 September 2023, ACER proposed to allow for a conversion in the validation phase, under the conditions that the converted XNECs have to respect a maximum zone-to-zone PTDF of 3% and that the connecting TSO has to stop all subsequent internal trades, or at least all trades in the burdening direction. ACER's aim was to take into account the concerns of the TSOs, while still ensuring that potential undue discrimination between internal and cross-zonal exchanges would not occur, as required by Article 21(1)(b)(ii) of the CACM Regulation.

(97) In response to ACER's revised preliminary position of 4 September 2023, the German TSOs expressed concerns that ACER's proposal may not be feasible, and that they need time to assess it. The German TSOs also asked ACER to consider permitting the XNEC to CNEC conversion on a temporary basis. They claimed that it would give the TSOs an opportunity to appropriately examine its effects and establish whether it is necessary to keep it in order to preserve the effect of activated XRAs on operational security. The TSOs asked for a temporary permission to convert XNECs to CNECs which would give them practical experience to carry out the relevant study.

(98) Notwithstanding the considerations in recitals (90)-(96), ACER sees merit in providing the TSOs with a limited period of time to gain experience and study the effects of the conversion. ACER has amended Article 16 to allow for an exceptional and temporary conversion of XNECs, provided that all available costly and non-costly remedial actions cannot resolve their congestion, and their RAM is the highest RAM which ensures operational security, with the floor of zero. ACER has confirmed the existing or specified further conditions for the conversion which address the concerns of the Core TSOs while, at the same time, restrict its scope to the absolute minimum that is necessary.

(99) In particular, ACER has allowed for a temporary conversion of XNECs to CNECs in the first twelve months after the ROSC application without a maximum zone-to-zone PTDF threshold, but under conditions specified in Article 16, paragraphs (3)-(4). This will provide the Core TSOs with sufficient time to study the needs and effects of this conversion and an opportunity to propose the related specifications, if required.

(100) In this context, the TSOs also asked for allowing the conversion of XNECs overloaded before any of the previous CROSAs. ACER has not accepted the proposal and specified that only XNECs overloaded before the latest CROSA can be converted. If an XNEC overloaded before any preceding CROSA ceased to be overloaded before the latest CROSA (due to ordered remedial actions and intermediate changes in the generation and load

[23] Core ID CCM as amended and approved by ACER Decision No 06/2022 of 19 April 2022.

pattern), converting it again to a CNEC would not be necessary, especially considering the exceptional nature of this conversion measure.

(101) During the third hearing phase, the Core TSOs asked ACER to extend the exceptional conversion to cover the period before the implementation of ROSC (see recital (52)). ACER notes that such an extension of the study period without the PTDF threshold is not necessary, as the Core TSOs may use existing practices for managing potential issues at non-CNECs. After the ROSC implementation, the transition period without the PTDF threshold may be needed to cope with new complexity of the ROSC and IDCC alignment and to gain experience.

(102) Several Core TSOs and regulatory authorities were concerned about ACER's proposal to restrict the application of IVA to solve congestions on CNECs only. For them, the possibility of using IVA on CNECs to mirror potential congestions on non-CNECs was needed for ensuring operational security. ACER has carefully considered these views and decided to permit using IVA for this purpose only as a last resort. Therefore, Article 18(2) requires the TSOs to consider all the measures specified in Article 22 of the SO Regulation before resorting to IVA for mirroring non-CNEC congestions. Also, the TSOs should ensure that potentially not applied measures are made available (e.g. countertrading). Under the conditions specified in Article 18(2), ACER expects that IVA would be used very rarely for this purpose.

(103) ACER did not find appropriate to allow for using IVA for non-CNECs' congestions as a standard validation measure, for the following important reasons:

(a) considering the compromise approach for the XNEC-CNEC conversion, mirroring of potential congestions through IVA is not needed and considerably less transparent than the temporary conversion to CNECs;

(b) allowing the consideration of non-CNECs in capacity calculation and validation can only be accepted as a last resort measure since the capacity calculation in the flow-based approach considers critical network elements only.[24]

(104) ACER has found it necessary to specify additional reporting obligations in Article 18(10) to appropriately monitor the exceptional conversion of non-CNECs into CNECs (Article 16, paragraphs (2)-(4)) and the instances of applying IVA for mirroring congestion on non-CNECs (Article 18(2)).

[24] See e.g. references in Article 26(1), 26(3), 29(3)(b) and 30(1) of the CACM Regulation.

7.2.2.5.2 Calculation of flow-based parameters

(105) ACER has extended the scope of Article 17 on the calculation of flow-based parameters before validation to include the process of calculation of unscheduled allocated flows (Fuaf). This process does not apply directly to the calculation of RAM values, but serves the purpose of performing TSOs' analyses of offered intraday capacities required by Article 25 (see recital (122)).

7.2.2.5.3 Other amendments to the description of the intraday capacity calculation process

(106) ACER has shortened the period for the Core TSOs to submit the proposal for amendment to the Core ID CCM to include advanced hybrid coupling ('AHC'). The period of 18 months in Article 14(4) has been shortened to 12 months to align the timing of the AHC application at the intraday level with the expected AHC development at the day-ahead level. As discussed during the working meetings, the shortened period concerns only the development of the proposal for the AHC inclusion, and not its actual implementation.

(107) ACER accepted the TSOs' proposal to remove the provision[25] on the application of nRAO. According to the Core TSOs, it would not be feasible to perform nRAO (which requires approx. 2.5 hours) within the available timeframe of approx. 1 hour. Moreover, the additional calculation run, IDCC(c), reduces the need for nRAO since it ensures that the results of the completed CROSA can be taken into account in the capacity calculation for most MTUs. ACER considers that the additional calculation run also addresses CREG's concerns about occurrence of zero or negative capacities (see section 6.2.3).

7.2.2.6 Updates and data provision (Articles 21-24)

(108) The Core TSOs suggested to monitor the level of intraday capacities to better understand the issues with providing higher capacities.[26] ACER's monitoring activity has so far indeed focused on the part of the physical capacity offered for trade in the day-ahead timeframe, where the coordinated capacity calculation methodologies are already implemented.[27] With the implementation of the Core ID CCM, ACER intends to start monitoring intraday capacities in the Core region as it would bring important insights on the underlying issues. To enable such monitoring, it is necessary that the Core TSOs provide data on the flow components at different critical network elements. This will enable ACER to assess the actual levels of intraday capacities in the Core and to identify potential implementation problems. To this end, ACER has added a new paragraph (3) in Article 24 of the methodology, specifying the related data provision requirements. Based on the discussions with the Core TSOs (see recital (52)), ACER specified that the provision of these additional data would commence in January 2025 (reporting data for December 2024).

[25] In the TSOs' proposal numbered as Article 17.
[26] Core TSOs' joint response of 18 December 2023 to ACER's revised preliminary position of 1 December.
[27] See ACER's 2023 MACZT Report.

(109) ACER has amended Article 22(2)(xi) to require that the TSOs publish the calculated set of PTDFs in case an internal element is exceptionally added to the list of CNECs during the validation. This will enable the monitoring of the minimum PTDF threshold as per Article 16.

(110) Based on the discussion at the Core IG meeting of 21 June 2023, ACER has amended paragraphs 2(d) and 2(f) of Article 22 and paragraph 6(d) of Article 24 to require the TSOs to publish the shadow prices and flows induced by net positions obtained at intraday auctions, both after the occurrence of the auction and within a quarterly report developed by the coordinated capacity calculator. This obligation will apply once SIDC is able to directly apply flow-based parameters.

(111) Finally, ACER has inserted minor edits in Articles 21, 22 and 24, mainly to ensure the consistency of these provisions with the removal of the nRAO process.

7.2.2.7 Implementation (Articles 25-26 and Annex 2)

7.2.2.7.1 Addressing implementation problems related to Article 16(8) of the Electricity Regulation while safeguarding the principle of non-discrimination

(112) Article 16 of the Electricity Regulation provides a framework for capacity allocation and congestion management based on the fundamental principles of equal treatment and non-discrimination between internal and cross-zonal exchanges. The principle that imported electricity should not be treated differently from domestic electricity, e.g. when deciding about access to the grid, follows directly from the fundamental freedoms in the EU Treaty, as well as from various provisions in EU electricity legislation implementing this principle.[28] The principle of non-discrimination translates into the principle of maximisation of cross-border capacities set out in Article 16(4) of the Electricity Regulation. Articles 14-17 of the Electricity Regulation provide for more detailed rules how to apply the non-discrimination rule in practice. One element of this framework is Article 16(8) of the Electricity Regulation, which aims to ensure that all market participants have equal access to the transmission network to exchange electricity, regardless of whether they are entering into internal or cross-zonal trades. Article 16(8) explicitly provides that the TSOs are not allowed to limit cross-zonal capacity to solve internal congestion or manage flows resulting from internal trade. This, again, reflects the principle of non-discrimination between internal and cross-zonal electricity exchanges.

(113) However, certain capacity limitations on critical network elements are unavoidable and technically justified, which has been recognised in the Clean Energy Package. To facilitate the implementation of the non-discrimination principle, to cater for possible security of

[28] See e.g. Articles 3(h), Art 14-17 or 34(2) and recitals 20, 21, 27 and 31 of the Electricity Regulation, as well as Articles 3(1), 40(1)(f) or 59(h) of Directive (EU) 2019/944 on common rules for internal market for electricity. Discrimination between domestic and non-domestic flows can also constitute an abuse of a dominant position under Article 102 TFEU, see e.g. antitrust cases *Swedish Interconnectors* – COMP Case No 39351, or *Tennet* – COMP Case No 40461.

supply considerations, and to avoid an individual calculation of the percentage of necessary limitations, Article 16(8) of the Electricity Regulation allows the TSOs to reduce capacities allocated at critical network elements[29] by a 'lumpsum' of up to 30% (e.g. to cater for reliability margins, loop flows and internal flows). To allow for a gradual transition to more open electricity borders, the Member States and the European Parliament also agreed in the Clean Energy Package that a transition time may be necessary for some Member States to take the necessary measures to implement the 70% requirement, such as network investments, more efficient redispatch, or changes to the current configuration of bidding zones. TSOs may therefore temporarily reduce CNEC capacity even by more than 30% in case they have received a derogation under Article 16(9) of the Electricity Regulation. Articles 14 and 15 of the Electricity Regulation provide for a coordinated process which aims at reducing the root causes for structural congestion and allowing all TSOs to reach the minimum 70% threshold by 2026.[30]

(114) As the non-discrimination rule applies, in principle, to all electricity trade within the EU, with no distinction between market timeframes, it is difficult to conceive a long-term regulatory solution for intraday trading which would give unlimited access to the grid to domestic electricity, while permanently putting significant restrictions on network access for non-domestic electricity.[31] When it comes to the principle of non-discrimination, Article 16(8) of the Electricity Regulation does not distinguish between the two timeframes covered by the CACM Regulation. It therefore appears to be in line with the principles of free flows of electricity in the internal market and non-discrimination of cross-border flows that the TSOs should, in any long-term solution, apply the maximisation principles of the Electricity Regulation not only to either the day-ahead or intraday timeframe, but to both timeframes.[32]

(115) Insofar as some Core regulatory authorities and the TSOs refer to Article 17(2) of the Electricity Regulation as a possible solution, this Decision leaves enough space to implement the main idea of this provision, namely to involve the TSOs in the development of workable solutions, such as the Core TSOs' analyses in new Article 25 of the Core ID CCM (see recital (122)).

[29] Critical network elements are considered in the flow-based approach.
[30] See e.g. the report on structural congestion in Article 14(2), the action plans to remove the structural congestion by 2026 in Article 15 and the bidding zone review process in Article 14(7) and (8) and 15(5) of the Electricity Regulation.
[31] ACER notes in this context that also a solution whereby the TSOs could "distribute" the allowed limitation between intraday and day-ahead framework (e.g. be allowed to make 70% of capacities available in day-ahead, and no or very limited capacities in the intraday timeframe) on a lasting basis cannot be considered as the target model envisaged by the Electricity Regulation after the transition time. Such solution would effectively and on a lasting basis limit the access by non-domestic grid users by more than 30%, while domestic users within the bidding zone would have access to 100% of the capacities. This appears difficult to reconcile with the EU principle of non-discrimination.
[32] The application to both timeframes also appears to follow from Article 21(1)(b)(ii) and Article 29(7)(d) of the CACM Regulation. Article 21(1)(b)(ii) of the CACM Regulation refers to point 1.7 of Annex I to Regulation (EC) 714/2009, which is now replaced by Article 16(8) of the Electricity Regulation.

(116) While recognising the challenges of an implementation on short notice, ACER also notes that a timely implementation of the non-discrimination principle to day-ahead and intraday trading would also help supporting the Union's decarbonisation objectives. Providing capacity for cross-border trading opportunities plays an important role in incentivising energy investments. Producers of renewable energy, which is intermittent by nature, must be able to trade closer to real time to balance their positions. As this requires liquid intraday markets, sufficient capacity should be made available to cross-zonal trade not only in day-ahead, but also in intraday.[33]

(117) In any event, ACER notes that the current compromise in this Decision addresses the concerns of those TSOs and regulatory authorities who argued against an immediate implementation of the non-discrimination principle to the intraday timeframe, and provides for further opportunities to analyse and discuss possible implementation problems and different solutions until January 2026.[34]

(118) In fact, to address the concerns voiced during the proceedings, it is appropriate to introduce a transition period and a further revision of the Core ID CCM before proceeding to further implementation steps of the 70% requirement in the intraday timeframe. ACER fully recognises the challenges of its practical implementation. Progress towards removing capacity limitations has been slow overall, and the minimum 70% requirement can often not yet be reached even in the day-ahead timeframe. Important coordinated procedures are ongoing under Article 14 to 16 of the Electricity Regulation and the CACM Regulation to define efficient solutions to address structural congestion and find an optimal bidding zone configuration.

(119) The extensive discussions between ACER, the regulatory authorities and the Core TSOs in the context of this decision procedure demonstrated that in this point of time the practical implementation of the 70% requirement in the intraday timeframe is significantly more challenging than in the day-ahead timeframe. In particular, solutions which have been devised for the day-ahead capacity calculation, such as the adjustment for minimum RAM, appear not readily applicable to the intraday timeframe right now, as they give rise to major concerns regarding security of efficiency risks. Exploring other solutions seems necessary, at least until more structural solutions developed in the processes under Article 14 to 16 of the Electricity Regulation are implemented.

(120) In view of these discussions and significant concerns coming from the TSOs as well as several regulatory authorities, ACER considers that it is appropriate for this Core ID CCM amendment not to provide at this stage any specific mechanism for reflecting the 70%

[33] The support for an application of the non-discrimination principle to all timeframes, once the necessary coordination processes under Articles 14-16 of the Electricity Regulation are finalised, and the importance of this principle for a well-functioning intraday market and integrating renewables is also highlighted in the European Commission's letter to Core TSOs. See letter of Commissioner Kadri Simson to the Core TSOs, 22 January 2024, Brussels, ref. ARES(2023)s2019763.

[34] In practical terms, meeting the 70% requirement in the intraday timeframe would, in ACER's view, already include capacity allocated in day-ahead, leaving only the top-up to be added in intraday.

requirement in capacity calculation, such as minimum RAM. Instead, following the compromise approach devised in the course of these decision proceedings, ACER considers it acceptable in the current state of the electricity market that the Core TSOs do not immediately implement the 70% requirement, and do not seek annual derogations for this purpose. ACER notes that TSOs remain nevertheless bound by the general obligation to maximise interconnector capacities in Article 16(4) of the Electricity Regulation. In this context, the TSO should put their best efforts to increase the current level of intraday capacities and actively explore ways to reach the 70% threshold in the future, considering the evolving market circumstances.

(121) By the end of 2025, the coordinated process under Articles 14 to 16 of the Electricity Regulation and Articles 31 to 34 of the CACM Regulation will have identified measures to facilitate the increase of cross-zonal capacity. It can be expected that progress with network extensions, organisation of redispatch measures and bidding zone reconfigurations will facilitate the implementation of the 70% requirement beyond the day-ahead timeframe. At that point in time, a review of the current Core ID CCM therefore should verify to what extent possible justifications for exceptionally higher limitations on critical network elements still remain. For that purpose, ACER has added a new paragraph (8) in Article 26 of the methodology, requiring the Core TSOs to submit the related amendment proposals by 1 October 2025. ACER considers that the TSOs' analyses and the resulting Core ID CCM amendment proposal should include solutions on how to increase intraday capacities and on how to eventually reach the 70% threshold on all CNECs, in all rounds of the intraday capacity calculation.

(122) In the meantime, further studies to explore all possible means to increase capacities in the intraday timeframe appear necessary, to inform the planned review of the Core ID CCM. To this aim, ACER has inserted a new Article 25 into the methodology, requesting the Core TSOs to carry out further analyses and submit them to ACER and the Core regulatory authorities by 1 April 2025. The proposed timeline aims to ensure that the TSOs' analyses can feed into their proposal for amending the methodology. The analyses would comprise a common assessment by all Core TSOs of both short- and long-term systemic measures as well as individual assessments of measures which can be taken by each Core TSO, including remedial actions, targeted investments, refinements to capacity calculation principles and data, or alternative bidding zone configurations, which would enable TSO to offer higher intraday cross-zonal capacities and over time, reach the minimum capacity threshold on all critical network elements.

(123) The Core TSOs (see recital (52)) and E-Control (see recital (53)) commented on the suitability of individual TSO assessments.

(124) Since the Core TSOs may have different issues and solutions regarding the level of ID capacities on their CNECs, ACER considers that each Core TSO should individually assess possible ways to increase capacities and implement the 70% requirement on their CNECs, without being limited by approaches or problems faced by other Core TSOs. On the other hand, a more consistent approach in developing individual assessments is welcomed. To that end, ACER aims to support the individual assessments by providing, in coordination with the Core regulatory authorities, informal guidance for performing these assessments.

In addition, some activities within the individual assessment may be organised jointly by the Core TSOs, such as the preparation of inputs (analysed timestamps, common grid models, CNEC lists, GSK data), as well as single calculation on the effects of bidding zone changes on all CNECs, per each analysed timestamp.

(125) The Core TSOs also commented on the appropriateness of studying the bidding zone reconfigurations in the context of the Core ID CCM (see recital (52)).

(126) Bidding zone reconfiguration is one of potential structural measures to decrease loop flows and increase capacities for the cross-zonal market, and thus reach the 70% threshold. As such, it should be one of the elements considered in the Core TSOs' analyses. ACER does not see this exercise as a duplication of the ongoing bidding zone review. The latter aims to study a wide range of benefits and drawbacks of potential changes in particular bidding zone configurations, while the TSOs' analyses under Article 25 should only apply the effects of predefined alternative bidding zone configurations[35] to the size of loop and internal flows per Core CNECs. To optimise the workload, the Core TSOs are free to re-use the information on flow components per CNECs from the bidding zone review analyses, if the selection of analysed timestamps at both processes (bidding zone review and TSOs' analyses in Core ID CCM) is suitable.

(127) E-Control questioned the link between the assessment of network investments or bidding zone reconfiguration, with the expected amendment of the Core ID CCM (see recital (53).

(128) ACER recognises that not each specific category of measures to be analysed by the TSOs under Article 25 would readily translate into concrete proposals for amending the Core ID CCM. However, the joint consideration of all possible measures in the TSOs' analyses will inform the Core TSOs, regulatory authorities and ACER on the actual state and prospects for further increasing intraday capacities and overtime, implementing the 70% requirement also in the intraday timeframe. Gaining this understanding is essential for assessing and proposing any further implementation steps.

7.2.2.7.2 Other amendments related to implementation

(129) ACER has amended Article 26 of the Proposal to define the implementation timeline of intraday capacity calculation rounds in line with the proposals by the Core TSOs.

(130) Regarding the third amendment proposal, ACER has allowed a two-year period in which the Core TSOs may apply the ATC-based validation in parallel to the IVA-based validation. Assuming that the first phase of IDCC(a) is implemented by June 2024, the option to apply the ATC-based validation would expire by June 2026. ACER expects that by then, the SIDC will be able to accommodate the flow-based parameters. Even if this is not the case,

[35] The potential configurations as defined in the Annex I of ACER Decision 11/2022

ATC-based validation should not be possible after the two-year period, as explained in section 7.2.2.8.

(131) For the avoidance of doubt, and considering the views of the Core TSOs and some Core regulatory authorities, ACER has added a new paragraph (9) in Article 26, clarifying that the Core ID CCM may also need to be revised following the CACM 2.0 process.

(132) ACER has updated the table in Annex 2 with phases of calculated and allocated capacities in light of the implementation of intraday auctions ('IDA') and Core intraday capacity calculation (IDCC(b)). This includes the amendments to link the possibility of applying zero intraday capacities before 22h of day D-1 with the implementation of the first IDA. Also, although it is unlikely that IDAs would be implemented before IDCC(b), the table has been amended to cover such possibility, by specifying that the leftovers from previous ID continuous trading process would be used in such case.

7.2.2.8 ATC-based validation process (Annex 6)

(133) ACER has accepted the third amendment proposal of the Core TSOs by adding Annex 6 to the methodology. Annex 6, further adapted during the proceedings, provides now a possibility of a second validation of cross-zonal capacities defined in the flow-based domain, after it has been converted to an ATC domain.

(134) ACER considers that the validation process in a flow-based capacity calculation process must be performed on a CNEC level in order to maintain the information on the location of the congestion and to allow for capacity reduction only to the extent necessary to guarantee operational security. Therefore, the validation process described in Article 19 of the methodology is and should remain the only enduring solution for the intraday flow-based capacity calculation.

(135) However, in order to address the Core TSOs' concerns about the constrained timings of the CNEC-based validation, which are significantly reduced compared to the day-ahead process, and the resulting security issues, ACER has allowed for a temporary ATC-based validation, under the conditions set out in Annex 6. The ATC-based validation is still permitted for a maximum of two years following the implementation of IDCC(a). ACER expects that two years is sufficient for all the TSOs to develop their local tools to perform a full-fledged CNEC-based validation, which is more suitable for the flow-based capacity calculation process, and more accurate than the ATC-based validation. ACER notes that in any case, the ATC-based validation becomes obsolete as soon as SIDC is updated to accommodate flow-based parameters.

7.3 Editorial amendments

(136) ACER has introduced a number of editorial amendments which were required to improve consistency and structure of the Proposal, while preserving the intended meaning of the content.

8 CONCLUSION

(137) For all the above reasons, ACER considers the Proposal in line with the requirements of the CACM Regulation, provided that the amendments described in this Decision are integrated in the Proposal, as presented in Annex I and Annex II to this Decision. The amendments, which have been consulted with the Core TSOs and the Core regulatory authorities, are necessary to ensure that the Proposal is in line with the purpose of the CACM Regulation and contributes to market integration, non-discrimination, effective competition and the proper functioning of the market.

(138) Therefore, ACER approves the Proposal subject to the necessary amendments set out in Annex I and Annex II. For reasons of clarity, Annex III to this Decision provides a complete, consolidated version of the Core ID CCM,

HAS ADOPTED THIS DECISION:

Article 1

The intraday capacity calculation methodology of the Core capacity calculation region, developed pursuant to Article 20 of Regulation (EU) 2015/1222, is amended and approved as set out in Annex I and Annex II to this Decision.

Article 2

This Decision is addressed to:

1. 50Hertz - 50Hertz Transmission GmbH
2. Amprion - Amprion GmbH
3. APG - Austrian Power Grid AG
4. ČEPS - ČEPS a.s.
5. CREOS Luxembourg - CREOS Luxembourg S.A.
6. ELES - ELES, d.o.o.
7. Elia - Elia Transmission Belgium S.A.
8. HOPS d.d. - Croatian Transmission System Operator Plc
9. MAVIR ZRt. - MAVIR Magyar Villamosenergia-ipari Átviteli Rendszerirányító Zártkörűen Működő Részvénytársaság ZRt.
10. PSE - Polskie Sieci Elektroenergetyczne S.A.
11. RTE - Réseau de Transport d'Electricité S.A.
12. SEPS - Slovenská elektrizačná prenosovú sústava, a.s.
13. TenneT GER - TenneT TSO GmbH
14. TenneT TSO - TenneT TSO B.V.
15. Transelectrica - Compania Nationala de Transport al Energiei Electrice S.A.
16. TransnetBW - TransnetBW GmbH

Done at Ljubljana, on 14 March 2024.

- SIGNED -

For the Agency
The Director

C. ZINGLERSEN

Annexes:

Annex I	The second amendment of the Core Intraday Capacity Calculation Methodology, as revised and approved by ACER.
Annex Ia	The second amendment of the Core Intraday Capacity Calculation Methodology, with ACER's amendments to the Core TSOs' proposal shown in track changes – **for information**.
Annex II	The third amendment of the Core Intraday Capacity Calculation Methodology, as revised and approved by ACER.
Annex IIa	The third amendment of the Core Intraday Capacity Calculation Methodology, with ACER's amendments to the Core TSOs' proposal shown in track changes – **for information**.
Annex III	Consolidated version of the Core Intraday Capacity Calculation Methodology – **for information**.
Annex IIIa	Consolidated version of the Core Intraday Capacity Calculation Methodology with amendments shown in track changes towards Annex II[36] to ACER Decision 06/2022 – **for information**.
Annex IV	Evaluation of responses to ACER's public consultation on the proposal for the second and third amendment of the intraday capacity calculation methodology of the Core capacity calculation region – **for information**.

In accordance with Article 28 of Regulation (EU) 2019/942, the addressees may appeal against this Decision by filing an appeal, together with the statement of grounds, in writing at the Board of Appeal of ACER within two months of the day of notification of this Decision.

[36] Annex II to ACER Decision 06/2022.

In accordance with Article 29 of Regulation (EU) 2019/942, the addressees may bring an action for the annulment before the Court of Justice only after the exhaustion of the appeal procedure referred to in Article 28 of that Regulation.

ACER
European Union Agency for the Cooperation of Energy Regulators

ACER Decision on Core ID CCM: Annex III

(text rectified by corrigendum of 4 April 2024)

Intraday capacity calculation methodology of the Core capacity calculation region

in accordance with Article 20ff. of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

Consolidated version of

14 March 2024

Contents

TITLE 1 – General provisions

Article 1. Subject matter and scope

1. The intraday capacity calculation methodology is the Core TSOs' methodology in accordance with Article 20ff. of the CACM Regulation and covers the intraday capacity calculation methodology for the Core CCR bidding zone borders.

2. This methodology is without prejudice to the TSOs' rights and obligations under Commission Regulation (EU) 2017/1485 establishing a guideline on electricity transmission system operation, such as taking any remedial actions pursuant to this Regulation to maintain operational security and ensure that the system operates in a normal state. Accordingly, the management of cross-zonal capacities by the TSOs after their delivery to the allocation process is beyond the scope of this methodology.

Article 2. Definitions and interpretation

1. For the purposes of the intraday capacity calculation methodology, terms used in this document shall have the meaning of the definitions included in Regulation (EU) 2019/943, Directive (EU) 2019/944, Commission Regulation (EU) 2015/1222, Commission Regulation (EU) 2016/1719, Commission Regulation (EU) 2017/2195, Commission Regulation (EU) 543/2013, the definitions set out in Article 2 Annex I of ACER Decision No 02/2019 on the Core CCR TSOs' proposal for the regional design of the day-ahead and intraday common capacity calculation methodologies and the definitions set out in Article 2 Annex I of ACER Decision No 33/2020 on the methodology for regional operational security coordination for the Core capacity calculation region ("Core ROSC methodology"). In addition, the following definitions, abbreviations and notations shall apply:

   (a) 'AAC_{ID}' is the already allocated capacity which has been allocated in SIDC;

   (b) 'AHC' means the advanced hybrid coupling, which is a solution to take fully into account the influences of the adjacent CCRs during the capacity allocation;

   (c) 'AMR_{DA}' means the adjustment for the minimum remaining available margin in accordance with the day-ahead capacity calculation methodology of the Core CCR;

   (d) 'annual report' means the report issued on an annual basis by the CCC and the Core TSOs on the intraday capacity calculation;

   (e) 'ATC' means the available transmission capacity, which is the transmission capacity that remains available after the allocation procedure and which respects the physical conditions of the transmission system;

   (f) 'CCC' means the coordinated capacity calculator, as defined in Article 2(11) of the CACM Regulation, of the Core CCR, unless stated otherwise;

   (g) 'CCR' means the capacity calculation region as defined in Article 2(3) of the CACM Regulation;

   (h) 'CGM' means the common grid model as defined in Article 2(2) of the CACM Regulation and means the intraday CGM established in accordance with the CGMM;

   (i) 'CGMM' means the common grid model methodology, pursuant to Article 17 of the CACM Regulation;

(j) 'CNE' means a critical network element;

(k) 'CNEC' means a CNE associated with a contingency used in capacity calculation. For the purpose of this methodology, the term CNEC also cover the case where a CNE is used in capacity calculation without a specified contingency;

(l) 'Core DA CCM' means the Core day-ahead capacity calculation methodology;

(m) 'Core CCR' means the Core capacity calculation region as established by the Determination of capacity calculation regions pursuant to Article 15 of the CACM Regulation;

(n) 'Core net position' means a net position of a bidding zone in Core CCR resulting from the allocation of cross-zonal capacities within the Core CCR;

(o) Core TSOs are 50Hertz Transmission GmbH ("50Hertz"), Amprion GmbH ("Amprion"), Austrian Power Grid AG ("APG"), CREOS Luxembourg S.A. ("CREOS"), ČEPS, a.s. ("ČEPS"), Eles d.o.o. sistemski operater prenosnega elektroenergetskega omrežja ("ELES"), Elia System Operator S.A. ("ELIA"), Croatian Transmission System Operator Plc (HOPS d.d.) ("HOPS"), MAVIR Hungarian Independent Transmission Operator Company Ltd. ("MAVIR"), Polskie Sieci Elektroenergetyczne S.A. ("PSE"), RTE Réseau de transport d'électricité ("RTE"), Slovenská elektrizačná prenosová sústava, a.s. ("SEPS"), TenneT TSO GmbH ("TenneT GmbH"), TenneT TSO B.V. ("TenneT B.V."), National Power Grid Company Transelectrica S.A. ("Transelectrica"), TransnetBW GmbH ("TransnetBW");

(p) 'cross-zonal CNEC' means a CNEC of which a CNE is located on the bidding zone border or connected in series to such network element transferring the same power (without considering the network losses);

(q) 'curative remedial action' means a remedial action which is only applied after a given contingency occurs;

(r) 'D-1' means the day before electricity delivery;

(s) 'D-2' means the day two-days before electricity delivery;

(t) 'DACF' means day ahead congestion forecast;

(u) 'default flow-based parameters' means the pre-coupling backup values calculated in situations when the intraday capacity calculation fails to provide the flow-based parameters in three or more consecutive hours. These flow-based parameters are based on previously calculated flow-based parameters;

(v) 'external constraint' means a type of allocation constraint that limits the maximum import and/or export of a given bidding zone;

(w) '$F_{0,all}$' means the flow per CNEC in a situation without any commercial exchange between bidding zones within Continental Europe and between bidding zones within Continental Europe and bidding zones of other synchronous areas;

(x) 'F_i' means the expected flow in commercial situation i;

(y) 'flow-based domain' means a set of constraints that limit the cross-zonal capacity calculated with a flow-based approach;

(z) 'FRM' or 'FRM' means the flow reliability margin, which is the reliability margin as defined in Article 2(14) of the CACM Regulation applied to a CNE;

(aa) 'F_{max}' means the maximum admissible power flow;

(bb) 'F_{ref}' means the reference flow;

(cc) 'GSK' or 'GSK' means the generation shift key as defined in Article 2(12) of the CACM Regulation;

(dd) 'HVDC' means a high voltage direct current network element;

(ee) ''IDA' means intraday auction;

(ff) 'ID CC MTU' is the intraday capacity calculation market time unit, which means the time unit for the intraday capacity calculation and is equal to 60 minutes;

(gg) 'IGM' means the intraday individual grid model as defined in Article 2(1) of the CACM Regulation;

(hh) 'internal CNEC' means a CNEC, which is not cross-zonal;

(ii) 'I_{max}' means the maximum admissible current;

(jj) 'IVA' means individual validation adjustment;

(kk) $LTA_{margin,DA}$ means the adjustment of remaining available margin to incorporate long-term allocated capacities in accordance with the day-ahead capacity calculation methodology of the Core CCR;

(ll) 'NP' or 'NP' means a net position of a bidding zone, which is the net value of generation and consumption in a bidding zone;

(mm) '$NP_{AAC,DA}$' means net position resulting from already allocated capacities in SDAC;

(nn) $NP_{AAC,ID}$' means net position resulting from already allocated capacities in SIDC;

(oo) 'oriented bidding zone border' means a given direction of a bidding zone border (e.g. from Germany to France);

(pp) 'pre-solved domain' means the final set of binding constraints for capacity allocation after the pre-solving process;

(qq) 'pre-solving process' means the identification and removal of redundant constraints from the flow-based domain;

(rr) 'preventive remedial action' means a remedial action which is applied on the network before any contingency occurs;

(ss) 'PST' means a phase-shifting transformer;

(tt) 'PTDF' or '$PTDF$' means a power transfer distribution factor;

(uu) '$\mathbf{PTDF}_{Core}$' means a matrix of power transfer distribution factors resulting from the intraday flow-based calculation for Core bidding zones;

(vv) '$\mathbf{PTDF}_{all}$' means a matrix of power transfer distribution factors resulting from the intraday flow-based calculation for all bidding zones of Continental Europe, and connection points of the bidding zones of Continental Europe with the bidding zones of other synchronous areas;

(ww) $\mathbf{PTDF}_{f,DA}$' means a matrix of power transfer distribution factors describing the final day-ahead flow-based domain;"

(xx) 'quarterly report' means a report on the intraday capacity calculation issued by the CCC and the Core TSOs on a quarterly basis;

(yy) 'RA' means a remedial action as defined in Article 2(13) of the CACM Regulation;

(zz) 'RAM' or 'RAM' means a remaining available margin;

(aaa) 'RCC' means Regional Coordination Centre;

(bbb) 'reference net position or exchange' means a position of a bidding zone or an exchange over HVDC interconnector assumed within the CGM;

(ccc) 'SDAC' means the single day-ahead coupling;

(ddd) 'SIDC' means the single intraday coupling;

(eee) 'shadow price' means the dual price of a CNEC or allocation constraint representing the increase in the economic surplus if a constraint is increased by one MW;

(fff) 'slack node' means the single reference node used for determination of the PTDF matrix, i.e. shifting the power infeed of generators up results in absorption of the power shift in the slack node. A slack node remains constant for each ID CC MTU;

(ggg) 'SO Regulation' means Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation;

(hhh) 'standard hybrid coupling' means a solution to capture the influence of exchanges with non-Core bidding zones on CNECs that is not explicitly taken into account during the capacity allocation phase;

(iii) 'static grid model' means a list of relevant grid elements of the transmission system, including their electrical parameters;

(jjj) 'U' is the reference voltage;

(kkk) 'UAF' is an unscheduled allocated flow;

(lll) 'vertical load' means the total amount of electricity which exits the transmission system of a given bidding zone to connected distribution systems, end consumers connected to the transmission system, and to electricity producers for consumption in the generation of electricity;

(mmm) 'zone-to-slack $PTDF$' means the PTDF of a commercial exchange between a bidding zone and the slack node;

(nnn) 'zone-to-zone $PTDF$' means the PTDF of a commercial exchange between two bidding zones;

(ooo) the notation x denotes a scalar;

(ppp) the notation $\vec{x}$ denotes a vector;

(qqq) the notation **x** denotes a matrix;

(rrr) 'LTA domain' means a set of bilateral exchange restrictions covering the previously allocated cross-zonal capacities;

(sss) 'Extended LTA inclusion approach' is an LTA inclusion approach in the Core DA CCM. When this approach is applied in the day ahead capacity calculation, the day ahead cross-zonal capacities consist of a flow-based domain (containing flow-based parameters) without LTA inclusion and a separate LTA domain (including LTA values);

(ttt) 'SEC_{DA}' means scheduled exchange resulting from already allocated capacities in the single day ahead coupling (SDAC). The parameter is provided by the SDAC based on the all TSO methodology for calculating scheduled exchanges resulting from single day-ahead coupling according to Article 43 of CACM Regulation;

(uuu) 'XNEC' means cross-border relevant network element with contingency, as defined in the Core ROSC methodology.

2. In this intraday capacity calculation methodology unless the context requires otherwise:

(a) the singular also includes the plural and vice versa;

(b) the acronyms used both in regular and italic font represent respectively the term used and the respective variable;

(c) the table of contents and the headings are inserted for convenience only and do not affect the interpretation of this intraday capacity calculation methodology;

(d) any reference to the intraday capacity calculation, intraday capacity calculation process or the intraday capacity calculation methodology shall mean a common intraday capacity calculation, common intraday capacity calculation process and common intraday capacity calculation methodology respectively, which is applied by all Core TSOs in a common and coordinated way on all bidding zone borders of the Core CCR; and

(e) any reference to legislation, regulation, directive, decision, order, instrument, code, or any other enactment shall include any modification, extension or re-enactment of it when in force.

Article 3. Application of this methodology

This intraday capacity calculation methodology solely applies to the intraday capacity calculation within the Core CCR. Capacity calculation methodologies within other CCRs or for other time frames are not in the scope of this methodology.

TITLE 2–- General description of the capacity calculation methodology

Article 4. Intraday capacity calculation process

1. For the intraday market time frame, the cross-zonal capacities shall be calculated using the flow-based approach as defined in this methodology.

2. The intraday cross-zonal capacity calculation shall be performed in the following sequence, by the times established in the process description document as referred to in paragraph 7:

   (a) IDCC(a): updating of cross-zonal capacities remaining after the SDAC for all ID CC MTUs between 00:00 and 24:00 of day D and providing them as intraday cross-zonal capacities to relevant NEMOs no later than 15 minutes before the intraday cross-zonal gate opening time, at 15:00 market time of day D-1;

   (b) IDCC(b): calculation of intraday cross-zonal capacities for all ID CC MTUs between 00:00 and 24:00 of day D. The cross-zonal capacities resulting from this calculation shall be published and submitted to NEMOs no later than 15 minutes before the target start of allocation at 22:00 market time of day D-1;

   (c) IDCC(c): re-calculation of intraday cross-zonal capacities for all ID CC MTUs between 06:00 and 24:00 of day D. The cross-zonal capacities resulting from this calculation shall be published and submitted to NEMOs no later than 15 minutes before the target start of allocation at 04:00 market time of day D;

   (d) IDCC(d): re-calculation of intraday cross-zonal capacities for all ID CC MTUs between 12:00 and 24:00 of day D. The cross-zonal capacities resulting from this re-calculation shall be published and submitted to NEMOs no later than 15 minutes before the target start of allocation at 10:00 market time of day D; and

   (e) IDCC(e): re-calculation of intraday cross-zonal capacities for all ID CC MTUs between 18:00 and 24:00 of day D. The cross-zonal capacities resulting from this re-calculation shall be published and submitted to NEMOs no later than 15 minutes before the target start of allocation at 16:00 market time of day D.

The reference to ID CC MTUs in the remainder of this methodology shall mean the MTUs as established in this paragraph.

3. Each calculation or re-calculation of cross-zonal capacities pursuant to paragraphs 2(b) to (2)(e), shall consist of three main stages:

   (a) the creation of capacity calculation inputs by the Core TSOs;

   (b) the capacity calculation process by the CCC; and

   (c) the capacity validation by the Core TSOs in coordination with the CCC. Capacity validation may also be applied for the update of capacities pursuant to paragraph 2(a).

4. Each Core TSO shall provide the CCC the following capacity calculation inputs by the times established in the process description document:

   (a) individual list of CNECs in accordance with Article 5;

   (b) operational security limits in accordance with Article 6;

   (c) external constraints in accordance with Article 7;

   (d) FRMs in accordance with Article 8;

   (e) GSKs in accordance with Article 9; and

(f) non-costly and costly RAs in accordance with Article 10.

5. In addition to the capacity calculation inputs pursuant to paragraph 3, the Core TSOs, or an entity delegated by the Core TSOs, shall send to the CCC, for each ID CC MTU of the delivery day, the following additional inputs by the times established in the process description document:

   (a) the Core net positions or, alternatively, the already allocated capacities on the Core bidding zone borders resulting from the SDAC;

   (b) the Core net positions or, alternatively, the already allocated capacities on the Core bidding zone borders resulting from the SIDC which are already included in the CGM;

   (c) the Core net positions or, alternatively, the already allocated capacities on the Core bidding zone borders resulting from the SIDC not already included in the CGM.

If the Core TSOs provided to the CCC the already allocated capacities on the Core biding zone borders instead of the Core net positions, the CCC shall convert them into Core net positions.

6. When providing the capacity calculation inputs pursuant to paragraphs 4 and 5, the Core TSOs shall respect the formats commonly agreed between the Core TSOs and the CCC while fulfilling the requirements and guidance defined in the CGMM.

7. No later than six months before the implementation of this methodology in accordance with Article 26(3)(b), the Core TSOs shall jointly establish a process description document as referred to in paragraphs 2, 4 and 5 and publish it on the online communication platform as referred to in Article 22. This document shall reflect an up-to-date detailed process description of all capacity calculation steps including the timeline of each step of the intraday capacity calculation.

8. The Core RCCs, acting as the CCC shall use the latest available CGMs, proposed and coordinated XRAs from the day ahead and intraday CROSAs, in accordance with the CSAM. During the interim period until ROSC CROSA process is implemented in accordance with Article 37 of Core ROSC methodology, only the latest available CGM shall be delivered.

9. In case the necessary outputs of the ROSC ICS/CROSA process cannot be provided within the foreseen timeframe, the delivery of the CGMs and XRAs pursuant to paragraph 8, and subsequent intraday capacity calculation and delivery of intraday capacities may be delayed only up to a point in time at which the target start of allocation pursuant to paragraphs 2(b), 2(c), 2(d) and 2(e) is not yet affected. If the target start of allocation becomes affected by such a delay, the fallback procedure pursuant to Article 19 applies.

10. The intraday capacity calculation process and validation in the Core CCR shall be performed by the CCC and the Core TSOs according to the following procedure:

Step 1. The CCC shall define the initial list of CNECs pursuant to Article 15;

Step 2. The CCC shall calculate the first flow-based parameters ($PTDF_{init}$ and $F_{ref,init}$) for each initial CNEC pursuant to Article 15;

Step 3. The CCC shall determine the final list of CNECs for subsequent steps of the capacity calculation pursuant to Article 16;

Step 4. The CCC shall calculate the RAM before validation (RAM_{bv}) based on the results of the previous processes pursuant to Article 17;

Step 5. The Core TSOs shall, according to Article 18, validate the RAM_{bv} with individual validation, and decrease RAM when operational security is jeopardised, which results in the final RAM_f;

Step 6. The CCC shall, according to Article 18, remove the redundant CNECs and redundant external constraints from final $PTDF_f$ and RAM_f;

Step 7. The CCC shall publish the $PTDF_f$ and RAM_f values in accordance with Article 22 and provide them to NEMOs for capacity allocation in accordance with paragraph 2.

11. All capacity updates, calculations and re-calculations pursuant to paragraph 2, including all steps pursuant to paragraph 3, shall be performed per ID CC MTU. Cross-zonal capacities shall be provided to the NEMOs for each ID CC MTU, but for capacity allocation they may be converted into a higher time resolution in accordance with the market time unit applicable on specific bidding zone border(s).

TITLE 3 – Capacity calculation inputs

Article 5. Definition of critical network elements and contingencies

1. Each Core TSO shall define a list of CNEs, which are fully or partly located in its own control area, and which can be overhead lines, underground cables, or transformers. All cross-zonal network elements shall be defined as CNEs, whereas only those internal network elements, which are defined pursuant to paragraph 6 or 7 shall be defined as CNEs. Until 30 days after the approval of the proposal pursuant to paragraph 6, all internal network elements may be defined as CNEs.

2. Each Core TSO shall define a list of proposed contingencies used in operational security analysis in accordance with Article 33 of the SO Regulation, limited to their relevance for the set of CNEs as defined in paragraph 1 and pursuant to Article 23(2) of the CACM Regulation. The contingencies of a Core TSO shall be located within the observability area of that Core TSO. This list shall be updated at least on a yearly basis and in case of topology changes in the grid of the Core TSO, pursuant to Article 21. A contingency can be an unplanned outage of:

   (a) a line, a cable, or a transformer;

   (b) a busbar;

   (c) a generating unit;

   (d) a load; or

   (e) a set of the aforementioned elements.

3. Each Core TSO shall establish a list of CNECs by associating the contingencies established pursuant to paragraph 2 with the CNEs established pursuant to paragraph 1 following the rules established in accordance with Article 75 of the SO Regulation. Until such rules are established and enter into force, the association of contingencies to CNEs shall be based on each TSO's operational experience. An individual CNEC may also be established without a contingency.

4. Each Core TSO shall provide to the CCC a list of CNECs established pursuant to paragraph 3.

5. No later than eighteen months after the implementation of this methodology in accordance with Article 26(2)(b), all Core TSOs shall jointly develop a list of internal network elements (combined with the relevant contingencies) to be defined as CNECs and submit it by the same deadline to all Core regulatory authorities as a proposal for amendment of this methodology in accordance with Article 9(13) of the CACM Regulation. After its approval in accordance with Article 9 of the CACM Regulation, the list of internal CNECs shall form an annex to this methodology.

6. The list pursuant to the previous paragraph shall be updated at least every two years. For this purpose, no later than eighteen months after the approval by all Core regulatory authorities of the proposal for amendment of this methodology pursuant to previous paragraph and this paragraph, all Core TSOs shall jointly develop a new proposal for the list of internal CNECs and submit it by the same deadline to all Core regulatory authorities as a proposal for amendment of this methodology in accordance with Article 9(13) of the CACM Regulation. After its approval in accordance with Article 9 of the CACM Regulation, the list of internal CNECs shall replace the relevant annex to this methodology.

7. The proposed list of internal CNECs pursuant to paragraph 5 and 6 shall not include any internal network element with contingency with a maximum zone-to-zone PTDF below 5%, calculated as the time-average over the last twelve months. An exception is applied for CNECs that are considered in accordance with Article 16(2) to (4).

8. The proposal pursuant to paragraphs 5 and 6 shall include at least the following:

   (a) a list of proposed internal CNECs with the associated maximum zone-to-zone PTDFs referred to in paragraph 7;

   (b) an impact assessment of increasing the threshold of the maximum zone-to-zone PTDF for exclusion of internal CNECs referred to in paragraph 7 to 10% or higher; and

   (c) for each proposed internal CNEC, an analysis demonstrating that including the concerned internal network element in capacity calculation is economically the most efficient solution to address the congestions on the concerned internal network element, considering, for example, the following alternatives:

      i. application of remedial actions;

      ii. reconfiguration of bidding zones;

      iii. investments in network infrastructure combined with one or the two above; or

      iv. a combination of the above.

Before performing the analysis pursuant to point (c), the Core TSOs shall jointly coordinate and consult with all Core regulatory authorities on the methodology, assumptions and criteria for this analysis.

9. The proposals pursuant to paragraphs 5 and 6 shall also demonstrate that the concerned Core TSOs have diligently explored the alternatives referred to in paragraph 8 sufficiently in advance taking into account their required implementation time, such that they could be applied or implemented by the time that the decisions of the Core regulatory authorities on the proposal pursuant to paragraphs 5 and 6 are taken.

10. The Core TSOs shall regularly review and update the application of the methodology for determining CNECs as defined in Article 21.

Article 6. Methodology for operational security limits

1. The Core TSOs shall use in the intraday capacity calculation the same operational security limits as those used in the operational security analysis carried out in accordance with Article 72 of the SO Regulation.

2. To take into account the thermal limits of CNEs, the Core TSOs shall use the maximum admissible current limit (I_{max}), which is the physical limit of a CNE according to the operational security limits in accordance with Article 25 of the SO Regulation. The maximum admissible current shall be defined as follows:

   (a) the maximum admissible current can be defined as:

      i. Seasonal limit, which means a fixed limit for all ID CC MTUs of each of the four seasons.

      ii. Dynamic limit, which means a value per ID CC MTU reflecting the varying ambient conditions.

      iii. Fixed limits for all ID CC MTUs, in case of specific situations where the physical limit reflects the capability of overhead lines, cables or substation equipment installed in the primary power circuit (such as circuit-breaker, or disconnector) with limits not sensitive to ambient conditions.

   (b) when applicable, I_{max} shall be defined as a temporary current limit of the CNE in accordance with Article 25 of the SO Regulation. A temporary current limit means that an overload is only allowed for a certain finite duration. As a result, various CNECs associated with the same CNE may have different I_{max} values.

   (c) I_{max} shall represent only real physical properties of the CNE and shall not be reduced by any security margin.[1]

   (d) the CCC shall use the I_{max} of each CNEC to calculate F_{max} for each CNEC, which describes the maximum admissible active power flow on a CNEC. F_{max} shall be calculated by the given formula:

$$F_{max} = \sqrt{3} \cdot I_{max} \cdot U \cdot cos(\varphi)$$

Equation 1

   (e) where I_{max} is the maximum admissible current of a critical network element (CNE), U is a fixed reference voltage for each CNE, and $\cos(\varphi)$ is the power factor.

   (f) the CCC shall, by default, set the power factor $\cos(\varphi)$ to 1 based on the assumption that the CNE is loaded only by active power and that the share reactive power is negligible (i.e. $\varphi = 0$). If the share of reactive power is not negligible, a TSO may consider this aspect during the validation phase in accordance with Article 18.

3. The Core TSOs shall aim at gradually phasing out the use of seasonal limits pursuant to paragraph 2(a)(i) and replace them with dynamic limits pursuant to paragraph 2(a)(ii), when the benefits are greater than the costs. If applicable, after the end of each calendar year, each TSO shall analyse for all its CNEs for which seasonal limits are applied and have a non-zero

[1] Uncertainties in capacity calculation are covered on each CNEC by the flow reliability margin (FRM) in accordance with Article 8 and adjustment values related to validation in accordance with Article 18.

shadow price at least in 0.1% of ID CC MTUs in the previous calendar year, the expected increase in the economic surplus in the next 10 years resulting from the implementation of dynamic limits, and compare it with the cost of implementing dynamic limits. Each TSOs shall provide this analysis to Core regulatory authorities. If the cost benefit analysis, taking into account other planned investments, is positive, the concerned TSO shall implement the dynamic limits within three years after the end of the analysed calendar year. In case of interconnectors, the concerned TSOs shall cooperate in performing this analysis and implementation when applicable.

4. TSOs shall regularly review and update operational security limits in accordance with Article 21.

Article 7. Methodology for allocation constraints

1. In case operational security limits cannot be transformed efficiently into I_{max} and F_{max} pursuant to Article 6, the Core TSOs may transform them into allocation constraints. For this purpose, the Core TSOs may only use external constraints as a specific type of allocation constraint that limits the maximum import and/or export of a given Core bidding zone within the SIDC.

2. The Core TSOs may apply external constraints as one of the following two options:

   (a) a constraint on the Core net position (the sum of cross-zonal exchanges within the Core CCR for a certain bidding zone in the SIDC), thus limiting the net position of the respective bidding zone with regards to its imports and/or exports to other bidding zones in the Core CCR. This option shall be applied until option (b) can be applied.

   (b) a constraint on the global net position (the sum of all cross-zonal exchanges for a certain bidding zone in the SIDC), thus limiting the net position of the respective bidding zone with regards to all CCRs, which are part of the SIDC. This option shall be applied when: (i) such a constraint is approved within all intraday capacity calculation methodologies of the respective CCRs, (ii) the respective solution is implemented within the SIDC algorithm and (iii) the respective bidding zone borders are participating in SIDC.

3. External constraints may be used by PSE during a transition period of two years following the implementation of this methodology in accordance with Article 26(2)(b) and in accordance with the reasons and the methodology for the calculation of external constraints as specified in Annex 1 to this methodology. During this transition period, PSE shall:

   (a) calculate the value of external constraints on a daily basis for each ID CC MTU;

   (b) if applicable and in case the external constraint had a non-zero shadow price in more than 0.1% of hours in a quarter, provide to the CCC a report analysing: (i) for each DA CC MTU when the external constraint had a non-zero shadow price the loss in economic surplus due to external constraint and the effectiveness of the allocation constraint in preventing the violation of the underlying operational security limits and (ii) alternative solutions to address the underlying operational security limits. The CCC shall include this report as an annex in the quarterly report as defined in Article 24(5);

   (c) if applicable and when more efficient, implement alternative solutions referred to in point (b).

4. In case that PSE could not find and implement alternative solutions referred to in the previous paragraph, it may, by eighteen months after the implementation of this methodology in

accordance with Article 26(2)(b), together with all other Core TSOs, submit to all Core regulatory authorities a proposal for amendment of this methodology in accordance with Article 9(13) of CACM Regulation. Such a proposal shall include the following:

(d) the technical and legal justification for the need to continue using the external constraints indicating the underlying operational security limits and why they cannot be transformed efficiently into I_{max} and F_{max};

(e) the methodology to calculate the value of external constraints including the frequency of recalculation.

In case such a proposal has been submitted by all Core TSOs, the transition period referred to in paragraph 3 shall be extended until the decision on the proposal is taken by all Core regulatory authorities.

5. For the SIDC fallback procedure, pursuant to Article 20, all external constraints, shall be modelled as constraints limiting the Core net position as referred to in paragraph 2(a).

6. PSE may discontinue the use of an external constraint. In such a case, PSE shall communicate this change to all Core regulatory authorities and to the market participants at least one month before discontinuation.

7. The Core TSOs shall review and update allocation constraints in accordance with Article 21.

Article 8. Reliability margin methodology

1. The FRMs shall cover the following forecast uncertainties:

   (a) cross-zonal exchanges on bidding zone borders outside the Core CCR;

   (b) generation pattern including specific wind and solar generation forecast;

   (c) generation shift key;

   (d) load forecast;

   (e) topology forecast;

   (f) unintentional flow deviation due to frequency containment process; and

   (g) flow-based capacity calculation assumptions including linearity and modelling of external (non-Core) TSOs' areas.

2. The Core TSOs shall aim at reducing uncertainties by studying and tackling the drivers of uncertainty.

3. The FRMs shall be calculated in two main steps. In the first step, the probability distribution of deviations between the expected power flows at the time of the capacity calculation and the realised power flows in real time shall be calculated. To calculate the expected power flows (F_{exp}), for each ID CC MTU of the observation period, the historical CGMs and GSKs used in capacity calculation shall be used. The historical CGMs shall be updated with the deliberated Core TSOs' actions (including at least the RAs considered during the capacity calculation) that

have been applied in the relevant ID CC MTU[2]. The power flows of such modified CGMs shall be recalculated (F_{ref}) and then adjusted to take into account the realised commercial exchanges inside the Core CCR. The latter adjustment shall be performed by calculating $PTDF$s according to the methodology as described in Article 12, but using the modified CGMs and the historical GSKs. The expected power flows at the time of the capacity calculation shall therefore be calculated using the final realised commercial exchanges in the Core CCR which are reflected in realised power flows. This above calculation of expected power flows (F_{exp}) is described with Equation 2.

$$\vec{F}_{exp} = \vec{F}_{ref} + \mathbf{PTDF}\left(\overrightarrow{NP}_{real} - \overrightarrow{NP}_{ref}\right)$$

Equation 2

with

$\vec{F}_{exp}$	expected power flow per CNEC in the realised commercial situation in Core CCR
$\vec{F}_{ref}$	flow per CNEC in the CGM updated to take deliberate TSO actions into account
PTDF	power transfer distribution factor matrix calculated with updated CGM
$\overrightarrow{NP}_{real}$	Core net position per bidding zone in the realised commercial situation
$\overrightarrow{NP}_{ref}$	Core net position per bidding zone in the updated CGM

4. The expected power flows on each CNEC of the Core CCR shall then be compared with the realised power flows observed on the same CNEC. When calculating the expected (respectively realised) flows for CNECs, the expected (resp. realised) flows shall be the best estimate of the expected (resp. realised) power flow which would have occurred, should the outage have taken place. Such estimate shall take curative remedial actions into account where relevant. All differences between these two flows for all ID CC MTUs of the observation period shall be used to define the probability distribution of deviations between the expected power flows at the time of the capacity calculation and the realised power flows;

5. In the second step, the 90th percentiles of the probability distributions of all CNECs shall be calculated[3]. This means that the Core TSOs apply a common risk level of 10% and thereby the FRM values cover 90% of the historical forecast errors within the observation period. Subject to the proposal pursuant to paragraph 6, the FRM value for each CNEC shall either be:

   (a) the 90th percentile of the probability distributions calculated for such CNEC;

   (b) the 90th percentile of the probability distributions calculated for the CNEs underlying such CNEC.

6. Each TSO may reduce the FRM values resulting from the second step for its own CNECs if it considers that the underlying uncertainties have been over-estimated. For CNECs used within both the Core day-ahead and intraday capacity calculations, the FRM values calculated

[2] These actions are controlled by the Core TSOs and thus not considered as an uncertainty.

[3] This value is derived based on experience in existing flow-based market coupling initiatives.

pursuant to this methodology shall not be higher than the FRM values for the same CNECs used within the Core day-ahead capacity calculation.

7. No later than eighteen months after the implementation of this methodology in accordance with Article 26(2)(b), the Core TSOs shall jointly perform the first FRM calculation pursuant to the methodology described above and based on the data covering at least the first year of operation of this methodology. By the same deadline, all Core TSOs shall submit to all Core regulatory authorities a proposal for amendment of this methodology in accordance with Article 9(13) of the CACM Regulation as well as the supporting document as referred to in paragraph 9 below.

8. The proposal for amendment of this methodology pursuant to the previous paragraph shall specify whether the FRM value shall be calculated for each CNEC based on the underlying probability distribution, or whether all CNECs with the same underlying CNE shall have the same FRM value calculated based on the probability distribution calculated for the underlying CNE. In case the proposal suggests calculating the FRMs at CNEC level, the proposal shall describe in detail how to estimate the expected and realised flows adequately, including the RAs that would have been triggered in order to manage the contingency when relevant.

9. The supporting document for the proposal for amendment of this methodology pursuant to paragraph 7 above shall include at least the following:

   (a) the FRM values for all CNECs calculated at the level of CNE and CNEC; and

   (b) an assessment of the benefits and drawbacks of calculating the FRM at the level of CNE or CNEC.

10. Until the proposal for amendment of this methodology pursuant to paragraph 7 is approved, the Core TSOs shall use the following FRM values:

    (a) if and as long as all Core TSOs apply FRM for the day-ahead capacity calculation equal to 10% of Fmax, the FRM value for intraday capacity calculation for each CNEC shall be min {5% of Fmax, FRM at day-ahead level};

    (b) as soon as the Core TSOs start applying the FRM calculation for the day-ahead capacity calculation pursuant to Article 8 of Core DA CCM, the FRM value for intraday capacity calculation shall be equal or lower than the FRM value at the day ahead level.

11. After the proposal for amendment of this methodology pursuant to paragraph 7 is approved, the FRM values shall be updated at least once every year based on an observation period of one year in order to reflect the seasonality effects. The FRM values shall then remain fixed until the next update.

Article 9. Generation shift key methodology

1. Each Core TSO shall define for its bidding zone and for each ID CC MTU a GSK, which translates a change in a bidding zone net position into a specific change of injection or withdrawal in the CGM. A GSK shall have fixed values, which means that the relative contribution of generation or load to the change in the bidding zone net position shall remain the same, regardless of the volume of the change.

2. For a given ID CC MTU, the GSK shall only include actual generation and/or load[4] present in the CGM for that ID CC MTU. The Core TSOs shall take into account the available information on generation or load available in the CGM in order to select the nodes that will contribute to the GSK.

3. The GSKs shall describe the expected response of generation and/or load units to changes in the net positions. This expectation shall be based on the observed historical response of generation and/or load units to changes in net positions, clearing prices and other fundamental factors, and thereby contributing to minimising the FRM.

4. The GSKs shall be updated and reviewed on a daily basis or whenever the expectations referred to in paragraph 3 change. The Core TSOs shall review and update the application of the generation shift key methodology in accordance with Article 21.

5. The Core TSOs belonging to the same bidding zone shall jointly define a common GSK for that bidding zone and shall agree on a methodology for such coordination. For Germany and Luxembourg, each TSO shall calculate its individual GSK and the CCC shall combine them into a single GSK for the whole German-Luxembourgian bidding zone, by assigning relative weights to each TSO's GSK. The German and Luxembourgian TSOs shall agree on these weights, based on the share of the generation in each TSO's control area that is responsive to changes in net position, and provide them to the CCC.

6. Within eighteen months after the implementation of this methodology in accordance with Article 26(2)(b), all Core TSOs shall develop a proposal for further harmonisation of the generation shift key methodology and submit it by the same deadline to all Core regulatory authorities as a proposal for amendment of this methodology in accordance with Article 9(13) of the CACM Regulation. The proposal shall at least include:

   (a) the criteria and metrics for defining the efficiency and performance of GSKs and allowing for quantitative comparison of different GSKs; and

   (b) a harmonised generation shift key methodology combined with, where necessary, rules and criteria for TSOs to deviate from the harmonised generation shift key methodology.

Article 10. Methodology for remedial actions in intraday capacity calculation

1. In accordance with Article 25(1) of the CACM Regulation and Article 20(2) of the SO Regulation, the Core TSOs shall individually define the RAs to be taken into account in the intraday capacity calculation.

2. In case a RA made available for the intraday capacity calculation in the Core CCR is also made available in another CCR, the TSO having control on this RA shall take care, when defining it, of a consistent use in its potential application in both CCRs to ensure operational security.

3. In accordance with Article 25(2) and (3) of the CACM Regulation, these RAs will be used for the coordinated calculation of cross-zonal capacities while ensuring operational security in real-time.

4. RAs used for intraday capacity calculation shall be aligned as much as technically feasible with the most recent ROSC CROSA. The latest version of coordinated RAs available at the time of

[4] And other elements connected to the network, such as storage equipment.

starting step 2 according to Article 4(9) shall be used. Such RAs will be only available once ROSC CROSA is implemented in accordance with Article 37 of Core ROSC methodology.

5. In accordance with Article 25(4) of the CACM Regulation, a TSO may withhold only those RAs, which are needed to ensure operational security in real-time operation and for which no other (costly) RAs are available, or those offered to the intraday capacity calculation in other CCRs in which the concerned TSO also participates. The CCC shall monitor and report in the annual report on systematic withholdings, which were not essential to ensure operational security in real-time operation.

6. The intraday capacity calculation may only take into account those non-costly RAs which can be modelled. These non-costly RAs can be, but are not limited to:

   (a) changing the tap position of a phase-shifting transformer (PST); and

   (b) a topological action: opening or closing of one or more line(s), cable(s), transformer(s), bus bar coupler(s), or switching of one or more network element(s) from one bus bar to another.

7. In accordance with Article 25(6) of the CACM Regulation, all RAs taken into account for day-ahead capacity calculation are also considered during the intraday timeframe, depending on their technical availability.

8. The RAs can be preventive or curative, i.e. affecting all CNECs or only pre-defined contingency cases, respectively.

9. TSOs shall review and update the RAs taken into account in the intraday capacity calculation in accordance with Article 21.

TITLE 4 – Update of intraday cross-zonal capacities

Article 11. Update of intraday cross-zonal capacities remaining after the SDAC

1. The CCC shall use the flow-based parameters resulting from day-ahead capacity calculation and the net positions resulting from already allocated capacities in the SDAC to calculate the updated day-ahead cross-zonal capacities, in the form of flow-based parameters, to be used as intraday cross-zonal capacities at the intraday cross-zonal gate opening time.

   For the updated intraday flow-based parameters, the PTDF values shall be the final PTDFs resulting from the day-ahead capacity calculation, and the RAM shall be derived as:

$$\overrightarrow{RAM}_{UID} = \overrightarrow{RAM}_{f,DA} - \mathbf{PTDF}_{f,DA}\,\overrightarrow{NP}_{AAC,DA}$$

Equation 3

with

$\overrightarrow{RAM}_{UID}$	updated remaining available margin for intraday cross-zonal capacities
$\overrightarrow{RAM}_{f,DA}$	final remaining available margin resulting from the day-ahead capacity calculation
$\mathbf{PTDF}_{f,DA}$	final power transfer distribution factor matrix resulting from the day-ahead capacity calculation
$\overrightarrow{NP}_{AAC,DA}$	net positions resulting from already allocated capacities in SDAC

2. For each CNEC, each TSO may decrease the $RAM_{f,DA}$ by decreasing the AMR_{DA} and $LTA_{margin,DA}$ as calculated pursuant to the day-ahead capacity calculation methodology while ensuring that there is no undue discrimination between internal and cross-zonal exchanges in line with Article 21(1)(b)(ii) of the CACM Regulation.

3. Irrespective of the options provided to each TSO pursuant to this paragraph, each TSO shall ensure that on each bidding zone border, the long-term capacities that are in effect taken into account in the $LTA_{margin,DA}$, are between 0.001 MW and 1500 MW.

4. Until the implementation of intraday auctions at 15:00 market time of day D-1, the Core TSOs may set to zero the cross-zonal capacities calculated pursuant to Article 4(2)(a), including those calculated pursuant to a transitional solution for updating the cross-zonal capacities remaining after the day-ahead capacity allocation pursuant to Article 26(5).

   (a) In case the final cross-zonal capacities, calculated in accordance with this Article and taking into account Article 20(1), are in the form of ATCs, such a decision may be made per bidding zone border by the competent TSOs;

   (b) In case the final cross-zonal capacities, calculated in accordance with this Article and taking into account Article 20(1) are in the form of flow-based parameters, such a decision shall be coordinated among all Core TSOs. Further details on the application of transitional solution are defined in Annex 2 to this methodology.

TITLE 5 - Description of the intraday capacity calculation process

Article 12. Calculation of power transfer distribution factors and reference flows

1. The flow-based calculation is a centralised calculation, which delivers two main classes of parameters needed for the definition of the flow-based domain: the power transfer distribution factors ($PTDFs$) and the remaining available margins ($RAMs$).

2. In accordance with Article 29(3)(a) of the CACM Regulation, the CCC shall calculate the impact of a change in the bidding zones net position on the power flow on each CNEC (determined in accordance with the rules defined in Article 5). This influence is called the zone-to-slack $PTDF$. This calculation is performed from the CGM and the GSK defined in accordance with Article 9.

3. The zone-to-slack $PTDFs$ are calculated by first calculating the node-to-slack $PTDFs$ for each node defined in the GSK. These nodal PTDFs are derived by varying the injection of a relevant node in the CGM and recording the difference in power flow on every CNEC (expressed as a percentage of the change in injection). These node-to-slack $PTDFs$ are translated into zone-to-slack $PTDFs$ by multiplying the share of each node in the GSK with the corresponding nodal PTDF and summing up these products. This calculation is mathematically described as follows:

$$\mathbf{PTDF}_{\text{zone-to-slack}} = \mathbf{PTDF}_{\text{node-to-slack}}\,\mathbf{GSK}_{\text{node-to-zone}}$$

Equation 4

with

$\mathbf{PTDF}_{zone-to-slack}$ matrix of zone-to-slack $PTDFs$ (columns: bidding zones; rows: CNECs)

$\mathbf{PTDF}_{node-to-slack}$	matrix of node-to-slack $PTDFs$ (columns: nodes; rows: CNECs)
$\mathbf{GSK}_{node-to-zone}$	matrix containing the $GSKs$ of all bidding zones (columns: bidding zones; rows: nodes; sum of each column equal to one)

4. The zone-to-slack $PTDFs$ as calculated above can also be expressed as zone-to-zone $PTDFs$. A zone-to-slack $PTDF_{A,l}$ represents the influence of a variation of a net position of bidding zone A on a CNEC l and assumes a commercial exchange between a bidding zone and a slack node. A zone-to-zone $PTDF_{A\rightarrow B,l}$ represents the influence of a variation of a commercial exchange from bidding zone A to bidding zone B on CNEC l. The zone-to-zone $PTDF_{A\rightarrow B,l}$ can be derived from the zone-to-slack $PTDFs$ as follows:

$$PTDF_{A\rightarrow B,l} = PTDF_{A,l} - PTDF_{B,l}$$

Equation 5

5. The maximum zone-to-zone $PTDF$ of a CNEC ($PTDF_{z2zmax,l}$) is the maximum influence that any Core exchange has on the respective CNEC, including exchanges over HVDC interconnectors which are integrated pursuant to Article 13:

$$\begin{aligned} PTDF_{z2zmax,l} = max\Big(&\max_{A\in BZ}\left(PTDF_{A,l}\right) \\ &- \min_{A\in BZ}\left(PTDF_{A,l}\right), \max_{H\in HVDC}\big(|(PTDF_{A,l} - PTDF_{VH\_1,l}) \\ &- (PTDF_{B,l} - PTDF_{VH\_2,l})|, |PTDF_{VH\_1,l} - PTDF_{VH\_2,l}|\big)\Big) \end{aligned}$$

Equation 6

6. with

$PTDF_{A,l}$	zone-to-slack $PTDF$ of bidding zone A on a CNEC l
HVDC	set of HVDC interconnectors integrated pursuant to Article 13
BZ	set of all Core bidding zones
$\max_{A\in BZ}(PTDF_{A,l})$	maximum zone-to-slack PTDF of Core bidding zones on a CNEC l
$\min_{A\in BZ}(PTDF_{A,l})$	minimum zone-to-slack PTDF of Core bidding zones on a CNEC l
	$PTDF_{VH\_1,l}$ zone-to-slack $PTDF$ of Virtual hub 1 on a CNEC l, with virtual hub 1 representing the converter station at the sending end of the HVDC interconnector located in bidding zone A
	$PTDF_{VH\_2,l}$ zone-to-slack $PTDF$ of Virtual hub 2 on a CNEC l, with virtual hub 2 representing the converter station at the sending end of the HVDC interconnector located in bidding zone B

7. The reference flow (F_{ref}) is the active power flow on a CNEC based on the CGM. In case of a CNEC without contingency, F_{ref} is simulated by directly performing the direct current load-flow calculation on the CGM, whereas in case of a CNEC with contingency, F_{ref} is simulated by first applying the specified contingency, and then performing the direct current load-flow calculation.

8. The expected flow F_i in the commercial situation i is the active power flow of a CNEC based on the flow F_{ref} and the deviation between the commercial situation considered in the CGM (reference commercial situation) and the commercial situation i:

$$\vec{F}_i = \vec{F}_{ref} + \mathbf{PTDF}\left(\overrightarrow{NP_i} - \overrightarrow{NP_{ref}}\right)$$

Equation 7

with

$\vec{F}_i$	expected flow per CNEC in the commercial situation i
$\vec{F}_{ref}$	flow per CNEC in the CGM (reference flow)
PTDF	power transfer distribution factor matrix
$\overrightarrow{NP_i}$	Core net position per bidding zone in the commercial situation i
$\overrightarrow{NP_{ref}}$	Core net position per bidding zone in the reference commercial situation

Article 13. Integration of HVDC interconnectors on bidding zone borders of the Core CCR

1. The Core TSOs shall apply the evolved flow-based (EFB) methodology when including HVDC interconnectors on the bidding zone borders of the Core CCR[5]. According to this methodology, a cross-zonal exchange over an HVDC interconnector on the bidding zone borders of the Core CCR is modelled and optimised explicitly as a bilateral exchange in capacity allocation, and is constrained by the physical impact that this exchange has on all CNECs considered in the final flow-based domain used in capacity allocation and constraints modelling the maximum possible exchange of the HVDC interconnector.

2. In order to calculate the impact of the cross-zonal exchange over a HVDC interconnector on the CNECs, the converter stations of the cross-zonal HVDC shall be modelled as two virtual hubs, which function equivalently as bidding zones. Then the impact of an exchange between two bidding zones A and B over such HVDC interconnector shall be expressed as an exchange from the bidding zone A to the virtual hub representing the sending end of the HVDC interconnector plus an exchange from the virtual hub representing the receiving end of the interconnector to the bidding zone B:

$$PTDF_{A\rightarrow B,l} = (PTDF_{A,l} - PTDF_{VH\_1,l}) + (PTDF_{VH\_2,l} - PTDF_{B,l})$$

Equation 8

with

[5] EFB is different from AHC. AHC imposes the capacity constraints of one CCR on the cross-zonal exchanges of another CCR by considering the impact of exchanges between two capacity calculation regions. E.g. the influence of exchanges of a bidding zone which is part of a CCR applying a coordinated net transmission capacity approach is taken into account in a bidding zone which is part of a CCR applying a flow-based approach. EFB takes into account commercial exchanges over the cross-border HVDC interconnector within a single CCR applying the flow-based method of that CCR.

$PTDF_{VH\_1,l}$ zone-to-slack $PTDF$ of Virtual hub 1 on a CNEC l, with virtual hub 1 representing the converter station at the sending end of the HVDC interconnector located in bidding zone A

$PTDF_{VH\_2,l}$ zone-to-slack $PTDF$ of Virtual hub 2 on a CNEC l, with virtual hub 2 representing the converter station at the receiving end of the HVDC interconnector located in bidding zone B

3. The PTDFs for the two virtual hubs $PTDF_{VH\_1,l}$ and $PTDF_{VH\_2,l}$ are calculated for each CNEC and they are added as two additional columns (representing two additional virtual bidding zones) to the existing $PTDF$ matrix, one for each virtual hub.

4. The virtual hubs introduced by this methodology are only used for modelling the impact of an exchange through a HVDC interconnector and no orders shall be attached to these virtual hubs in the coupling algorithm. The two virtual hubs will have a combined net position of 0 MW, but their individual net position will reflect the exchanges over the interconnector. The flow-based net positions of these virtual hubs shall be of the same magnitude, but they will have an opposite sign.

Article 14. Consideration of non-Core bidding zone borders

1. Where critical network elements within the Core CCR are also impacted by electricity exchanges outside the Core CCR, the Core TSOs shall take such impact into account with a standard hybrid coupling (SHC) and where possible also with an advanced hybrid coupling (AHC).

2. In the standard hybrid coupling, the Core TSOs shall consider the electricity exchanges on bidding zone borders outside the Core CCR as fixed input to the intraday capacity calculation. These electricity exchanges, defined as best forecasts of net positions and flows for HVDC lines, are defined and agreed pursuant to Article 19 of the CGMM and are incorporated in each CGM. They impact the F_{ref} and $F_{0,Core}$ on all CNECs and thereby increase or decrease the RAM of the Core CNECs in order for those CNECs to accommodate the flows resulting from those exchanges. Uncertainties related to the electricity exchanges forecasts are implicitly integrated within the FRM of each CNEC.

3. In the AHC, the CNECs of the intraday capacity calculation methodology shall limit not only the net positions of the Core bidding zone borders, but also the electricity exchanges on the bidding zone borders of adjacent CCRs.

4. No later than twelve months after the implementation of this methodology in accordance with Article 26(2)(b), the Core TSOs shall jointly develop a proposal for the implementation of the AHC and submit it by the same deadline to all Core regulatory authorities as a proposal for amendment of this methodology in accordance with Article 9(13) of the CACM Regulation. The proposal for the implementation of the AHC shall aim to reduce the volume of unscheduled allocated flows on the CNECs of the Core CCR resulting from electricity exchanges on the bidding zone borders of adjacent CCRs. If before the implementation of this methodology, the AHC has been implemented on some bidding zone borders in existing flow-based capacity calculation initiatives, it may continue to be applied on those bidding zone borders as part of the day-ahead capacity calculation carried out according to this methodology until the amendments pursuant to this paragraph are implemented.

5. Until the AHC is implemented, the Core TSOs shall monitor the accuracy of non-Core exchanges in the CGM. The Core TSOs shall report in the annual report to all Core regulatory authorities the accuracy of such forecasts.

Article 15. Initial flow-based calculation

1. As a first step in the intraday capacity calculation process, the CCC shall merge the individual lists of CNECs provided by all Core TSOs in accordance with Article 5(4) into a single list, which shall constitute the initial list of CNECs.

2. Subsequently, the CCC shall use the initial list of CNECs pursuant to paragraph 1, the CGM pursuant to Article 4(7) and the GSK for each bidding zone in accordance with Article 9 to calculate the initial flow-based parameters for each ID CC MTU.

3. The initial flow-based parameters shall be calculated pursuant to Article 12 and shall consist of the **PTDF** values and $\vec{F}_{ref}$ values for each initial CNEC.

Article 16. Definition of final list of CNECs for intraday capacity calculation

1. The CCC shall use the initial list of CNECs determined pursuant to Article 15 and remove those CNECs, for which the maximum zone-to-zone $PTDF_{init}$ is below 5%. The remaining CNECs shall constitute the final list of CNECs.

2. If all available costly and non-costly RAs are not sufficient to ensure operational security on an internal network element with a specific contingency, which is not defined as a CNEC, the concerned Core TSO may exceptionally add such element to the final list of CNECs, provided that:

   (a) Its maximum zone-to-zone PTDF is equal or above the threshold of 5% referred to in paragraph (1);

   (b) Its voltage level must be 110 kV or above;

   (c) Its RAM shall be the highest RAM ensuring operational security considering all available costly and non-costly RAs, with the floor of zero.

3. In the first twelve months following the implementation of the ROSC methodology in accordance with Article 76(1) of the SO Regulation, the concerned Core TSO may also add an XNEC to the final list of CNECs, with no PTDF threshold, provided that:

   (a) It was loaded 100% or more before the latest CROSA and for which cross-border redispatch or countertrading were applied during that CROSA;

   (b) Its RAM shall be at least the difference between its Fmax and its loading after the CROSA.

   After twelve months following the implementation of the ROSC methodology, the PTDF threshold of 5% shall apply to the XNEC to CNEC conversion, unless the amendment pursuant to paragraph (4) is approved and implemented.

4. The Core TSOs shall study the effects and needs for the XNEC to CNEC and may propose an amendment to this methodology, which shall at least include:

   (a) the proposed PTDF threshold for XNEC to CNEC conversion;

(b) rules for avoiding undue discrimination between internal and cross zonal exchanges for such XNECs, which shall include limitations of such exchanges in proportion to the burdening effect of their consequential flows (internal flows and allocated flows, respectively).

Article 17. Calculation of flow-based parameters before validation

1. The flows assumed to result from commercial exchanges outside the Core CCR (F_{uaf}) shall be calculated in the following steps. First, the flows on CNECs in situations without commercial exchanges are calculated by setting the corresponding net positions $\overrightarrow{NP_i}$ to zero:

(a) The flows without Core exchanges are calculated as:

$$\vec{F}_{0,Core} = \vec{F}_{ref} - \vec{F}_{ref,Core}$$

Equation 8a

$$\vec{F}_{ref,Core} = \mathbf{PTDF_{Core}}\ \overrightarrow{NP}_{ref,Core}$$

Equation 8b

(b) The flows without exchanges in the whole Continental Europe and on its links towards other synchronous areas, are calculated as:

$$\vec{F}_{0,all} = \vec{F}_{ref} - \mathbf{PTDF_{all}}\ \overrightarrow{NP}_{ref,all}$$

Equation 8c

For this calculation, the CCC shall use the GSKs provided by the concerned TSOs, and when these are not available, the CCC shall use a GSK where all nodes with positive injections participate in shifting in proportion to their injection.

(c) The flow assumed to result from commercial exchanges outside the Core CCR (F_{uaf}) is then calculated for each CNEC as follows:

$$\vec{F}_{uaf} = \vec{F}_{0,Core} - \vec{F}_{0,all}$$

Equation 8d

with

$\vec{F}_{0,Core}$	flow per CNEC in a situation without commercial exchanges within the Core CCR
$\vec{F}_{ref}$	flow per CNEC in the CGM (which already contains the flows originated by SDAC process, and partially from the SIDC process)
$\vec{F}_{ref,Core}$	flow originated from the Core net positions which are already included in the CGM
$\mathbf{PTDF_{Core}}$	power transfer distribution factor matrix for all bidding zones of the Core CCR

$\mathbf{PTDF}_{all}$	power transfer distribution factor matrix for all bidding zones of Continental Europe, and connection points of the bidding zones of Continental Europe with the bidding zones of other synchronous areas
$\overrightarrow{NP}_{ref,Core}$	Core net position per bidding zone included in the CGM (resulting from SDAC and the SIDC exchanges already included in the CGM), excluding the net positions' changes resulting from the application of remedial actions in the previous CROSA process
$\overrightarrow{NP}_{ref,all}$	total net positions included in the CGM, of: all bidding zones of Continental Europe, and connection points of the bidding zones of Continental Europe with the bidding zones of other synchronous areas
$\vec{F}_{0,all}$	flow per CNEC in a situation without any commercial exchange between bidding zones within Continental Europe and any commercial exchange between the bidding zones of Continental Europe and the bidding zones of other synchronous areas
$\vec{F}_{uaf}$	unscheduled allocated flow, i.e. the flow per CNEC resulting from commercial exchanges outside Core CCR

2. Based on the initial flow-based domain and on the final list of CNECs, the Core CCC shall calculate for each CNEC the RAM before validation, according to the equation:

$$\overrightarrow{RAM}_{bv} = \vec{F}_{max} - \overrightarrow{FRM} - \vec{F}_{ref}$$

Equation 12

$\vec{F}_{max}$	Maximum active power flow pursuant to Article 6
$\overrightarrow{FRM}$	Flow reliability margin pursuant to Article 8
$\overrightarrow{RAM}_{bv}$	Remaining available margin before validation

3. In case an external constraint restricts the Core net positions pursuant to Article 7(2)(a), it shall be added as an additional row to the $\mathbf{PTDF}_f$ matrix and the $\overrightarrow{RAM}_{bv}$ vector as follows:

   (a) the $PTDF$ value in the column related to the bidding zone applying the concerned external constraint is set to 1 for an export limit and -1 for an import limit, respectively;

   (b) the $PTDF$ values in the columns related to all other bidding zones are set to zero; and

   (c) the RAM value is set to the amount of the external constraint, corrected for the net position included in the CGM.

Article 18. Validation of flow-based parameters

1. The Core TSOs shall validate and have the right to correct cross-zonal capacity for reasons of operational security during the validation process.

2. Each Core TSO shall validate and have the right to decrease the RAM for reasons of operational security during the individual validation. The adjustment due to individual validation is called 'individual validation adjustment' (IVA) and it shall have a positive value, i.e. it may only reduce the RAM. IVA may reduce the RAM only to the minimum degree that is needed to ensure operational security, and only after all the expected available costly and non-costly remedial actions pursuant to Article 22 of the SO Regulation are considered. In case certain remedial actions are not implemented, such as countertrading, Core TSOs shall ensure their implementation within twelve months following the application of IDCC(b) pursuant to Article 4(2)(b).

3. The individual validation adjustment may be done in the following situations:

   (a) an occurrence of an exceptional contingency or forced outage as defined in Article 3(39) and Article 3(77) of the SO Regulation;

   (b) when all available costly and non-costly RAs are not sufficient to ensure operational security;

   (c) a mistake in input data, that leads to an overestimation of cross-zonal capacity from an operational security perspective; and/or

   (d) a potential need to cover reactive power flows on certain CNECs.

4. When performing the validation, the Core TSOs shall consider the operational security limits pursuant to Article 6(1). While considering such limits, they may consider additional grid models, and other relevant information. Therefore, the Core TSOs shall use the tools developed by the CCC for analysis, but may also employ verification tools not available to the CCC.

5. In case of a required reduction due to situations as defined in paragraph 3(a), a TSO may use a positive value for IVA for its own CNECs or adapt the external constraints, pursuant to Article 7, to reduce the cross-zonal capacity for its bidding zone.

6. In case of a required reduction due to situations as defined in paragraph 3(b), (c), and (d), a TSO may use a positive value for IVA for its own CNECs. In case of a situation as defined in paragraph 3(c), a Core TSO may, as a last resort measure, request a common decision to launch the default flow-based parameters pursuant to Article 20.

7. After individual validation adjustments, the remaining available margin before validation ($\overrightarrow{RAM_{bv}}$) shall be adjusted for the flows resulting from net positions or already allocated capacities resulting from the SIDC in accordance with Article 4(5)c. The final RAM_f shall be calculated by the CCC for each CNEC and external constraint according to Equation 13.

$$\overrightarrow{RAM_f} = \overrightarrow{RAM_{bv}} - \overrightarrow{IVA} - \mathbf{PTDF_{Core}}\ \overrightarrow{NP_{AAC,IDadd}}$$

Equation 13

with

$\overrightarrow{RAM_f}$ final remaining available margin

$\overrightarrow{RAM}_{bv}$	remaining available margin before validation
$\overrightarrow{IVA}$	individual validation adjustment
$\mathbf{PTDF}_{Core}$	final power transfer distribution factor matrix resulting from the intraday capacity calculation
$\overrightarrow{NP}_{AAC,IDadd}$	Core net positions resulting from SIDC which are not already included in the CGM

8. The CCC shall remove those $\overrightarrow{RAM_f}$ and $\mathbf{PTDF_f}$ values which are redundant and may therefore be removed without impacting the possible allocation of cross-zonal capacity. The pre-solved CNECs and external constraints shall thus ensure that the capacity allocation shall not exceed any limiting CNEC or external constraint.

9. Any reduction of cross-zonal capacities during the validation process shall be communicated and justified to market participants and to all Core regulatory authorities in accordance with Article 22 and Article 24, respectively.

10. Every three months, the CCC shall provide in the quarterly report all the information on the reductions of cross-zonal capacity and exceptional additions of internal network elements. The quarterly report shall include at least the following information for each CNEC of the pre-solved domain affected by a reduction and for each ID CC MTU:

    (a) the identification of the CNEC;

    (b) all the corresponding flow components pursuant to Article 22(2)(b)(vii);

    (c) the volume of reduction and, if applicable, the shadow price of the CNEC resulting from SIDC and the estimated market loss of economic surplus due to the reduction;

    (d) the detailed reason(s) for reduction, including the operational security limit(s) that would have been violated without reductions, specifying network elements on which these limits would have been violated, and under which circumstances they would have been violated, as well as the list of remedial actions with their detailed information, considered prior to the reduction;

    (e) the forecast flow in the CGM used for D-1 capacity calculation, in the CGM considered for the intraday capacity calculation within which the capacity reduction occurred, in the first CGM established after the considered intraday calculation and the realised flow, before (and when relevant after) contingency;

    (f) if an internal network element with a specific contingency was exceptionally added to the final list of CNECs pursuant to Article 16:

        i. a justification why adding the network element with a specific contingency to the list was the only way to ensure operational security;

        ii. the name or the identifier of the internal network element with a specific contingency;

        iii. the ID CC MTUs for which the internal network element with a specific contingency was added to the list;

iv. the maximum zone-to-zone PTDF calculated on the basis of the methodology in Article 12, calculated on the CGM for MTUs defined in paragraph iii;

v. for the cases under Article 16(3), the amount of total, internal, loop and allocated flows at the considered exceptionally added XNEC; and

vi. the information referred to in paragraphs (b), (c) and (e) above.

(g) the remedial actions included in the CGM before the intraday capacity calculation;

(h) in case of reduction due to individual validation, the TSO invoking the reduction; and

(i) the proposed measures to avoid similar reductions in the future.

11. The quarterly report shall also include at least the following aggregated information:

(a) statistics on the number, causes, volume and estimated loss of economic surplus of applied reductions by different TSOs; and

(b) general measures to avoid cross-zonal capacity reductions in the future.

12. When a given Core TSO reduces capacity for its CNECs in more than 1% of ID CC MTUs of the analysed quarter, the concerned TSO shall provide to the CCC a detailed report and action plan describing how such deviations are expected to be alleviated and solved in the future. This report and action plan shall be included as an annex to the quarterly report.

13. The final flow-based parameters shall consist of $\mathbf{PTDF}_f$ and $\overrightarrow{RAM}_f$ for CNECs and external constraints of the pre-solved domain.

Article 19. Intraday capacity calculation fallback procedure

According to Article 21(3) of the CACM Regulation, when the intraday capacity calculation for specific ID CC MTUs does not lead to the final flow-based parameters due to, *inter alia*, a technical failure in the tools, an error in the communication infrastructure, or corrupted, missing or delayed input data, the Core TSOs and the CCC shall define the missing parameters by calculating the default flow-based parameters. The calculation of default flow-based parameters shall be based on previously calculated flow-based parameters for the same delivery market time unit. The latest (intraday or day-ahead) available flow-based domain, which may be corrected during local validation in accordance with Article 18, for the considered delivery hour is first converted to zero Core balance. The RAM on each CNEC (including allocation constraints) is then decreased by the adjustments for minRAM and LTA inclusion (if present). The redundant constraints are removed, and pre-solved constraints are adjusted for the Core net positions resulting from the SDAC and the SIDC.

Article 20. Calculation of ATCs for SIDC fallback procedure

1. In case the SIDC is unable to accommodate flow-based parameters, the CCC shall convert them into available transmission capacities (hereafter referred as "ATCs for SIDC fallback procedure") for each Core oriented bidding zone border and each DA CC MTU. The Core TSOs may delegate this responsibility to a third party.

2. The flow-based parameters shall serve as the basis for the determination of the ATCs for SIDC fallback procedure. As the selection of a set of ATCs from the flow-based parameters leads to an infinite set of choices, the algorithm provided in paragraph 5 determines the ATCs for SIDC fallback procedure.

3. The following inputs are required to calculate ATCs for SIDC fallback procedure for each ID CC MTU:

   (a) final flow-based parameters ($\mathbf{PTDF_f}$ and $\overrightarrow{RAM_f}$) as calculated pursuant to 0 or final flow-based parameters ($\mathbf{PTDF_{f,DA}}$ and $\overrightarrow{RAM_{UID}}$) as calculated pursuant to Article 11;

   (b) if defined, the global allocation constraints shall be assumed to constrain the Core net positions pursuant to Article 7(5), and shall be described following the methodology described in Article 17(3). Such constraints shall be adjusted for offered cross-zonal capacities on the non-Core bidding zone borders.

4. the final PTDFs ($\mathbf{PTDF_f}$ and $\mathbf{PTDF_{f,DA}}$) of all or only a subset of CNECs can be adjusted before the ID ATC extraction by setting the positive zone-to-zone PTDFs below a certain threshold to zero. The following outputs are the outcomes of the calculation for each MTU:

   (a) ATCs for SIDC fallback procedure; and

   (b) constraints with zero margin after the calculation of ATCs for SIDC fallback procedure.

   (c) An ATC limitation on specific borders as set by relevant TSOs as output of the local validation as defined in Annex 6: $ATC_{A\rightarrow B\ validated}$

5. The calculation of the ATCs for SIDC fallback procedure is an iterative procedure, which gradually calculates ATCs for each DA CC MTU, while respecting the constraints of the final flow-based parameters pursuant to paragraph 3:

   (a) The initial ATCs are set equal to zero for each Core oriented bidding zone border, i.e.:

$$\overrightarrow{ATC}_{k=0} = 0$$

   with

$\overrightarrow{ATC}_{k=0}$	the initial ATCs before the first iteration

   (b) the remaining available margin at iteration zero is either equal to the final remaining available margin ($\overrightarrow{RAM_f}$) according to Article 18(8) or the updated remaining available margin for intraday cross-zonal capacities (RAM_UID) according to Article 11(1):

$$\overrightarrow{RAM}_{ATC}(0) = \overrightarrow{RAM_f}$$
$$\text{or } \overrightarrow{RAM}_{ATC}(0) = \overrightarrow{RAM}_{UID}$$

Equation 14

   with

$\overrightarrow{RAM}_{ATC}(0)$	remaining available margin for ATC calculation at iteration k=0
$\overrightarrow{RAM_f}$	remaining available margin of the flow-based parameters pursuant to paragraph 3.

$\overrightarrow{RAM_{UID}}$	updated remaining available margin for intraday cross-zonal capacities

(c) In the case when there are negative RAMs, negative ATCs are calculated for CNECs with negative $RAM_{ATC}(0)$ according to the following procedure:

i. Per CNEC with negative remaining available margin for ATC calculation at iteration *k*=0 ($RAM_{ATC}(0)$) negative ATCs are calculated for all oriented bidding zone borders with positive PTDFs according to Equation 14a:

$$ATC_{A\rightarrow B,CNEC\ i} = \frac{pPTDF_{A\rightarrow B,CNEC\ i}}{\sum_{(A,B)\in\ Core\ contract\ paths\ with\ positive\ z2zPTDFs} PTDF_{A\rightarrow B}^{2}}\ RAM_{ATC,CNEC\ i}(0)$$

Equation 14a

with

$ATC_{A\rightarrow B,CNEC\ i}$	negative ATC for the oriented bidding zone border A to B determined by CNEC i
A, B	Core bidding zones
$RAM_{ATC,CNEC\ i}(0)$	remaining available margin for ATC calculation at iteration *k*=0 of CNEC i
$pPTDF_{A\rightarrow B,CNEC\ i}$	Final positive zone-to-zone PTDF of the oriented bidding zone border A to B

ii. In case for an oriented Core bidding zone border more than one negative ATC has been calculated according to Equation 14athen for each oriented Core bidding zone border the most negative ATC is determined over all CNECs with negative remaining available margin.

$$\overrightarrow{ATC_{A\rightarrow B}} = min\left(\overrightarrow{ATC_{A\rightarrow B,CNEC\ i}}\right)$$

Equation 14b

iii. After extraction of negative ATCs a scaling factor (*SF*) is calculated for each CNEC with negative remaining available margin:

$$SF_{CNEC\ i} = \left|\frac{RAM_{ATC,CNEC\ i}(0)}{\sum_{(A,B)\in\ Core\ contract\ paths\ with\ positive\ z2zPTDFs} PTDF_{A\rightarrow B,CNEC\ i}\ \ ATC_{A\rightarrow B}}\right|$$

Equation 14c

The final scaling factor (SF_{final}) is the maximum of all calculated scaling factors:

$$SF_{final} = max(SF_{CNEC\ i})$$

Equation 14d

iv. The final negative ATCs are calculated by scaling the negative ATCs with the final scaling factor:

$$\overrightarrow{ATC}_{negative,final} = \overrightarrow{ATC}_{A\rightarrow B}\, SF_{final}$$

Equation 14e

(d) Before starting the iterative method applied to calculate the positive ATCs for SIDC fallback all the remaining available margins for ATC calculation at iteration k=0 ($\overrightarrow{RAM}_{ATC}(0)$) shall be adjusted to be non-negative:

$$\overrightarrow{RAM}_{ATC}(0) = \max\left(0, \overrightarrow{RAM}_{ATC}(0)\right)$$

Equation 14f

with

$\overrightarrow{RAM}_{ATC}(0)$	remaining available margin for ATC calculation at iteration *k*=0

The iterative method applied to calculate the positive ATCs for SIDC fallback procedure consists of the following actions for each iteration step *k*:

i. for each CNEC and external constraint of the flow-based parameters pursuant to paragraph 3, calculate the remaining available margin based on ATCs at iteration *k*-1

$$\overrightarrow{RAM}_{ATC}(k) = \overrightarrow{RAM}_{ATC}(0) - \mathbf{pPTDF}_{\boldsymbol{zone-to-zone}}\, \overrightarrow{ATC}_{k-1}$$

Equation 14g

with

$\overrightarrow{RAM}_{ATC}(k)$	remaining available margin for ATC calculation at iteration *k*
$\overrightarrow{ATC}_{k-1}$	ATCs at iteration *k*-1
$\mathbf{pPTDF}_{\boldsymbol{zone-to-zone}}$	positive zone-to-zone power transfer distribution factor matrix

ii. for each CNEC, share $RAM_{ATC}(k)$ with equal shares among the Core oriented bidding zone borders with strictly positive zone-to-zone power transfer distribution factors on this CNEC;

iii. from those shares of $RAM_{ATC}(k)$, the maximum additional bilateral oriented exchanges are calculated by dividing the share of each Core oriented bidding zone border by the respective positive zone-to-zone PTDF.

iv. for each Core oriented bidding zone border, $\overrightarrow{ATC}_k$ is calculated by adding to $\overrightarrow{ATC}_{k-1}$ the minimum of all maximum additional bilateral oriented exchanges for this border obtained over all CNECs and external constraints as calculated in the previous step;

v. $\overrightarrow{ATC_k}$ is limited to a maximum value of $ATC_{A\rightarrow B\ validated}$ if such value has been introduced by TSOs on the border A→B as a result of the ATC validation phase as described in Annex 6. Then go back to step i;

vi. iterate until the difference between the sum of ATCs of iterations *k* and *k*-1 is smaller than 1kW;

vii. the resulting positive ATCs for SIDC fallback procedure stem from the ATC values determined in iteration *k*, after rounding down to integer values;

viii. at the end of the calculation, there are some CNECs and external constraints with no remaining available margin left. These are, together with the CNECs and external constraints with initially negative $RAM_{ATC}(0)$, the limiting constraints for the calculation of ATCs for SIDC fallback procedure.

(e) positive zone-to-zone PTDF matrix ($\mathbf{pPTDF_{zone-to-zone}}$) for each Core oriented bidding zone border shall be calculated from the $\mathbf{PTDF_{Core}}$ as follows (for HVDC interconnectors integrated pursuant to Article 13, Equation 8 shall be used):

$$pPTDF_{zone-to-zone,A\rightarrow B} = \max\left(0, PTDF_{zone-to-slack,A} - PTDF_{zone-to-slack,B}\right)$$

Equation 15a

with

$pPTDF_{zone-to-zone,A\rightarrow B}$	positive zone-to-zone $PTDFs$ for Core oriented bidding zone border *A* to *B*
$PTDF_{zone-to-slack,m}$	zone-to-slack $PTDF$ for Core bidding zone border m

(f) The final ATCs per Core oriented bidding zone border are the minimum from positive and negative ATCs:

$$\overrightarrow{ATC_{final}} = \min\left(\overrightarrow{ATC_k}, \overrightarrow{ATC_{negative,final}}\right)$$

Equation 15b

TITLE 6 – Updates and data provision

Article 21. Reviews and updates

1. Based on Article 3(f) of the CACM Regulation and in accordance with Article 27(4) of the same Regulation, all TSOs shall regularly and at least once a year review and update the key input and output parameters listed in Article 27(4)(a) to (d) of the CACM Regulation.

2. If the operational security limits, critical network elements, contingencies and allocation constraints used for intraday capacity calculation inputs pursuant to Article 5 and Article 7 need to be updated based on this review, the Core TSOs shall publish the changes at least 1 week before their implementation.

3. In case the review proves the need for an update of the reliability margins, the Core TSOs shall publish the changes at least one month before their implementation.

4. The review of the list of RAs taken into account in the intraday capacity calculation, as defined in Article 10(4), shall include at least an evaluation of the efficiency of specific PSTs and the topological RAs considered from the CROSA process.

5. In case the review proves the need for updating the application of the methodologies for determining GSKs, critical network elements and contingencies referred to in Articles 22 to 24 of the CACM Regulation, changes have to be published at least three months before their implementation.

6. Any changes of parameters listed in Article 27(4) of the CACM Regulation shall be communicated to market participants, all Core regulatory authorities and ACER.

7. The Core TSOs shall communicate the impact of any change of allocation constraints and parameters listed in Article 27(4)(d) of the CACM Regulation to market participants, all Core regulatory authorities and ACER. If any change leads to an adaption of the methodology, the Core TSOs shall make a proposal for amendment of this methodology according to Article 9(13) of the CACM Regulation.

Article 22. Publication of data

1. In accordance with Article 3(f) of the CACM Regulation aiming at ensuring and enhancing the transparency and reliability of information to all regulatory authorities and market participants, all Core TSOs and the CCC shall regularly publish the data on the intraday capacity calculation process pursuant to this methodology as set forth in paragraph 2 on a dedicated online communication platform where capacity calculation data for the whole Core CCR shall be published. To enable market participants to have a clear understanding of the published data, all Core TSOs and the CCC shall develop a handbook and publish it on this communication platform. This handbook shall include at least a description of each data item, including its unit and underlying convention.

2. The Core TSOs and the CCC shall publish at least the following data items (in addition to the data items and definitions of Commission Regulation (EU) No 543/2013 on submission and publication of data in electricity markets):

   (a) cross-zonal capacities in accordance with Article 4(2) by the deadlines set therein;

   (b) the following information for intraday cross-zonal capacity calculation and re-calculation pursuant to Article 4(2)(b) to (e) shall be published by the deadlines established therein:

      i. maximum and minimum possible net position of each bidding zone;

      ii. maximum possible bilateral exchanges between all pairs of Core bidding zones;

      iii. if applicable, ATCs for SIDC fallback procedure;

      iv. names of CNECs (with geographical names of substations where relevant and separately for CNE and contingency) and external constraints of the final flow-based parameters before pre-solving and the TSO defining them;

      v. for each CNEC of the final flow-based parameters before pre-solving, the EIC code of CNE and Contingency;

vi. for each CNEC of the final flow-based parameters before pre-solving, the method for determining I_{max} in accordance with Article 6(2)(a);

vii. detailed breakdown of RAM for each CNEC of the final flow-based parameters before pre-solving: I_{max}, U, F_{max}, FRM, F_{ref}, $F_{0,\text{core}}$, $F_{0,\text{all}}$, $F_{\text{ref,core}}$, F_{uaf}, IVA;

viii. value of each external constraint before pre-solving;

ix. indication of whether default flow-based parameters were applied;

x. indication of whether a CNEC is redundant or not;

xi. information about the validation reductions:

- the identification of the CNEC;
- the TSO invoking the reduction;
- the volume of reduction (IVA);
- the detailed reason(s) for reduction in accordance with Article 18(2) and 18(3), including the operational security limit(s) that would have been violated without reductions, and under which circumstances they would have been violated;
- if an internal network elements with a specific contingency was exceptionally added to the final list of CNECs during validation: (i) a justification of the reasons of why adding the internal network elements with a specific contingency to the list was the only way to ensure operational security, (ii) the name or identifier of the internal network elements with a specific contingency, along with the calculated set of PTDFs;

(c) the following forecast information contained in the CGM for each ID CC MTU shall be published by the deadlines established in Article 4(2):

i. vertical load for each Core bidding zone and each TSO;

ii. production for each Core bidding zone and each TSO;

iii. Core net position for each Core bidding zone and each TSO;

iv. reference net positions of all bidding zones in synchronous area Continental Europe and reference exchanges for all HVDC interconnectors within synchronous area Continental Europe and between synchronous area Continental Europe and other synchronous areas; and

(d) as soon as the SIDC directly applies the flow-based parameters, in case of intraday auctions, two hours after the auction, the information pursuant to paragraph 2(b)(vii) shall be complemented by the following information for each CNEC and external constraint of the final flow-based parameters.

i. shadow prices;

ii. flows resulting from net positions obtained at intraday auctions.

(e) every six months, the publication of an up-to-date static grid model by each Core TSO.

(f) The CCC shall include in its quarterly report as defined in Article 25(6) the flows resulting from net positions resulting from intraday auctions on each CNEC and external constraint of the final flow-based parameters. This requirement is valid after the SIDC will directly apply the flow-based parameters.

3. Individual Core TSO may withhold the information referred to in paragraph 2(b)(iv), 2(b)(v) and 2(e) if it is classified as sensitive critical infrastructure protection related information in their Member States as provided for in point (d) of Article 2 of the Council Directive 2008/114/EC of 8 December 2008 on the identification and designation of European critical infrastructures and the assessment of the need to improve their protection. In such a case, the information referred to in paragraph 2(b)(iv) and 2(b)(v) shall be replaced with an anonymous identifier which shall be stable for each CNEC across all ID CC MTUs. The anonymous identifier shall also be used in the other TSO communications related to the CNEC, including the static grid model pursuant to paragraph 2(e) and when communicating about an outage or an investment in infrastructure. The information about which information has been withheld pursuant to this paragraph shall be published on the communication platform referred to in paragraph 1.

4. Any change in the identifiers used in paragraphs 2(b)(iv), 2(b)(v) and 2(e) shall be publicly notified at least one month before its entry into force. The notification shall at least include:

(a) the day of entry into force of the new identifiers; and

(b) the correspondence between the old and the new identifier for each CNEC.

5. Pursuant to Article 20(9) of the CACM Regulation, the Core TSOs shall establish and make available a tool which enables market participants to evaluate the interaction between cross-zonal capacities and cross-zonal exchanges between bidding zones. The tool shall be developed in coordination with stakeholders and all Core regulatory authorities and updated or improved when needed.

6. The Core regulatory authorities may request additional information to be published by the TSOs. For this purpose, all Core regulatory authorities shall coordinate their requests among themselves and consult it with stakeholders and ACER. Each Core TSO may decide not to publish the additional information, which was not requested by its competent regulatory authority.

Article 23. Quality of the data published

1. No later than six months before the implementation of this methodology in accordance with Article 26(2)(b), the Core TSOs shall jointly establish and publish a common procedure for monitoring and ensuring the quality and availability of the data on the dedicated online communication platform as referred to in Article 22. When doing so, they shall consult with relevant stakeholders and all Core regulatory authorities.

2. The procedure pursuant to paragraph 1 shall be applied by the CCC, and shall consist of continuous monitoring process and reporting in the annual report. The continuous monitoring process shall include the following elements:

(a) individually for each TSO and for the Core CCR as a whole: data quality indicators, describing the precision, accuracy, representativeness, data completeness, comparability and sensitivity of the data;

(b) the ease-of-use of manual and automated data retrieval;

(c) automated data checks, which shall be conducted in order automatically to accept or reject individual data items before publication based on required data attributes (e.g. data type, lower/upper value bound, etc.); and

(d) satisfaction survey performed annually with stakeholders and the Core regulatory authorities.

The quality indicators shall be monitored in daily operation and shall be made available on the platform for each dataset and data provider such that users are able to take this information into account when accessing and using the data.

3. The CCC shall provide in the annual report at least the following:

(a) the summary of the quality of the data provided by each data provider;

(b) the assessment of the ease-of-use of data retrieval (both manual and automated);

(c) the results of the satisfaction survey performed annually with stakeholders and all Core regulatory authorities; and

(d) suggestions for improving the quality of the provided data and/or the ease-of-use of data retrieval.

4. The Core TSOs shall commit to a minimum value for at least some of the indicators mentioned in paragraph 2, to be achieved by each TSO individually on average on a monthly basis. Should a TSO fail to fulfil at least one of the data quality requirements, this TSO shall provide to the CCC within one month following the failure to fulfil the data quality requirement, detailed reasons for the failure to fulfil data quality requirements, as well as an action plan to correct past failures and prevent future failures. No later than three months after the failure, this action plan shall be fully implemented and the issue resolved. This information shall be published on the online communication platform and in the annual report.

Article 24. Monitoring and reporting

1. The Core TSOs shall provide to the Core regulatory authorities data on intraday capacity calculation for the purpose of monitoring its compliance with this methodology and other relevant legislation.

2. At least, the information on non-anonymized names of CNECs for final flow-based parameters before pre-solving as referred to in Article 22(2)(b)(iv) and (v) shall be provided to all Core regulatory authorities on a monthly basis for each CNEC and each ID CC MTU. This information shall be in a format that allows easily to combine the CNEC names with the information published in accordance with Article 22(2).

3. In addition, each month, starting in January 2025 with data for December 2024, the Core TSOs shall provide the Core regulatory authorities and ACER with the following data for each MTU and each CNEC:

(a) final zone-to-hub PTDF values for all modelled bidding zones;

(b) Core net positions pursuant to Article 4(5); and

(c) flow components, consisting of the internal flow, loop flows (total loop flow and particular loop flows created by each bidding zone) and PST flow.

4. The Core regulatory authorities may request additional information to be provided by the TSOs. For this purpose, all Core regulatory authorities shall coordinate their requests among themselves. Each Core TSO may decide not to provide the additional information, which was not requested by its competent regulatory authority.

5. The CCC, with the support of the Core TSOs where relevant, shall draft and publish an annual report satisfying the reporting obligations set in Articles 10, 14, 23 and 26 of this methodology:

   (a) according to Article 10(5), the Core TSOs shall report to the Core CCC on systematic withholdings which were not essential to ensure operational security in real-time operation.

   (b) according to Article 14(5), the Core TSOs shall monitor the accuracy of non-Core exchanges in the CGM.

   (c) according to Article 23(3), the CCC shall monitor and report on the quality of the data published on the dedicated online communication platform as referred to in Article 22, with supporting detailed analysis of a failure to achieve sufficient data quality standards by the concerned TSOs, where relevant.

   (d) according to Article 26(4), after the implementation of this methodology, the Core TSOs shall report on their continuous monitoring of the effects and performance of the application of this methodology.

6. The CCC, with the support of the Core TSOs where relevant, shall draft and publish a quarterly report satisfying the reporting obligations set in Articles 7, 19 and 26 of this methodology:

   (a) according to Article 7(3)(b), the CCC shall collect all reports analysing the effectiveness of relevant allocation constraints, received from the concerned TSOs during the period covered by the report, and annex those to the quarterly report.

   (b) according to Article 18(10), the CCC shall provide all information on the reductions of cross-zonal capacity, with a supporting detailed analysis from the concerned TSOs where relevant.

   (c) according to Article 26(4), during the implementation of this methodology, the Core TSOs shall report on their continuous monitoring of the effects and performance of the application of this methodology.

   (d) according to Article 22(2)(f), Core TSOs shall report on flows resulting from net positions resulting from the intraday auctions, on each CNEC and external constraint of the final flow-based parameters. This requirement is valid after the SIDC will directly apply the flow-based parameters.

7. The published annual and quarterly reports may withhold commercially sensitive information or sensitive critical infrastructure protection related information as referred to in Article 22(3). In such a case, the Core TSOs shall provide the Core regulatory authorities with a complete version where no such information is withheld.

TITLE 7 - Implementation

Article 25. TSOs' analyses

1. Core TSOs shall analyse possible measures to increase cross-zonal capacities in the intraday timeframe, and over time, to reach the minimum capacity threshold of 70% pursuant to Article 16(8) of the Regulation (EU) 2019/943, on each CNEC. The analyses shall consist of a common assessment by all Core TSOs and individual assessments by each Core TSO.

2. The common assessment by all Core TSOs shall identify and analyse both short-term and long-term systemic measures which would maximise the infrastructure utilisation and enable higher intraday capacities, and which can be jointly implemented by all Core TSOs. These measures shall at least include:

   (a) the ability to activate remedial actions closer to real time;

   (b) the possibility to ignore marginal PTDF values in case of flow-based to ATC conversion;

   (c) the possibility for a TSO to remove the interconnectors with the non-Core bidding zones from the list of critical network elements.

3. The individual assessments shall identify and analyse measures which can be implemented individually by each Core TSO for each of its CNECs, and shall at least consider:

   (a) remedial actions which can be activated within or after the intraday timeframe, including non-costly and costly ones;

   (b) targeted investments, contributing to meeting the minimum capacity requirement on specific CNECs, and specifying their expected implementation time;

   (c) alternative bidding zone configurations pursuant to ACER Decision 11/2022;

   (d) further potential refinements of capacity calculation principles and data, such as removing frequently redundant CNECs from the initial CNEC list.

4. The analyses, consisting of the assessments pursuant to paragraphs 1 to 3, shall be submitted to the Core regulatory authorities and ACER not later than 1 April 2025.

Article 26. Timescale for implementation

1. The TSOs of the Core CCR shall publish this methodology without undue delay after the decision has been taken by ACER in accordance with Article 9(12) of the CACM Regulation.

2. The TSOs of the Core CCR shall implement this methodology within the following timeframes:

   (a) IDCC(a): update of cross-zonal capacities pursuant to Article 4(2)(a) by the deadline for the implementation of day-ahead capacity calculation methodology as established in the day-ahead capacity calculation methodology of the Core CCR;

   (b) IDCC(b): calculation of intraday cross-zonal capacities pursuant to Article 4(2)(b) by **4 months** after the adoption of ACER Decision 03/2024 approving the related amendments;

   (c) IDCC(c): re-calculation of intraday cross-zonal capacities pursuant to Article 4(2)(c) by **9 months** after the implementation of calculation of intraday cross-zonal capacities pursuant to point (b) of this paragraph;

(d) IDCC(d): re-calculation of intraday cross-zonal capacities pursuant to Article 4(2)(d) by **22 months** after the implementation of calculation of intraday cross-zonal capacities pursuant to point (b) of this paragraph; and

(e) IDCC(e): re-calculation of intraday cross-zonal capacities pursuant to Article 4(2)(e) at the latest by **3 months** after the implementation of the corresponding intraday CROSA following the ROSC methodology.

3. The implementation process, which shall start with the entry into force of this methodology and finish by the deadlines established in paragraph 2, shall consist of the following steps:

(a) internal parallel run, during which the TSOs shall test the operational processes for the intraday capacity calculation inputs, the intraday capacity calculation process and the intraday capacity validation and develop the appropriate IT tools and infrastructure;

(b) external parallel run, during which the TSOs will continue testing their internal processes and IT tools and infrastructure. In addition, the Core TSOs will involve the Core NEMOs to test the implementation of this methodology, and market participants to test the effects of applying this methodology on the market. In accordance with Article 20(8) of CACM Regulation, this phase shall not be shorter than 6 months.

4. During the internal and external parallel runs, the Core TSOs shall continuously monitor the effects and the performance of the application of this methodology. For this purpose, they shall develop, in coordination with the Core regulatory authorities, ACER and stakeholders, the monitoring and performance criteria and report on the outcome of this monitoring on a quarterly basis in a quarterly report. After the implementation of this methodology, the outcome of this monitoring shall be reported in the annual report.

5. After the adoption of this methodology and until the implementation of the day-ahead capacity calculation methodology, the Core TSOs shall apply a transitional solution to compute the cross-zonal capacities which remain after the day-ahead capacity allocation pursuant to Article 4(2)(a). This update shall be done based on day-ahead cross-zonal capacities used in existing day-ahead capacity calculation and allocation initiatives. The details on the application of this transitional solution are defined in Annex 2 to this methodology.

6. After the implementation of the day-ahead capacity calculation methodology and until the implementation of the intraday capacity calculation methodology pursuant to Article 4(2)(b), the Core TSOs shall apply a transitional solution for updating of intraday cross-zonal capacities remaining after the SDAC as referred to in Article 4(2)(a). The details on the application of this transitional solution are defined in Annex 2, Annex 3, Annex 4 and Annex 5 to this methodology. During this transition period:

(a) Annex 3 shall apply and replace Article 11;

(b) Annex 4 shall apply and replace Article 20; and

(c) Annex 5 shall apply.

7. In parallel to IVA validation and as long as SIDC is not able to directly apply flow-based parameters, the Core TSOs may also perform ATC based validation pursuant to Annex 6. Regardless of the ability of SIDC to apply the flow-based parameters, the ATC based validation shall no longer be allowed after 24 months following the implementation of the intraday capacity calculation methodology pursuant to Article 4(2)(b).

8. By 1 October 2025, all Core TSOs shall propose amendments to this methodology based on the outcomes of their analyses pursuant to Article 25.

9. If required, following the expected amendments to the CACM Regulation, this methodology shall be revised accordingly.

TITLE 8 - Final provisions

Article 27. Language

1. The reference language for this methodology shall be English. For the avoidance of doubt, where TSOs need to translate this methodology into their national language(s), in the event of inconsistencies between the English version published by TSOs in accordance with Article 9(14) of the CACM Regulation and any version in another language, the relevant TSO shall, in accordance with national legislation, provide the relevant Core regulatory authorities with an updated translation of the methodology.

Annex 1: Justification of usage and methodology for calculation of external constraints

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

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

Technical and legal justification

Implementation of external 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 and in effect not removed from the wholesale market and SIDC. However, if balancing service providers (generating units) would already sold too much energy in the previous market timeframes because of high exports, they may not be able to provide sufficient upward reserve capacity within the integrated scheduling process.[6] 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 SIDC.

The objective to limit balancing service providers to sell too much energy in the intraday market in order to be able to provide sufficient reserve capacity in the integrated scheduling process cannot be efficiently met by translating this limit into capacities of critical network elements offered to the market. If this limit was to be reflected in cross-zonal capacities offered by PSE in the form of an appropriate adjustment of cross-zonal capacities, this would imply that PSE would need to guess the most likely market direction (imports and/or exports on particular interconnectors) and accordingly reduce the cross-zonal capacities in these directions. In the flow-based approach, this would need to be done on each CNEC in a form of reductions of the RAM. However, from the point of view of market participants, due to the inherent uncertainties of market results, such an approach is burdened with the risk of suboptimal splitting of allocation constraints onto individual interconnections – overestimated on one interconnection and underestimated on the other, or vice versa. Also, such reductions of the RAM would limit cross-zonal exchanges for all bidding zone borders having impact on Polish CNECs, whereas the allocation constraint has an impact only on the import or export of the Polish bidding zone, whereas the trading of other bidding zones is unaffected.

External 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 application of external constraints. Considering allocation constraints separately in each CCR would require PSE to split global external 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

[6] 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.

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 external constraints:

When determining the external 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.

External constraints are bidirectional, with independent values for each ID CC MTU, and separately for directions of import to Poland and export from Poland.

For each hour, the constraints are calculated according to the below equations:

$$\mathrm{EXPORT}_{constraint} = \mathrm{P}_{CD} - \mathrm{P}_{NA} + \mathrm{P}_{NCD} - (\mathrm{P}_{L} + \mathrm{P}_{UPres}) \quad (1)$$

$$\mathrm{IMPORT}_{constraint} = \mathrm{P}_{L} - \mathrm{P}_{DOWNres} - \mathrm{P}_{CD_{min}} - \mathrm{P}_{NCD} \quad (2)$$

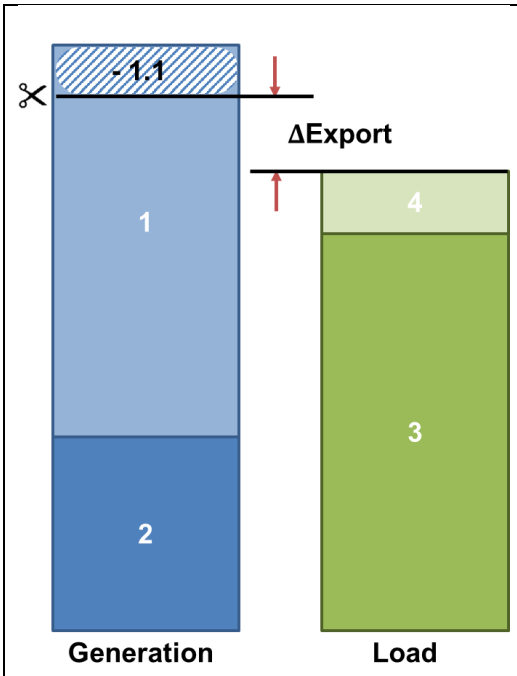
Where:

P_{CD}	Sum of operating generating capacities of centrally dispatched units as declared by generators[7]
$\mathrm{P}_{CD_{min}}$	Sum of technical minima of centrally dispatched generating units in operation
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_{L}	Demand forecasted by PSE
P_{UPres}	Minimum reserve for upward regulation
$\mathrm{P}_{DOWNres}$	Minimum reserve for downward regulation

For illustrative purposes, the process of practical determination of external constraints in the framework of the intraday capacity calculation is illustrated below in Figures 1 and 2. The figures illustrate how a forecast of the Polish power balance for each hour of the delivery day is developed by PSE in the morning of D-1 in order to determine reserves in generating capacities available for potential exports and imports, respectively, for the intraday market.

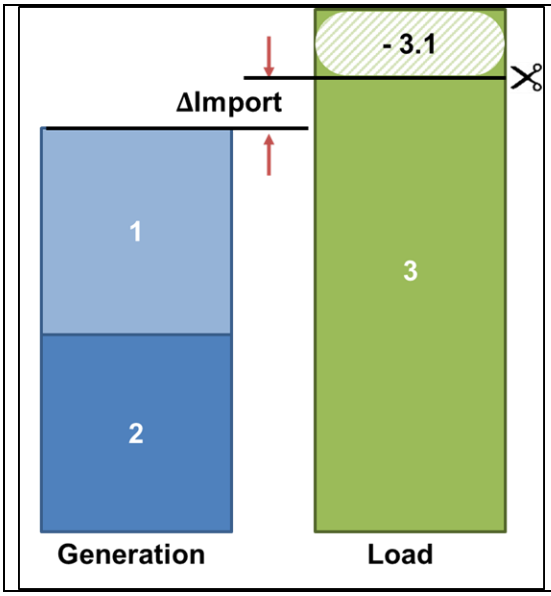
[7] Note that generating units which are kept out of the market on the basis of strategic reserve contracts with the TSO are not taken into account in this calculation.

External constraint in export direction is applicable if ΔExport is lower than the sum of cross-zonal capacities on all Polish interconnections in export direction. External constraint in import direction is applicable if ΔImport is lower than the sum of cross-zonal capacities on all Polish interconnections in import 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
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 external constraints in export direction (generating capacities available for potential exports) in the framework of the intraday capacity calculation.



1 Sum of technical minima of centrally dispatched generating units in operation

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, reduced by:
3.1 Minimum necessary reserve for down regulation

Figure 2: Determination of external constraints in import direction (reserves in generating capacities available for potential imports) in the framework of intraday capacity calculation.

Frequency of re-assessment

External constraints are determined in a continuous process based on the most recent information, for each capacity allocation time frame, from forward till day-ahead and intra-day. In case of intraday

process, these are calculated for each intraday capacity calculation timeframe in accordance with Article 4(2), resulting in independent values for each ID CC MTU, and separately for directions of import to Poland and export from Poland.

Time periods for which external constraints are applied

As described above, external constraints are determined in a continuous process for each capacity allocation timeframe, so they are applicable for all ID CC MTUs of the respective allocation day.

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Annex 2: Calculated and allocated capacities in relation to the implementation of IDAs and Core intraday capacity calculation (IDCCb))

Intraday cross-zonal capacities	before the implementation of IDA1 (15:00 of D-1)		after the implementation of IDA1 (15:00 of D-1)	
	before the implementation of Core ID CCM at 22:00 (IDCCb))	after the implementation of Core ID CCM at 22:00 (IDCCb))	before the implementation of Core ID CCM at 22:00	after the implementation of Core ID CCM at 22:00
Between 15:00 and 22:00 of D-1	Leftovers from the day-ahead cross-zonal capacities based on Core DA CCM according to the transitional solution pursuant to Article 26(5) and Annexes 3, 4 and 5 OR Zero intraday cross-zonal capacities pursuant to Annex 3(4)	Leftovers from the day-ahead cross-zonal capacities based on Core DA CCM pursuant to Article 4(2)(a) OR Zero intraday cross-zonal capacities pursuant to Article 11(4)	Leftovers from IDA1	Leftovers from IDA1
From 22:00 of D-1 onwards	Leftovers from the day-ahead cross-zonal capacities based on Core DA CCM according to the transitional solution pursuant to Article 26(5) and Annexes 3, 4 and 5	Intraday cross-zonal capacities from Core ID CCM at 22:00 pursuant to Article 4(2)(b)	Leftovers from IDA1 & continuous trading process executed until 22h	Intraday cross-zonal capacities from Core ID CCM at 22:00 pursuant to Article 4(2)(b)

Annex 3: Update of intraday cross-zonal capacities remaining after the SDAC in the transition period

(1) The CCC shall use the final cross-zonal capacities resulting from day-ahead capacity calculation and the net positions resulting from already allocated capacities in the SDAC to calculate the updated day-ahead cross-zonal capacities to be used as intraday cross-zonal capacities at the intraday cross-zonal gate opening time.

(a) In the case that the LTA inclusion in day-ahead is ensured through the LTA margin approach, the intraday cross-zonal capacities are described as flow-based parameters;

(b) In the case that the LTA inclusion in day-ahead is ensured through the Extended LTA inclusion approach, the intraday cross-zonal capacities are described as a union of flow-based parameters and "LTA values" (LTA domain).

For the updated intraday flow-based parameters, the PTDF values shall be the final PTDFs resulting from the day-ahead capacity calculation, and the RAM shall be derived as:

$$\overrightarrow{RAM}_{UID} = \max\left(0, \overrightarrow{RAM}_f - \mathbf{PTDF_f}\,\overrightarrow{NP}_{AAC}\right)$$

Equation 3b

with

$\overrightarrow{RAM}_{UID}$	updated remaining available margin for intraday cross-zonal capacities
$\overrightarrow{RAM}_f$	final remaining available margin resulting from the day-ahead capacity calculation
$\mathbf{PTDF_f}$	final power transfer distribution factor matrix resulting from the day-ahead capacity calculation
$\overrightarrow{NP}_{AAC}$	net positions resulting from already allocated capacities in SDAC

The updated LTA values, applicable if the Extended LTA inclusion approach is applied in day-ahead, shall be derived as:

$$\overrightarrow{LTA}_{UID} = \max\left(0, \overrightarrow{LTA}_f - \overrightarrow{SEC}_{DA}\right)$$

Equation 3c

$\overrightarrow{LTA}_{UID}$	updated remaining available long-term capacities for provision to SIDC; value per oriented border
$\overrightarrow{LTA}_f$	LTA domain resulting from the day-ahead capacity calculation thus adjusted for long-term nominations; value per oriented border;
$\overrightarrow{SEC}_{DA}$	schedule exchange resulting from already allocated capacities in SDAC

(2) In case the LTA inclusion in day-ahead is ensured through:

(a) the LTA margin approach: for each CNEC, each TSO may decrease the RAM_f by decreasing $LTA_{margin,DA}$ as calculated pursuant to the day-ahead capacity calculation methodology while that there is no undue discrimination between internal and cross-zonal exchanges as referred to in Article 21(1)(b)(ii) of the CACM Regulation;

(b) the Extended LTA inclusion approach: each TSO may decrease the LTA_f on its borders while ensuring compliance with Article 16 of Regulation (EU) 2019/943.

Irrespective of the options provided to each TSO pursuant to (a) and (b), each TSO shall ensure that on each bidding zone border, the long-term capacities that are in effect taken into account pursuant to (a) and (b) are between 0.001 MW and 1500 MW.

(3) For each CNEC, each TSO may adjust the RAM_f by modifying the AMR_{DA} as calculated pursuant to the day-ahead capacity calculation methodology while ensuring compliance that there is no undue discrimination between internal and cross-zonal exchanges as referred to in Article 21(1)(b)(ii) of the CACM Regulation.

(4) Until the implementation of intraday auctions at 15:00 market time of day D-1, the Core TSOs may set to zero the cross-zonal capacities calculated pursuant to Article 4(2)(a). Such a decision may be made per bidding zone border by the competent TSOs.

Annex 4: Calculation of ATCs for SIDC fallback procedure in the transition period

1. In case the SIDC is unable to accommodate flow-based parameters or in case the leftovers from the day-ahead cross-zonal capacities based on Core DA CCM are used according to a transitional solution as defined in Annex 2 to this methodology, the CCC shall convert the cross-zonal capacities into available transmission capacities for each Core oriented bidding zone border and each DA CC MTU. The Core TSOs may delegate this responsibility to a third party.

2. The cross-zonal capacities shall serve as the basis for the determination of the ATCs for SIDC fallback procedure. As the selection of a set of ATCs from the cross-zonal capacities leads to an infinite set of choices, an applicable algorithm determines the ATCs for SIDC fallback procedure.

3. The following inputs are required to calculate ATCs for SIDC fallback procedure for each ID CC MTU:

   (a) the final flow-based parameters ($\mathbf{PTDF_f}$ and $\overrightarrow{RAM_{UID}}$) and $\overrightarrow{LTA_{UID}}$ as calculated pursuant to Annex 3 and, if applicable, $\overrightarrow{LTA_{UID}}$ calculated pursuant to Annex 3;

   (b) If defined, the global allocation constraints shall be assumed to constrain the Core net positions pursuant to Article 7(5), and shall be described following the methodology described in Article 17(2). Such constraints shall be adjusted for offered cross-zonal capacities on the non-Core bidding zone borders.

4. In case the cross-zonal capacities are described solely by flow-based parameters, the calculation of the ATCs for SIDC fallback procedure is an iterative procedure, which gradually calculates ATCs for each DA CC MTU, while respecting the constraints of the final flow-based parameters pursuant to paragraph 3:

   (a) The initial ATCs are set equal to zero for each Core oriented bidding zone border, i.e.:

$$\overrightarrow{ATC}_{k=0} = 0$$

   with

$\overrightarrow{ATC}_{k=0}$	the initial ATCs before the first iteration

   (b) the remaining available margin of the final flow-based parameters ($\overrightarrow{RAM_f}$) have to be adjusted for the flows resulting from net positions or already allocated capacities resulting from the SIDC in accordance with Article 4(5)(b):

$$\overrightarrow{RAM}_{ATC}(0) = \max\left(0, \overrightarrow{RAM_f} - \mathbf{PTDF_f}\,\overrightarrow{NP}_{SIDC}\right)$$

Equation 14

   with

$\overrightarrow{RAM}_{ATC}(0)$	remaining available margin for ATC calculation at iteration k=0

$\overrightarrow{RAM_f}$	remaining available margin of the flow-based parameters pursuant to paragraph 3, or equal to $\overrightarrow{RAM_{UID}}$ from Annex 3, if applicable.
$\mathbf{PTDF_f}$	PTDF matrix of the final flow-based parameters
$\overrightarrow{NP_{SIDC}}$	Core net positions resulting from SIDC which are not already included in the CGM

(c) The iterative method applied to calculate the ATCs for SIDC fallback procedure consists of the following actions for each iteration step *k*:

i. for each CNEC and external constraint of the flow-based parameters pursuant to paragraph 3, calculate the remaining available margin based on ATCs at iteration *k*-1

$$\overrightarrow{RAM_{ATC}}(k) = \overrightarrow{RAM_{ATC}}(0) - \mathbf{pPTDF_{zone-to-zone}}\,\overrightarrow{ATC_{k-1}}$$

with

$\overrightarrow{RAM_{ATC}}(k)$	remaining available margin for ATC calculation at iteration *k*
$\overrightarrow{ATC_{k-1}}$	ATCs at iteration *k*-1
$\mathbf{pPTDF_{zone-to-zone}}$	positive zone-to-zone power transfer distribution factor matrix

ii. for each CNEC, share $RAM_{ATC}(k)$ with equal shares among the Core oriented bidding zone borders with strictly positive zone-to-zone power transfer distribution factors on this CNEC;

iii. from those shares of $RAM_{ATC}(k)$, the maximum additional bilateral oriented exchanges are calculated by dividing the share of each Core oriented bidding zone border by the respective positive zone-to-zone PTDF. The maximum additional bilateral oriented exchanges may be negative, i.e. it may lead to decrease the exchange capacity;

iv. for each Core oriented bidding zone border, $\overrightarrow{ATC_k}$ is calculated by adding to $\overrightarrow{ATC_{k-1}}$ the minimum of all maximum additional bilateral oriented exchanges for this border obtained over all CNECs and external constraints as calculated in the previous step;

v. go back to step i;

vi. iterate until the difference between the sum of ATCs of iterations *k* and *k*-1 is smaller than 1 kW;

vii. the resulting ATCs for SIDC fallback procedure stem from the ATC values determined in iteration *k*, after rounding down to integer values;

viii. at the end of the calculation, there are some CNECs and external constraints with no remaining available margin left. These are the limiting constraints for the calculation of ATCs for SIDC fallback procedure.

(d) positive zone-to-zone PTDF matrix ($\mathbf{pPTDF_{zone-to-zone}}$) for each Core oriented bidding zone border shall be calculated from the $\mathbf{PTDF_{Core}}$ as follows (for HVDC interconnectors integrated pursuant to Article 13, Equation 8 shall be used):

$$pPTDF_{zone-to-zone,A\rightarrow B} = \max\left(0, PTDF_{zone-to-slack,A} - PTDF_{zone-to-slack,B}\right)$$

Equation 15

with

$pPTDF_{zone-to-zone,A\rightarrow B}$	positive zone-to-zone $PTDFs$ for Core oriented bidding zone border *A* to *B*
$PTDF_{zone-to-slack,m}$	zone-to-slack $PTDF$ for Core bidding zone border m

5. In case the cross-zonal capacities are described as the union of flow-based parameters and an LTA domain, the calculation of the ATCs for SIDC fallback procedure is a mathematical optimisation process.

The following objective function is applied:

$$Maximize\ [\left(\sum \overrightarrow{ATC}_{phys} / N_{oriented\ borders}\right) * W_{sum} + \left(\text{Min}\ \overrightarrow{ATC}_{phys}\right) * (1 - W_{sum})]$$

with

ATC_{phys}	Sum of the ATCs resulting from flow based parameters and possible long-term capacities, e.g. : $(\overrightarrow{ATC}_{phys} = \overrightarrow{ATC}_{FB} + \overrightarrow{ATC}_{LTA})$
$N_{oriented\ borders}$	The number of oriented borders in Core CCR
W_{sum}	A common weighting factor applied on all Core borders to adopt between maximizing the sum of ATCs averaged across all borders and maximizing the lowest ATC across all borders; this value is a scalar between 0 and 1, initially set to 0.5.

(a) This objective function is subject to the following constraints:

$$\overrightarrow{ATC}_{phys} = \overrightarrow{ATC}_{FB} + \overrightarrow{ATC}_{LTA}$$

$$\overrightarrow{ATC}_{LTA} \leq (\alpha - 1) * \overrightarrow{LTA}_{UID}$$

$$\overrightarrow{ATC}_{FB} \leq \alpha * \frac{\overrightarrow{RAM}_{UID}}{pPTDF_{zone-to-zone}}$$

$$\overrightarrow{ATC}_{FB} \geq 0$$

$$\overrightarrow{ATC}_{LTA} \geq 0$$

with

α	A single optimization variable, between 0 and 1 used for all ATC borders
$\overrightarrow{LTA}_{UID}$	Updated remaining available long-term capacities for ATC extraction pursuant to Annex 3
$\overrightarrow{RAM}_{UID}$	Updated remaining available margin for ATC calculation provided by the FB Domain pursuant to Annex 3
$\mathbf{pPTDF}_{zone-to-zone}$	positive zone-to-zone power transfer distribution factor matrix

Annex 5: Other transitional arrangements

1. Each Core TSO shall have the right to perform individual validation of ID ATCs calculated and provided to Core TSOs pursuant to Annex 4, by which these ATCs may be adjusted in case such adjustments are needed to maximise cross-zonal capacity and/or to maintain operational security. Pursuant to this validation, each Core TSO shall have the right to adjust ID ATCs on its bidding zone borders. The maximum of ID ATC increase per bidding zone border shall be 300 MW.

2. The ID ATC on a biding zone border shall always be the lowest value of ID ATCs set by TSOs on both sides of this bidding zone border.

3. As soon as possible after the implementation of DA CCM and no later than from four months after the adoption of this Decision, each Core TSO requiring amendment of ID ATCs shall provide to all Core TSOs the justification for each ATC adjustment. This justification shall be based on the assessment of the day-ahead or intraday congestion forecast common grid models and shall include the concerned CNECs on which the need for decrease or increase of flow or capacity was identified to maximise cross-zonal capacity and/or maintain operational security.

4. After the implementation of DA CCM, the Core TSOs shall regularly publish the following information about the update of intraday cross-zonal capacities remaining after the SDAC in the transition period:

   (a) the percentage of LTA and AMR applied on the intraday level pursuant to Annex 3;

   (b) applied Wsum value pursuant to Annex 4; and

   (c) the flow-based domain and, if relevant, LTA domain used for ATC extraction pursuant to Annex 3, in particular the values: $\overrightarrow{RAM_f}$ (before and after possible adjustment), $\overrightarrow{NP_{AAC}} * \mathbf{PTDF_{Core}}$, $\overrightarrow{RAM_{UID}}$, $\overrightarrow{LTA_f}$ (before and after possible adjustment), $\overrightarrow{SEC_{DA}}$ and $\overrightarrow{LTA_{UID}}$; and

   (d) ID ATC adjustments pursuant to paragraph 1 including justifications as of deadline pursuant to paragraph 3;

In case the information pursuant to point (c) cannot be published at the time of implementation of DA CCM, it shall be published as soon as feasible and for all days since the implementation of DA CCM.

5. As from four months after the start of the transition period pursuant to Article 26(5), the Core CCC shall assist the Core TSOs in the ATC validation, by providing at least the following information for each Core CNEC and for each MTU, based on the CGMs from the DACF procedure:

   (a) reference flows;

   (b) zone-to-zone PTDFs of Core oriented borders; and

   (c) potential maximal flows due to ID ATCs, superposed to the reference flows.

The CCC shall provide this information not later than 20:45 of D-1.

6. During the transition period pursuant to Article 26(5), the Core TSOs may apply and implement, without the need to amend the intraday capacity calculation methodology, further adjustments of the ATC extraction methodology pursuant to Annex 4 if it better meets the objectives of the CACM Regulation and is agreed among Core TSOs.

Annex 6: ATC based validation process

1. Each Core TSO has the right to perform an ATC based validation in order to ensure operational security. This is an additional process, next to the existing validation process described in Article 18 as IVA validation. Pursuant to this validation, each Core TSO can set a maximum ATC value for its own oriented border.
2. The ID ATC on a bidding zone border shall always be the lowest value of all ID ATCs set by all TSOs for this bidding zone border.

$$ATC_{A\rightarrow B\ validated} = \min\left(\overrightarrow{ATC}_{A\rightarrow B\ validated,TSO\ 1}, \overrightarrow{ATC}_{A\rightarrow B\ validated,TSO\ 2}, \overrightarrow{ATC}_{A\rightarrow B\ validated,TSO\ x}\right)$$

Equation 16

with

$ATC_{A\rightarrow B\ validated}$	Minimum of validated ATCs for border A→B by all Core TSOs adjacent to this border
$\overrightarrow{ATC}_{A\rightarrow B\ validated,TSO\ x}$	Validated ATC for border A→B by TSO x

3. The ATC limitation may be done only in the following situations:
   (a) an occurrence of an unexpected contingency impacting a CNE after the beginning of the related IDCC process;
   (b) as a fallback, in case IVA validation cannot be performed fully in time or if it faces IT issue; or
   (c) a mistake in input data that leads to an overestimation of cross-zonal capacity from an operational system security perspective.
4. In addition to the publication described in Article 22, Core TSOs and the CCC shall publish at least the following information and data items with regard to the ATC based validation for each IDCC MTU:
   (a) The TSO invoking the limitation;
   (b) The ATC limitation per border;
   (c) The situation applicable as per the previous paragraph; and
   (d) The detailed reason for the limitation of the ATC with the same level of information as IVA validation following the reasonings developed in Article 18(2), including the operational security limits (when relevant) that would have been violated without the reductions, and under which circumstances they would have been violated.
5. Every three months, the CCC, with the support of Core TSOs where relevant, shall provide in the quarterly report the data items given under paragraph 4(a), 4(b), 4(c) and 4(d), with regard to the ATC based validation for each IDCC MTU.