

ACER Decision on Core ID CCM: Annex I

(text rectified by corrigendum of ~~XX~~ 4 April 2024)

**The second amendment ~~of~~to the intraday
capacity calculation methodology of the
Core capacity calculation region**

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

~~09-08-2022~~ _____

Purpose:	<input type="checkbox"/> methodology draft	<input type="checkbox"/> for public consultation
	<input checked="" type="checkbox"/> for NRA approval	<input type="checkbox"/> for final publication
Status:	<input type="checkbox"/> draft	<input checked="" type="checkbox"/> final
TSO approval:	<input type="checkbox"/> for approval	<input checked="" type="checkbox"/> approved
NRA approval:	<input checked="" type="checkbox"/> outstanding	<input type="checkbox"/> approved

14 March 2024

Whereas

TSOs of the Core CCR (“Core TSOs”), taking into account the following:

- (1) Based on further developments and alignments with Core NRAs after the decision by the Agency in 21st February 2019, Core TSOs deemed it necessary to introduce the following changes.
- (2) The following changes fulfil the objectives set out in Article 3 CACM.
- (3) The amendments performed with respect to the integration of the ROSC aligned business process in Article 2 ensure operational security and an optimised calculation of cross-zonal capacity in accordance with Article 3(c) and Article 3(d) of CACM by establishing a consistent use of remedial actions between the CROSA and the IDCC process, which will ensure remedial actions applied in CROSA remain effective after providing intraday capacity to the intraday market. Including already coordinated remedial actions during the intraday capacity calculation process will lead to a more accurate representation of the grid and a grid model which is as much as possible congestion-free, thereby also ensuring optimal use of the transmission infrastructure in accordance with Article 3(b) CACM. These will also prevent that the impact of activated XRAs is diminished by additional intraday cross-zonal trade, which could be detrimental to ensuring operational security as set out by Article 3(c) CACM.;
- (4) The amendments performed with respect to the avoidance of disproportionate negative ATCs on distant Core borders in Article 3 ensure a fair and non-discriminatory treatment of TSOs and market participants in accordance with Article 3(e) of CACM as high negative ATCs would basically block border directions for the intraday market although the benefit from grid security perspective would be very limited.

Article 1

Amendments ~~concerning definitions and interpretation~~ to Article 1

~~1.~~ Article ~~2.~~ Definitions ~~1~~ ‘Subject matter and ~~interpretation~~ scope’, shall be amended accordingly:

a) ~~a)~~ Paragraph 1 shall be replaced and be read accordingly:

“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.”

b) Paragraph 2 shall be included and be read accordingly:

“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.”

Amendments to Article 2

Article 2. ‘Definitions and interpretation’, shall be amended accordingly:

a) Paragraph 1 shall be replaced and be read accordingly:

“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, ~~Comission~~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 ~~the~~ACER Decision No 02/~~2019~~of the Agency for the Cooperation of the Energy Regulators of 21 February 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 ~~the~~ACER Decision No 33/2020 ~~of the Agency for the Cooperation of the Energy Regulators of 4 December 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 ~~”;~~:

~~b) Number 1. shall be replaced and be read accordingly:~~

a. ~~“‘AAC_{ID}’~~‘AAC_{ID}’ is the already allocated capacity which has been allocated in ~~SIDC;~~:

~~e) Number 27, 36, 38, 39 & 41 shall be omitted~~

~~d) A new number 40a. shall be included and be read accordingly:~~

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;

~~b-mm.~~ _____ ‘NP_{AAC,DA}’ means net position resulting from already allocated capacities in SDAC;²²;

~~e) A new number 40b. shall be included and be read accordingly:~~

~~e-nn.~~ _____ “‘NP_{AAC,ID}’ means net position resulting from already allocated capacities in SIDC;²²;

~~f) Number 49. shall be replaced and be read accordingly:~~

~~oo.~~ _____ “‘PTDF_{f,DA}’ ‘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.~~ _____ ‘PTDF_{Core}’ means a matrix of power transfer distribution factors resulting from the intraday flow-based calculation for Core bidding zones;

~~vv.~~ _____ ‘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.~~ _____ PTDF_{f,DA}’ means a matrix of power transfer distribution factors describing the final day-ahead flow-based domain;”

~~g) Number 50. shall be replaced and be read accordingly:~~

~~_____ “‘PTDF_f’ means a matrix of power transfer distribution factors describing the final Intraday flow-based domain;”~~

~~h) A new number 55a. shall be included and be read accordingly:~~

~~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 coupling²²;
- ddd. ~~2. Article 11. Update of~~ ‘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 \mathbf{x} denotes a matrix;

rrr. 'LTA domain' means a set of bilateral exchange restrictions covering the previously allocated cross-zonal capacities remaining after the SDAC;

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.'

b) Paragraph 2. (a) shall be amended read accordingly:

a) ~~In Equation 3~~ "the singular also includes the plural and vice versa;"

c) Paragraph 2- \overrightarrow{RAM}_f . (e) shall be replaced with $\overrightarrow{RAM}_{f,DA}$ read accordingly:

b) ~~In Equation 3~~ \overrightarrow{PTDF}_f shall be replaced with $\overrightarrow{PTDF}_{f,DA}$

e) ~~In Equation 3~~ $\overrightarrow{NP}_{AAC}$ shall be replaced with $\overrightarrow{NP}_{AAC,DA}$

Article 2

"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."

Amendments introducing the ROSC aligned business process
~~1. to Article 4. Intraday capacity calculation process shall be amended accordingly:~~

~~a) Paragraph 8~~ Article 4 'Intraday capacity calculation process', shall be replaced and be read accordingly:

"

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 bidding 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.

~~4.8.~~ The Core RCCs shall deliver, acting as the CCC shall use the latest available CGM 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.

~~b) Step 3 of Paragraph 9 shall be replaced and be read accordingly:~~

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 1.~~Step 3. The CCC shall determine the final list of CNECs for subsequent steps of the capacity calculation pursuant to Article 16;²²;
- ~~Step 2.~~ e) ~~Step 4 of Paragraph 9 shall be omitted~~
- ~~Step 3.~~ d) ~~A new paragraph 11 shall be added and be read accordingly:~~
- ~~Step 4.~~ “~~Based on the latest available information regarding the actual system state, each TSO in the Core region shall have the right to reduce available cross-zonal capacity on their own borders after submitting capacity to SIDC in accordance with paragraph 2. Such reduction shall be coordinated amongst the TSOs sharing the border.~~”
- ~~Step 5.~~ d) ~~A new paragraph 12 shall be added and be read accordingly:~~
- ~~Step 6.~~ “~~Core TSOs aim at ensuring maximal coherence between operational processes run in Core CCR. In this context, the intraday capacity calculation shall take place only after the coordinated operational security analysis run within the scope of the ROSC ICS/CROSA processes on day-ahead and intraday. Considering the fact that these ROSC processes are key for planning remedial measures to ensure operational security, the intraday capacity calculation can only commence once the ROSC ICS/CROSA process is finalized and adequate up-to-date grid models are available. This implies, that in case the ROSC ICS/CROSA process cannot be finalized within the foreseen timeframe and more time is necessary to manage grid security, intraday capacity calculation and subsequent delivery of intraday capacities may be delayed. Core TSOs shall strive at ensuring that the delay in providing intraday capacity, according to the time of delivery mentioned in paragraph 2, is as small as possible.~~”
- Step 4. ~~2.~~ 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).”

Amendments to Article 5-Definition

Article 5 'Definition of critical network elements and ~~contingencies~~contingencies', shall be ~~amended~~replaced and be read accordingly:

~~a) In Paragraph 4 the last sentence shall be removed and be read accordingly:~~

~~““~~
~~”~~

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.
- ~~4.4.~~Each Core TSO shall provide to the CCC a list of CNECs established pursuant to paragraph 3.²².

~~b) In Paragraph 7 a sentence shall be added and be read accordingly:~~

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.

2.7. 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 ~~added~~ exceptionally considered in accordance with Article 16(2).²²⁾ to (4).

8. ~~3. Article 8. Reliability margin~~ 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.

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

Amendments to Article 6

Article 6 'Methodology for operational security limits', shall be amended accordingly:

- a) ~~Paragraph 4~~ a) Paragraph 4. (f) shall be replaced and be read accordingly:
“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.”
- b) Paragraph 4. shall be replaced and be read accordingly:
“TSOs shall regularly review and update operational security limits in accordance with Article 21.”

Amendments to Article 7

Article 7 'Methodology for allocation constraints', shall be replaced and be read accordingly:

“

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:
- (a) 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} ;
 - (b) 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.”

Amendments to Article 8

Article 8 'Reliability margin methodology', shall be amended accordingly:

- a) Paragraph 7 shall be replaced and be read accordingly:

“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.”

b) Paragraph 10 shall be replaced and be read accordingly:

“Until the proposal for amendment of this methodology pursuant to paragraph 7 ~~has been~~is approved ~~by all Core regulatory authorities~~, the Core TSOs shall use the following ~~FRM~~FRM values:

(c) (a) ~~—if and as long as all Core TSOs apply FRM for CNECs already used in existing flow based~~the day-ahead capacity calculation initiatives, the FRM values 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};

(d) 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 ~~to~~than the FRM ~~values used~~value at the day ahead level.”

Amendments to Article 9

Article 9 'Generation shift key methodology', shall be amended accordingly:

a) Paragraph 4 shall be replaced and be read accordingly:

“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 ~~these initiatives at the time of adoption~~accordance with Article 21.”

b) The first sentence of Paragraph 6 shall be replaced and be read accordingly:

“Within eighteen months after the implementation of this methodology; ~~and~~ 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.”

(b) ~~—for CNECs not already used in existing flow based capacity calculation initiatives, the FRM values shall be equal or lower to 10% of the F_{max} calculated under normal weather conditions.”~~

Amendments to Article 10-Methodology

Article 10 'Methodology for remedial actions in intraday capacity calculation', shall be ~~amended accordingly~~ replaced and be read accordingly:

~~a) Paragraph 3 shall be replaced and be read accordingly:~~

““
—

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.
- ~~3.3.~~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.²²

~~b) Paragraph 4 shall be replaced and be read accordingly:~~

- ~~2.4.~~“RAs used for intraday capacity calculation will~~will~~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 starting step 2 according to Article 4(9) ~~should~~ shall be used. Such RAs will be only available once ROSC CROSA is implemented in accordance ~~of~~with Article 37 of Core ROSC methodology.”²²

~~e) Paragraph 7 shall be replaced and be read accordingly:~~

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.
- ~~3.7.~~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.”²²

8. d) Paragraph 9 The RAs can be preventive or curative, i.e. affecting all CNECs or only pre-defined contingency cases, respectively.

TSOs shall be omitted

5. Article 15. Initial flow based review and update the RAs taken into account in the intraday capacity calculation in accordance with Article 21.”

Amendments to Article 11

Article 11 'Update of intraday cross-zonal capacities remaining after the SDAC', shall be amended accordingly:

a) Paragraph 3 Paragraphs 2 to 4 shall be replaced and be read accordingly:

“

“

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.”

Amendments to Article 14

Article 14 'Consideration of non-Core bidding zone borders', shall be amended accordingly:

- a) The first sentence of Paragraph 4 shall be replaced and be read accordingly:
“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.”

Amendments to Article 15

Article 15 'Initial flow-based calculation', shall be replaced and be read accordingly:

“

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 $PTDF_{init}$ and $\vec{F}_{ref,init}$ $PTDF$ values and \vec{F}_{ref} values for each initial CNEC, ~~as well as for additional elements part of the pre-defined static list of network elements with contingencies mentioned in.~~

Amendments to Article 16(2)(a).”

~~6. Article 16. shall be renamed to “Definition 'Definition of final list of CNECs for intraday capacity calculation”~~

~~7. Article 16. Definition of final list of CNECs for intraday capacity calculation calculation', shall be amended accordingly:~~

- a) ~~a) In~~ Paragraph 1 ~~the last sentence~~ shall be replaced and be read accordingly:
“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 pre-final list of CNECs.”
- b) ~~b) Paragraph 2 shall be replaced~~ included and be read accordingly:
“Some additional cross-border relevant network elements with a specific

~~contingency (XNECs) resulting from the most recently performed or running ROSC CROSA process, and not already part of the pre-final list of CNECs mentioned in paragraph 1, may be exceptionally turned into CNECs. The inclusion of such additional elements complies to Core ROSC methodology Article 31(3a) which emphasizes the need to prevent the effect of activated cross-border relevant RAs in ROSC CROSA process on operational security to be diminished by additional cross-zonal trades. The selection of the additional elements shall be based on the list of overloaded XNECs prior to the application of costly cross-border remedial actions during CROSA process, after application of two sequential filters:~~

~~(a) The aforementioned overloaded XNEs must be part of a pre-defined static list of network elements with contingencies,~~

~~(b) The sensitivity of the activated costly cross-border relevant RAs in CROSA process on the filtered elements that result from the previous step (a) must be over a dedicated agreed global threshold amongst Core NRA and Core TSOs based on experience once the ROSC CROSA process is implemented.”~~

~~e) “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.”~~

c) Paragraph 3 shall be ~~added~~included and be read accordingly:

~~“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 consist of both the pre-final list of CNECs from 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 1 and the selected network elements from the aforementioned process in paragraph 2(4) is approved and implemented.”~~

d) ~~4)~~ Paragraph 4 shall be ~~added~~included and be read accordingly:

~~“Until the ROSC CROSA process is implemented in accordance of Article 37 of Core ROSC methodology, the addition of network elements as referred to in paragraph 2 is not applied. The final list of CNECs will therefore be the equal to the pre-final list of CNECs during this interim period.”~~

~~8:~~“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).”

Amendments to Article 17-

Article 17 ‘Non-costly remedial actions ~~optimisation~~optimisation’ shall be ~~fully omitted~~ ~~9-deleted, and the new~~ Article 18. ~~Calculation 17~~ would be ‘Calculation of flow-based parameters before ~~validation~~validation’, which shall be ~~amended~~read accordingly:

~~a) In paragraph 1 letter (a) shall be replaced and be read accordingly:~~

~~“the calculation of F_{ref} and $PTDF_f$ as follows:~~

~~i. $PTDF_f = PTDF_{int}$~~

~~ii. $\vec{F}_{ref} = \vec{F}_{ref,int}$ ”~~

~~b) In paragraph 1 letter (b) shall be replaced and be read accordingly:~~

~~“the calculation of RAM before validation as follows:~~

~~For all CNECs part of the pre-final list pursuant to Article 16(1):-~~

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

Equation 1

~~Or for all CNECs part of the additional set of network elements pursuant to Article 16(2):-~~

$$\overrightarrow{RAM}_{bv} = \max(0, \vec{F}_{max} - \overrightarrow{FRM} - \vec{F}_{ref})$$

Equation 12a

With

~~\vec{F}_{max} — Maximum active power flow pursuant to Article 6~~

~~\overrightarrow{FRM} — Flow reliability margin pursuant to Article 8~~

~~\vec{F}_{ref} — Flow resulting pursuant to paragraph 1(a)
 $\overrightarrow{RAM}_{app}$ — Remaining available margin before validation²²~~

~~10. Article 19. Validation of flow based parameters shall be amended accordingly:~~

~~Paragraph 7 shall be replaced and be read accordingly:~~

~~““~~

~~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}	<u>flow per CNEC in the CGM (which already contains the flows originated by SDAC process, and partially from the SIDC process)</u>
$\vec{F}_{ref,Core}$	<u>flow originated from the Core net positions which are already included in the CGM</u>
$PTDF_{Core}$	<u>power transfer distribution factor matrix for all bidding zones of the Core CCR</u>
$PTDF_{all}$	<u>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</u>
$\vec{NP}_{ref,Core}$	<u>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</u>
$\vec{NP}_{ref,all}$	<u>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</u>
$\vec{F}_{0,all}$	<u>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</u>
\vec{F}_{uaf}	<u>unscheduled allocated flow, i.e. the flow per CNEC resulting from commercial exchanges outside Core CCR</u>

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:

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

Equation 12

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

2. 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 $PTDF_f$ matrix and the \vec{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.”

Amendments to Article 18

The previous Article 19 'Validation of flow-based parameters' shall become Article 18, and shall be read accordingly:

“

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)(b).c. The final \overrightarrow{RAM}_f shall be calculated by the CCC for each CNEC and external constraint according to Equation 13: Equation 1 Equation 1 Equation 1 Equation 11.

$$\overrightarrow{RAM}_f = \overrightarrow{RAM}_{bv} - \overrightarrow{IVA} - \mathbf{PTDF}_z \mathbf{PTDF}_{Core} \overrightarrow{NP}_{AAC,IDadd}$$

Equation ~~13~~ 11

with

- ~~\overrightarrow{RAM}_f final remaining available margin~~
- ~~$\overrightarrow{RAM}_{bv}$ remaining available margin before validation~~
- ~~\overrightarrow{IVA} individual validation adjustment~~
- ~~\mathbf{PTDF}_z final power transfer distribution factor matrix resulting from the intraday capacity calculation~~
- ~~$\overrightarrow{NP}_{AAC,ID}$ Core net positions resulting from SIDC which are not already included in the CGM²~~

~~11.~~

- \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 \overline{RAM}_f and $PTDF_f$ 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:
 - (a) a justification why adding the network element with a specific contingency to the list was the only way to ensure operational security;
 - (b) the name or the identifier of the internal network element with a specific contingency;
 - (c) the ID CC MTUs for which the internal network element with a specific contingency was added to the list;
 - (d) 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;

- (e) for the cases under Article 16(3), the amount of total, internal, loop and allocated flows at the considered exceptionally added XNEC; and
 - (f) 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 $PTDF_f$ and \overline{RAM}_f for CNECs and external constraints of the pre-solved domain.”

Amendments to Article 19

The previous Article 20-- 'Intraday capacity calculation fallback ~~procedure~~procedure' shall be amended accordingly:

The third sentence shall be replaced become Article 19, and shall be read accordingly:

“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 4918, 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.”

~~12. Article 22. Reviews and updates shall be amended accordingly:~~

~~Paragraph 4 shall be replaced and be read accordingly:~~

~~“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.”~~

~~13. Article 23. Publication of data shall be amended accordingly:~~

~~a) In paragraph 2 letter (b)(vii) shall be replaced and be read accordingly:~~

~~“detailed breakdown of RAM for each CNEC of the final flow based parameters before pre solving: I_{max} , U , F_{max} , FRM , $F_{ref,limit}$, $F_{0,core}$, $F_{0,all}$, IVA .”~~

~~b) In paragraph 2 letter (b)(xii) shall be omitted~~

~~14. Article 25. Monitoring, reporting and information to the Core regulatory authorities shall be amended accordingly:~~

~~In paragraph 4 letter (e) shall be omitted~~

Article 3

Amendments to ~~avoid disproportionate negative ATCs on very distant Core borders~~ Article 20

~~1. The previous Article 21, Calculation 'Calculation of ATCs for SIDC fallback procedure', shall become Article 20 and shall be read accordingly:~~

~~“~~

- ~~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 shall be amended accordingly.”) for each Core oriented bidding zone border and each DA CC MTU. The Core TSOs may delegate this responsibility to a third party.~~

~~a) In paragraph 5 letter (e) shall be replaced and be read accordingly:~~

~~“Negative ATCs are calculated for CNECs with negative $RAM_{ATC}(0)$ according to the following procedure:~~

2. i- 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 (\overrightarrow{PTDF}_f and \overrightarrow{RAM}_f) as calculated pursuant to Article 18 ~~Article 18~~ or final flow-based parameters ($\overrightarrow{PTDF}_{f,DA}$ and $\overrightarrow{RAM}_{UID}$) as calculated pursuant to Article 11 ~~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 (\overrightarrow{PTDF}_f and $\overrightarrow{PTDF}_{f,DA}$) 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: $ATC_{A \rightarrow B \text{ validated}}$ ¹
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

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

¹ Relates to the third amendment, for information only.

remaining available margin for intraday cross-zonal capacities (RAM_UID) according to Article 11(1):

$$\overrightarrow{RAM}_{ATC}(0) = \overrightarrow{RAM}_f$$

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

Equation 14

with

$\overrightarrow{RAM}_{ATC}(0)$	<u>remaining available margin for ATC calculation at iteration $k=0$</u>
\overrightarrow{RAM}_f	<u>remaining available margin of the flow-based parameters pursuant to paragraph 3.</u>
$\overrightarrow{RAM}_{UID}$	<u>updated remaining available margin for intraday cross-zonal capacities</u>

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

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

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

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
$\overrightarrow{RAM}_{ATC, CNEC i}(0)$	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

$ATC_{A \rightarrow B, CNEC i}$ 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 14a then for each oriented Core bidding zone border the most negative ATC is determined over all CNECs with negative remaining available margin.

$$\overrightarrow{ATC}_{A \rightarrow B} = \min(\overrightarrow{ATC}_{A \rightarrow B, CNEC i})$$

Equation 14b

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

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

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. ~~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 14e²²

~~d) e) b) In paragraph 5 a new letter (ee) shall be added and be read accordingly:~~

~~(ee)~~ “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 $k=0$~~

$\overrightarrow{RAM}_{ATC}(0)$ 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. ~~i.~~ for each CNEC and external constraint of the flow-based parameters pursuant to paragraph 3.3, calculate the remaining available margin based on ATCs at iteration $k-1$

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

Equation 14g

with

~~$\overrightarrow{RAM}_{ATC}(k)$ — remaining available margin for ATC calculation at iteration k~~

~~$\overrightarrow{ATC}_{k-1}$ — ATCs at iteration $k-1$~~

~~$\mathbf{pPTDF}_{zone-to-zone}$ — positive zone-to-zone power transfer distribution factor matrix~~

~~ii.~~

$\overrightarrow{RAM}_{ATC}(k)$ 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 $\overrightarrow{RAM}_{ATC}(k)$ with equal shares among the Core oriented bidding zone borders with strictly positive zone-to-zone power transfer distribution factors on this CNEC;

iii. ~~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_z.

iv. ~~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;~~

v. ~~vi.~~ \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 $A \rightarrow B$ as a result of the ATC validation phase as described in Annex 6. Then go back to step ~~iii.~~²

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

vii. ~~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. ~~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 procedure²².

~~— c) In paragraph 5 a new letter (e) shall be added and be read accordingly:~~

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

² Relates to the third amendment, for information only.

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

Equation 215a2213

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

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

$$\overrightarrow{ATC}_{final} = \min(\overrightarrow{ATC}_k, \overrightarrow{ATC}_{negative,final})$$

Equation 15b"

Article 4

Amendments to ~~ensure a correct handling of HVDC interconnectors~~ Article 21

~~1. Article 12. Calculation of power transfer distribution factors and reference flow shall be amended accordingly:~~

~~Paragraph 5 shall be replaced and be read accordingly:~~

~~“The maximum zone to zone PTDF of a CNEC ($PTDF_{zzzmax,t}$) is the maximum influence that any Core exchange has on the respective CNEC, including exchanges over HVDC interconnectors which are integrated pursuant to previous Article 13:~~

$$PTDF_{zzzmax,t} = \max\left(\max_{ACBZ}(PTDF_{A,t}), \min_{ACBZ}(PTDF_{A,t}), \max_{H \in HVDC} (|(PTDF_{A,t} - PTDF_{H \rightarrow A,t}) - (PTDF_{B,t} - PTDF_{H \rightarrow B,t})|, |PTDF_{H \rightarrow A,t} - PTDF_{H \rightarrow B,t}|)\right)$$

Equation 6

with

~~$PTDF_{A,t}$~~ zone to slack PTDF of bidding zone A on a CNEC l

~~HVDC~~ set of HVDC interconnectors integrated pursuant to 22 'Reviews and updates', shall become 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~~

~~2. Article 13. Integration of HVDC interconnectors on bidding zone borders of the Core CCR shall be 21 and shall be~~ amended accordingly:

~~In paragraph 1 the last sentence paragraphs 6 and 7 shall be replaced and be~~ amended by replacing “the Agency” with “ACER”.

Amendments to Article 22

~~The previous Article 23 'Publication of data', shall become Article 22 and shall be read accordingly as follows:~~

~~“According~~

- ~~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 exchange over an HVDC interconnector on the capacities in accordance with Article 4(2) by the deadlines set therein;~~
 - ~~(b) the following information for intraday cross-zonal capacity calculation and recalculation 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 borders of the Core CCR is modelled and optimised explicitly as a;~~
- ~~ii. maximum possible bilateral exchange in capacity allocation, and is constrained by the physical impact that this exchange has on all exchanges between all pairs of Core bidding zones;~~
- ~~iii. if applicable, ATCs for SIDC fallback procedure;~~
- ~~iv. names of CNECs considered in (with geographical names of substations where relevant and separately for CNE and contingency) and external constraints of the final flow-based domain used in capacity allocation and constraints modelling the maximum possible exchange of the HVDC interconnector.” parameters before pre-solving and the TSO defining them;~~

Article 5

~~Amendments to ensure consistency with the amended day-ahead capacity calculation methodology~~

- ~~ii.v. 1. Article 19. Validation of for each CNEC of the final flow-based parameters shall be amended accordingly; before pre-solving, the EIC code of CNE and Contingency;~~

~~a) In Paragraph 3 a sentence shall be added and be read accordingly:~~

~~“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 CNEC and for which the maximum zone-to-zone PTDF is above the PTDF threshold referred to in Article 16(1), the competent Core TSO may exceptionally add such internal network element with associated contingency to the final list of CNECs. The RAM on this exceptional CNEC shall be the highest RAM ensuring operational security considering all available costly and non-costly RAs. $PTDF_{init}$ according to Article 15(3) shall be used to determine if the PTDF of the additional CNEC is above the PTDF threshold.”~~

~~b) In paragraph 10 letter (e) shall be omitted~~

~~e) In Paragraph 10 letter (f) shall be replaced and be read accordingly:~~

- ~~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} , $F_{0,core}$, $F_{0,all}$, $F_{ref,core}$, 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 ~~element~~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 ~~the~~ identifier of the internal network elements with a specific contingency, ~~the~~along with the calculated set of PTDFs;

~~(b)(c)~~(c) the following forecast information contained in the CGM for each ID CC MTUs for which the internal network elements with a specific contingency was added to the list and the information referred to in points (b) and (c) above;MTU shall be published by the deadlines established in Article 4(2):

~~2. Article 23. Publication of data shall be amended accordingly:~~

~~a) In paragraph 2 letter (d)(ii) shall be omitted~~

~~b) In paragraph 2 a new letter (f) shall be added and be read accordingly:~~

~~i. “The CCC shall include in its quarterly report as defined in Article 25(5) the flows resulting from 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 ~~resulting from~~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~~

~~as soon as the SIDC ~~on each CNEC and external constraint of the final~~ directly applies the flow-based parameters.”~~

e) ~~A new paragraph 7 shall be added and be read accordingly:~~

~~“Core TSOs shall provide Core regulatory authorities on a monthly basis the underlying capacity calculation and market coupling data related to the quarterly reports. The reporting framework shall be developed in coordination with Core regulatory authorities and updated and improved when needed.”~~

3. ~~Article 25. Monitoring, reporting and information to the Core regulatory authorities shall be amended accordingly:~~

~~In paragraph 5 a new letter (d) shall be added and read accordingly:~~

~~(e)(d) “according to Article 23(2)(f), Core TSOs shall report on flows resulting from net positions resulting from the SIDC on, 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.”~~

Article 6

Amendments related to the ID-ATC extraction to introduce the “Setting low PTDF to zero” feature and to clarify the wording

1. ~~Article 21. Calculation of ATCs for SIDC fallback procedure shall be amended accordingly:~~

~~a) In paragraph 3 letter (a) $PTDF_f$ shall be replaced with $PTDF_{f,DA}$~~

~~b) In paragraph 3 a new letter (c) shall be added and be read accordingly:
“the final PTDFs ($PTDF_f$ and $PTDF_{f,DA}$) 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.~~

~~i. b) In paragraph 5 letter (b) 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.”

Amendments to Article 23

The previous Article 24 'Quality of the data published', shall become Article 23 and shall be amended accordingly:

- a) Paragraph 1 shall be replaced and be read accordingly:

~~“the remaining available margin at iteration zero is either equal to the final remaining available margin (\overrightarrow{RAM}_F) according to Article 19(0) or the updated remaining available margin for intraday cross zonal capacities ($\overrightarrow{RAM}_{GTT}$) according to Article 11 (1):~~

$$\overrightarrow{RAM}_{GTT}(0) = \overrightarrow{RAM}_F$$

or $\overrightarrow{RAM}_{GTT}(0) = \overrightarrow{RAM}_{GTT}$

Equation 3

with

~~$\overline{RAM}_{ATC}(0)$ — remaining available margin for ATC calculation at iteration $k=0$~~

~~\overline{RAM}_f — final remaining available margin of the flow-based parameters~~“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.”

Amendments to Article 24

The previous Article 25 'Monitoring, reporting and information to the Core regulatory authorities', shall become Article 24 'Monitoring and reporting', and shall be read accordingly:

“

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. “

Amendments to Article 25

A new Article 25 'TSOs' analyses', shall be included and shall be read accordingly:

“
—

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.”

Amendments to Article 26

Article 26 'Timescale for implementation', shall be replaced and be read accordingly:

“

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.”

Amendments to Annex 1

Annex 1 'Justification of usage and methodology for calculation of external constraints', shall be amended accordingly:

- a) The first sentence shall be replaced and be read accordingly:

“The following section depicts in detail the justification of usage and methodology currently used by each Core TSO 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.”

- b) Chapters ‘1. Belgium: ‘ and ‘2. Nederlands’ shall be deleted.

Amendments to Annex 2

Annex 2 shall be renamed to 'Calculated and allocated capacities in relation to the implementation of IDAs and Core intraday capacity calculation (IDCCb)', and shall be read accordingly:

“
—

<u>Intraday cross-zonal capacities</u>	<u>before the implementation of IDA1 (15:00 of D-1)</u>		<u>after the implementation of IDA1 (15:00 of D-1)</u>	
	<u>before the implementation of Core ID CCM at 22:00 (IDCCb)</u>	<u>after the implementation of Core ID CCM at 22:00 (IDCCb)</u>	<u>before the implementation of Core ID CCM at 22:00</u>	<u>after the implementation of Core ID CCM at 22:00</u>
<u>Between 15:00 and 22:00 of D-1</u>	<u>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</u> <u>OR</u> <u>Zero intraday cross-zonal capacities pursuant to Annex 3(4)</u>	<u>Leftovers from the day-ahead cross-zonal capacities based on Core DA CCM pursuant to Article 4(2)(a)</u> <u>OR</u> <u>Zero intraday cross-zonal capacities pursuant to Article 11(4)</u>	<u>Leftovers from IDA1</u>	<u>Leftovers from IDA1</u>
<u>From 22:00 of D-1 onwards</u>	<u>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</u>	<u>Intraday cross-zonal capacities from Core ID CCM at 22:00 pursuant to Article 4(2)(b)</u>	<u>Leftovers from IDA1 & continuous trading process executed until 22h</u>	<u>Intraday cross-zonal capacities from Core ID CCM at 22:00 pursuant to Article 4(2)(b)</u>

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Amendments to Annex 3

Annex 3 'Update of intraday cross-zonal capacities remaining after the SDAC in the transition period', shall be amended accordingly:

a) Paragraph 1(b) shall be replaced and be read accordingly:

“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).”

b) Paragraph 2(a) shall be replaced and be read accordingly:

“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;”

c) Paragraph 3 shall be replaced and be read accordingly:

“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.”

d) Paragraph 4 shall be replaced and be read accordingly:

“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.”

Amendments to Annex 4

Annex 4 'Calculation of ATCs for SIDC fallback procedure in the transition period', shall be amended accordingly:

a) Paragraph 3(b) shall be replaced and be read accordingly:

“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.”

b) Paragraph 4(d) shall be amended by replacing “ $PTDF_{Core}$ ” with “ $PTDF_f$ ”.

c) Paragraph 5 shall be amended by replacing “a” with “an”.

Amendments to Annex 5

Annex 5 'Other transitional arrangements', shall be replaced and be read accordingly:

“

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 bidding 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: \overline{RAM}_f (before and after possible adjustment), $\overline{NP}_{AAC} * \mathbf{PTDF}_{Core_2} \overline{RAM}_{UID_2} \overline{LTA}_f$ (before and after possible adjustment), \overline{SEC}_{DA} and \overline{LTA}_{UID} ; and
 - ~~(a)~~(d) ID ATC adjustments pursuant to paragraph 31 including justifications as of deadline pursuant to paragraph 3;

~~\overline{RAM}_{UID} — updated remaining available margin for intraday cross-zonal capacities”~~

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.

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.”

Introduction of a new Annex 6³

A new Annex 6: 'ATC based validation process', shall be introduced and be read accordingly:

“

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.

$$ATC_{A \rightarrow B \text{ validated}} = \min(\overrightarrow{ATC}_{A \rightarrow B \text{ validated, TSO } 1}, \overrightarrow{ATC}_{A \rightarrow B \text{ validated, TSO } 2}, \overrightarrow{ATC}_{A \rightarrow B \text{ validated, TSO } x})$$

Equation 16

with

$ATC_{A \rightarrow B \text{ validated}}$ Minimum of validated ATCs for border A → B by all Core TSOs adjacent to this border

$\overrightarrow{ATC}_{A \rightarrow B \text{ validated, TSO } x}$ 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.

³ Relates to the third amendment, for information only.

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.

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.”