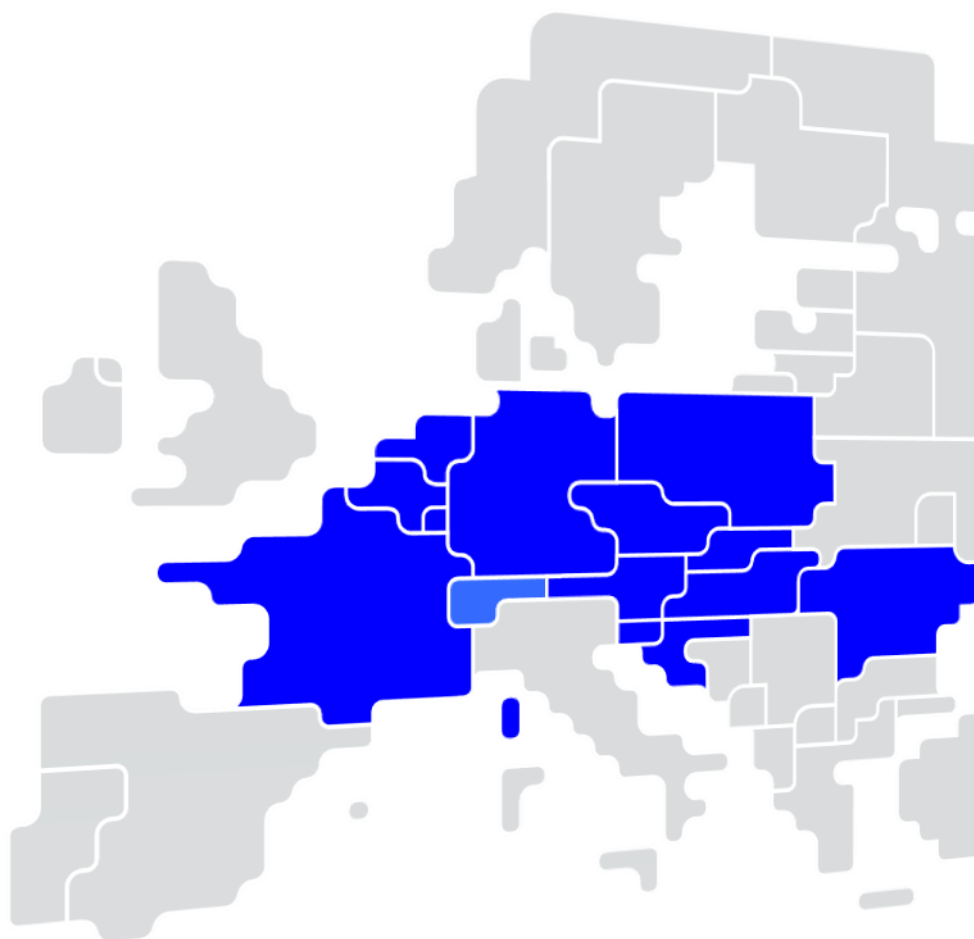
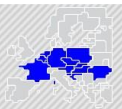




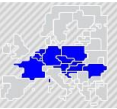
SNB NTC capacity calculation Methodology

in accordance with Article 13(2) of the first amendment of the Day-Ahead Capacity Calculation
Methodology of the Core Capacity Calculation Region of 10 May 2021
31st of January 2024





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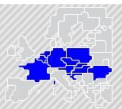


Amprion, APG, RTE, Swissgrid and TransnetBW, TAKING INTO ACCOUNT THE FOLLOWING,

Whereas

- (1) Since the introduction of Flow-Based in the Central Western Europe (CWE) region in 2015 and the removal of semi-coordinated Net Transfer Capacity (NTC) values¹ between CWE and Switzerland, Swissgrid experienced increasing physical flows through its grid. The increase of capacities due to the recent implementation of new EU regulations such as the Regulation (EU) 2019/943 on the Internal Market for Electricity incl. the minimum margin available for cross-zonal trade as well as the enlargement of the region (now Capacity Calculation Region Core) accentuated the situation.
- (2) As per Article 13 of the System Operation Guideline (SOGL), EU TSOs are required to conclude agreements with non-EU countries to fulfil the requirements set forth in SOGL. This requirement is covered by the conclusion by all TSOs and non-EU TSOs of the Synchronous Area Continental Europe with the so-called Synchronous Area Framework Agreement (SAFA). A specific Swiss clause, Article 28(3) SAFA, requires all parties to develop a common proposal for the integration of Switzerland in the relevant methodologies for capacity calculation for regulatory approval by the competent NRAs. It was agreed by the parties that these contractual arrangements must be carried out in the Capacity Calculation Regions (CCR).
- (3) As a result, a set of high-level options on how to consider Swissgrid in the Core CCR were developed by the Core TSOs and discussed with ACER, the European Commission and the Swiss neighbouring National Regulatory Authorities (NRAs) on 17 November 2019 in a dedicated task force monitoring the progress on the consideration of Switzerland, respectively Swissgrid, in the EU processes. This led to the invitation of Swissgrid into the Core CCR accompanied by a Letter of Intent on 12 December 2019 that defines how the parties involved will work together. Among the high-level options, the so-called “A2+” concept was decided as the most suitable approach.
- (4) In addition, the Day-Ahead Capacity Calculation Methodology of the Core CCR (Core DA CCM) was amended in 2021. The amendment introduced a new Article 13(2) that opens up the possibility of enhanced coordination between Core TSOs and a technical counterparty (in this case Swissgrid). The operationalisation of such enhanced coordination is subject to unanimous validation of all relevant NRAs.
- (5) Apart from the enhanced coordination in capacity calculation, Swissgrid is already a formal project party of the ROSC project based on the Core ROSC Methodology according to Article 76 System Operation Guideline, which explicitly allows for the participation of technical counterparties. The cooperation between Core TSOs and Swissgrid in that context is formalized in the Inter-TSO Agreement for Enhanced Coordination in Capacity Calculation in Core CCR. The same holds for the cost-sharing of remedial actions. The consideration of Swissgrid in the capacity calculation process will thus facilitate efficient handling of capacities, in the absence of full market integration. It will also provide a structured end-to-end process chain from capacity calculation, the application of remedial actions ensuring grid security, right through to the sharing of costs associated with these processes.

¹ Before the introduction of Flow-Based and the coordinated Available Transfer Capacity (ATC) mechanism in CWE, NTCs on the Swiss borders were integrally coordinated via the previous schemas of the “C-function” in Germany (borders NL-DE, FR-DE and CH-DE) as well as on the French eastern border (borders BE-FR, DE-FR and CH-FR).



This document sets out the Coordinated NTC Capacity Calculation Methodology on SNB hereafter referred to as the “SNB NTC capacity calculation Methodology”.

- (6) The proposed SNB NTC capacity calculation Methodology replaces the current scheme of independent DA Capacity Calculations (CCs) on SNB by each involved TSO.
- (7) This SNB NTC capacity calculation Methodology serves the objective of calculating cross zonal capacity within the day-ahead (DA) timeframe for the exchange of energy for the bidding zone borders CH-FR (Switzerland – France), CH-DE/LU (Switzerland – Germany/Luxemburg) and CH-AT (Switzerland – Austria).
- (8) The CC results following from this SNB NTC capacity calculation Methodology are subsequently subject to a validation schema that considers the mutual influences between SNB and Core. This validation process is set out in a separate methodology, hereafter referred to as the “Core-SNB Cross-Regional Validation Methodology” or “Cross-Regional Validation Methodology”.
- (9) The Coordination Areas that are relevant for this document are a) Swiss Northern Borders (SNB) comprising of CH-FR, CH-DE/LU and CH-AT, and b) Core Capacity Calculation Region (CCR Core) as defined by ACER Decision 06/2016.
- (10) Any amendment of the Core DA CCM shall trigger an impact assessment on this methodology by the relevant TSOs.

TITLE 1 GENERAL PROVISIONS

Article 1 Subject, Matter and Scope

The SNB NTC capacity calculation Methodology as determined in this document is the common methodology for the capacity calculation performed within the day-ahead timeframe for the bidding zone borders CH-FR, CH-DE/LU and CH-AT.

Article 2 Definitions and interpretation

For the purposes of this SNB NTC capacity calculation Methodology, terms used in this document shall have the meaning of the definitions included in the Core DA CCM of 21 February 2019 as amended from time to time, as well as in the Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity, Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast), Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (CACM Regulation) and Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council. In addition, the following definitions, abbreviations and notations shall apply:

CC	Capacity Calculation
CCM	Capacity Calculation Methodology
Coordination Area	Set of bidding zones borders, within which capacity calculation is fully coordinated
Core DA CCM	Day-Ahead Capacity Calculation Methodology of the Core CCR
Core CCC	Core Coordinated Capacity Calculator, as defined in Article 2(1)5 of the Core DA CCM



CWE	Central-Western Europe
DA	Day-Ahead
Fmax	The maximum admissible power flow in MW;
FRM	Flow Reliability Margin
$F_{0,SNB}$	Flows in the CNEC without SNB exchanges
F_{SNB}	Flows induced in the CNEC by SNB exchanges
F_{uaf}	Flows induced in the CNEC by cross-border exchanges outside the CCR
GLSK	Generation and Load Shifting Key
LTC	Long Term Contracts
LTN	Long Term Nominations
MACZT	Margin Available for Cross Zonal Trade
MTU	Market Time Unit
NPF	Net Position Forecast
NTC	Net Transfer Capacity
PATL	Permanent Admissible Transmission Limit
PST	Phase Shifting Transformer
RAM_{init}	Remaining Available Margin before adjustment for minimum RAM
R_{AMR}	Minimum RAM factor
SNB	Swiss-Northern Borders. The coordination area comprising of the bidding zone borders CH-FR, CH-DE/LU and CH-AT
SNB CCC	SNB Coordinated Capacity Calculator
SNB TSOs	Transmission System Operators of SNB
Splitting Key	Splitting Key is used for determining the ratio of generation shifting per SNB bidding zone during the NTC calculation and the splitting of NTCs per SNB border
TATL	Temporary Admissible Transmission Limit

In this SNB NTC capacity calculation Methodology unless the context requires otherwise:

- a) the singular indicates the plural and vice versa;
- b) the acronyms used both in regular and italic font represent respectively the term used and the respective variable;
- c) the table of contents and the headings are inserted for convenience only and do not affect the interpretation of this SNB NTC capacity calculation Methodology;
- d) any reference to a legislation act, regulations, directive, ordinance instrument, code, or any other enactment shall include any modification, extension or re-enactment of that text while it is in force.

Article 3 Application of this SNB NTC capacity calculation Methodology

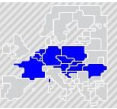
This SNB NTC capacity calculation Methodology solely applies to the SNB NTC capacity calculation for the bidding zone borders CH-FR, CH-DE/LU and CH-AT for the day-ahead timeframe. Capacity calculation methodologies for other bidding zone borders or for other timeframes are outside the scope of this SNB NTC capacity calculation methodology.



TITLE 2 GENERAL DESCRIPTION OF THE CAPACITY CALCULATION PROCESS

Article 4 SNB NTC capacity calculation process

1. The results of day-ahead SNB NTC capacity calculation will serve as input to the SNB day-ahead market allocation platforms, where determined ATCs will be allocated.
2. No later than six months before the implementation of this methodology, the SNB TSOs shall jointly establish a process description document as referred to in paragraphs 4, 5 and 6. The process description document shall reflect an up-to-date detailed process description of all capacity calculation steps including the timeline of each step of the day-ahead capacity calculation in accordance with this SNB NTC capacity calculation Methodology.
3. This SNB NTC capacity calculation process shall consist of three main stages:
 - (a) the creation of capacity calculation inputs by the SNB TSOs;
 - (b) the capacity calculation process by the SNB CCC; and
 - (c) the capacity validation by the SNB TSOs in coordination with the SNB CCC.
4. Each SNB TSO shall provide the SNB CCC the following capacity calculation inputs by the times established in the process description document:
 - a) GLSKs in accordance with Article 6;
 - b) individual list of CNECs in accordance with Article 7;
 - c) Contingencies for the CO dictionary in accordance with Article 7(2);
 - d) FRMs in accordance with Article 8; and
 - e) non-costly RAs in accordance with Article 9.
5. In addition to the capacity calculation inputs pursuant to paragraph 4, the SNB TSOs, or an entity designated by the SNB TSOs, shall send to the SNB CCC, for each DA CC MTU of the delivery day, the following additional inputs by the times established in the process description document:
 - a) the LTN
 - b) the LTC
 - c) The CGM used for the Core day-ahead capacity calculation process pursuant to Article 4(7) of Core DA CCM
 - d) The best forecasts of net positions and flows (hereafter referred to as NPF), defined and agreed pursuant to Article 19 of the CGMM which were considered for creation of CGM pursuant to paragraph 5(c).
6. When providing the capacity calculation inputs pursuant to paragraphs 4 and 5, the SNB TSOs shall respect the formats commonly agreed between the SNB TSOs and the SNB CCC in the business process document pursuant to paragraph 2, while fulfilling the requirements and guidance defined in the CGMM.



7. The SNB NTC capacity calculation shall be performed by the SNB CCC and the SNB TSOs according to the following procedure:
 - a) The CCC shall merge the inputs provided by SNB TSOs pursuant to paragraph 4;
 - b) The CCC shall determine the final list of CNECs for subsequent steps of the day-ahead capacity calculation pursuant to Article 10;
 - c) The CCC shall perform CC including optimisation of non-costly measures in accordance with Article 13 and 14;
 - d) The CCC shall forward the calculation outputs to the Cross-Regional Validation operator, in accordance with Article 15;
 - e) The CCC shall collect the results of the Cross-Regional Validation and make them available to the SNB TSOs.
 - f) The SNB TSOs shall perform the individual capacity validation in accordance with Article 15, considering all costly and non-costly measures;
 - g) The CCC shall collect the results from SNB TSOs individual validation and determine the final ATCs in accordance with Article 16;
 - h) The CCC shall provide the capacities for each SNB border to the SNB day-ahead market allocation platforms.

TITLE 3 CAPACITY CALCULATION INPUTS

Article 5 Common Grid Model

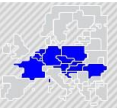
1. The CGM for the Core DA capacity calculation process prepared by the Core CCC shall be the basis for the SNB NTC capacity calculation. This CGM includes the D2CF IGM of all Core TSOs, CH and IT.

Article 6 Generation and Load Shift Key (GLSK)

1. SNB TSOs shall provide GLSKs for the purpose of SNB NTC capacity calculation in line with the principles outlined in Article 9(1)(2)(3)(5) of the Core DA CCM.

Article 7 Critical Network Element and Contingency (CNEC)

1. Each SNB 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.
2. Each SNB 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. 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 SNB TSO shall establish a list of CNECs by associating the contingencies established pursuant to paragraph 2 with the CNEs established pursuant to paragraph 1 following the rules established in accordance with Article 75 of the SO Regulation. Until such rules are established and enter into force, the association of contingencies to CNEs shall be based on each TSO's operational experience. An individual CNEC may also be established without a contingency.
4. Each SNB TSO shall provide to the SNB CCC a list of CNECs established pursuant to paragraph 3. The operational security limits of each provided CNEC shall respect the provisions given in Article 6(1) and 6(2) of Core CCM.
5. The CCC shall calculate the Fmax for each CNEC according to the definition given in Article 6(2) of Core CCM.

Article 8 Reliability margin methodology

1. For all CNECs used for calculation of cross-zonal capacities in accordance with Article 7, the SNB TSOs shall use FRM values in accordance with the applicable Core DA CCM in force.

Article 9 Remedial Action (RA)

1. SNB TSOs shall individually define the non-costly remedial actions (RAs) to be taken into account during NTC computation. SNB TSO's shall ensure that a non-costly RA made available for the day-ahead capacity calculation in the SNB region is not made available for other CCRs, in order to safeguard the consistency in its application and ensure operational security.
2. The optimised application of non-costly RAs in the day-ahead capacity calculation is performed in accordance with Article 13.

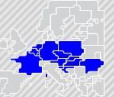
TITLE 4 DESCRIPTION OF THE SNB NTC CAPACITY CALCULATION PROCESS

Article 10 CNEC selection

1. The zone-to-zone PTDFs of all CNECs for the exchanges between FR and CH, DE/LU and CH and AT and CH are calculated by the SNB CCC for both directions using the CGM and GLSK pursuant to Article 5 and 6. This calculation is done per MTU, in line with the description given in article 11 of Core DA CCM.
2. Only SNB CNECs with a maximum zone-to-zone PTDF higher than 5%, in accordance with Article 15 of Core DA CCM, shall be taken into consideration for the NTC calculation.

Article 11 Consideration of non-SNB bidding zone borders

1. The SNB TSOs shall consider the electricity exchanges on bidding zone borders other than the SNB as fixed input to the day-ahead capacity calculation. These electricity exchanges, defined as best forecasts of net positions are incorporated in each CGM. They impact the F_{ref} and $F_{0,SNB}$ on all CNECs and thereby increase or decrease the RAM of the SNB CNECs in order for those CNECs to accommodate the flows resulting from those exchanges. Uncertainties related to the electricity exchanges forecasts are implicitly integrated within the FRM of each CNEC.



Article 12 Splitting Key

1. Each calculation corner to be computed by the SNB CCC pursuant to Article 14 shall have an associated Splitting Key per SNB bidding zone. The Splitting Key shall be used by the CCC to:
 - a. Define the share of net position shifting for each SNB bidding zone during the NTC calculation;
 - b. Determine the splitting of calculated NTCs for entire SNB to individual borders (AT<>CH, DE<>CH, FR<>CH).
2. The Splitting Key shall be determined by the SNB CCC for each SNB bidding zone before the start of the SNB NTC capacity calculation, as follows:
 - a. For a calculation corner that is given by the NPF, the SNB CCC shall determine the Splitting Key for each SNB bidding zone, based on the forecasted exchanges on SNB borders given by the NPF for each MTU, by applying one of the following formulas for each bidding zone:

$$SplittingKey_{BZ_{exporting,i}} = \frac{NP_{SNB,BZ_{exporting,i}}}{\sum NP_{SNB,BZ_{exporting}}}$$

$$SplittingKey_{BZ_{importing,i}} = -\frac{NP_{SNB,BZ_{importing,i}}}{\sum NP_{SNB,BZ_{importing}}}$$

Where,

- i – SNB bidding zone for which splitting factors is being calculated;
 - $NP_{SNB,i}$ - SNB Net position of SNB bidding zone i , for which splitting key is being calculated. It stems from forecasted exchanges between that zone and other SNB bidding zones, via SNB. If this value is positive, the bidding zone is exporting and first formula will apply, otherwise bidding zone is importing and second formula will apply;
 - $\sum NP_{SNB}$ – sum of all NP_{SNB} with same direction (exporting or importing) as SNB zone i , for which the splitting key is calculated.
- b. For a calculation corner that is not forecasted by the NPF, the Splitting Key shall be determined based on historical D-1 NTC values, as follows:
 - i. The CCC shall collect all the historical D-1 NTC values in the last 24 months per individual SNB border in the direction that is consistent with the corner to be computed;
 - ii. The CCC shall calculate the maximum absolute value of collected NTC for each individual SNB border;
 - iii. To obtain the Splitting Key for each SNB TSO bidding zone, the SNB CCC shall apply the mathematical procedure of paragraph 2.a) considering that forecasted exchanges on SNB borders are equal to the maximum NTC values determined in previous step.
3. For a calculation corner that is given by the NPF, SNB TSOs may impose upper and/or lower limits for splitting factors, based on annual statistical analysis, in order to cover uncertainties related with NPF by redistributing individual NTCs values in such a manner that will at the same time increase operational security and guarantee minimum NTC on each SNB. These upper and/or lower limits may be defined during or after the implementation phase of this methodology.



4. The methodology for the Splitting Key given in paragraph 2 shall be reviewed by SNB TSOs every twelve (12) months.

Article 13 Non-Costly Remedial Actions Optimisation

1. The Non-costly Remedial Actions Optimisation (NRAO) process coordinates and optimises the use and application of non-costly RAs pursuant to Article 9, with the aim of securing the evaluated NTC level and allow for further NTC increase according to the methodology defined in Article 14.
2. The NRAO shall be an automated, coordinated and reproducible optimisation process performed by the SNB CCC that applies non-costly RAs defined in accordance with Article 9.
3. The NRAO consists of the following objective function, variables and constraints:

- a. Effect of RAs to RAM can be calculated as:

$$\begin{aligned} \overrightarrow{RAM_{PATL}}^{after_RAO} + f(all\ RAs) &= \overrightarrow{RAM_{PATL}}^{before_RAO} \\ \overrightarrow{RAM_{TATL}}^{after_RAO} + f(all\ RAs_i) &= \overrightarrow{RAM_{TATL}}^{before_RAO} \quad \forall i \in preventive\ RAs \end{aligned}$$

Where,

- $\overrightarrow{RAM_{PATL}}^{after_RAO}$ is the Remaining Available Margin (RAM) based on the Permanent Admissible Transmission Loading (PATL) after Remedial Action Optimization (RAO)
- $\overrightarrow{RAM_{PATL}}^{before_RAO}$ is the RAM based on the PATL before RAO
- $f(all\ RAs)$ is the effect of a set of RAs on the considered network elements.
- $\overrightarrow{RAM_{TATL}}^{after_RAO}$ is the RAM based on the Temporary Admissible Transmission Loading (TATL) after RAO.
- $\overrightarrow{RAM_{TATL}}^{before_RAO}$ is the RAM based on the TATL before RAO.

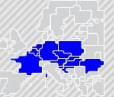
- b. the objective function of the NRAO is to maximise the smallest RAM of all limiting CNECs:

$$\min(\overrightarrow{RAM_{PATL_i}}^{after_RAO}) \rightarrow to\ be\ maximized \quad \forall i \in set\ of\ CNECs$$

- c. the optimisation process iterates over switching states (i.e. activated or not-activated) of topological measures and Phase Shifting Transformer (PST) tap positions in order to maximise this objective. Preventive RAs may jointly be associated with all CNECs, whereas curative RAs may be optimised independently for each contingency. In the situation where all RAs are preventive and fully shared with all CNECs, effect of different RAs on the RAM can be formulated as:

$$\begin{aligned} diag(1) \cdot \overrightarrow{RAM}^{after_RAO} + PSDF \cdot \overrightarrow{Tap} + \sum_{j \in Topo} topo_activation_j (\Delta PSDF_j \cdot \overrightarrow{Tap} + \Delta \overrightarrow{LF_j}) \\ = \overrightarrow{RAM}^{before_RAO} \end{aligned}$$

Where,



- $\Delta \vec{LF}_j$ is change in CNEC load flow because of activation of topological RA j ,
 - $PSDF$ and $\Delta PSDF_j$ are phase shifting distribution factors of PSTs and delta phase shifting distribution factors of PSTs after the activation of topological RA j ,
 - $\vec{Tap}$ is integer variable of PST tap positions after the NRAO,
 - j is the index of a topological RA,
 - $topo_activation$ is binary variable of activated topological RAs after the NRAO.
- d. NRAO ensures that all PSTs from the same PST group (i.e., parallel PSTs) have same tap position after the NRAO, and that the available range of tap positions of each PST is respected;
- e. NRAO uses different penalization factors for PSTs and topological RAs in order not to activate RAs if it doesn't contribute to minimum RAM enlargement for more than specified by penalization factor;
- f. NRAO respects maximum number of curative RAs activations:
- i. Total number of curative activations per contingency;
 - ii. Total number of curative activations per TSO;
 - iii. Maximum number of curative activations per contingency per TSO;
 - iv. Maximum number of curative PST activations per contingency per TSO;
 - v. Maximum number of curative topological RA activations per contingency per TSO.
4. The non-costly RAs applied at the final secure NTC level in accordance with Article 14 shall be provided to all SNB TSOs pursuant to Article 18 and shall be taken as an input to the Cross-Regional validation process.

Article 14 NTC Calculation

1. The SNB CCC shall perform the NTC calculation always for both full import and full export corner scenarios. In case NPF on SNB borders indicate a transit pattern, NTC calculation shall also be performed for this scenario.
2. To determine the maximum NTC on all SNB borders, for each scenario, an iterative procedure shall be applied where the magnitude and distribution of initial SNB exchanges given in the CGM is modified and assessed in a stepwise manner.
 - (a) The distribution of each SNB border given in the CGM is adjusted according to the Splitting Key agreed among SNB TSOs in Article 12.
 - (b) The shift magnitude for each SNB border, with respect to the initial CGM level, is given by distributing the desired overall SNB exchange increase/decrease, according to lit. a).
 - (c) Finally, the new exchange for each SNB border is reflected in the CGM by modifying the initial generation of each SNB bidding zone for the amount determined in lit. b) according to the respective GLSK.
3. In each iteration, the RAM for each CNEC is computed to determine the feasibility of the studied exchange level:

- (a) To address the requirement of Article 16(8) of the Regulation (EU) 2019/943, the SNB TSOs shall ensure that the RAM for each CNEC determining the cross-zonal capacity is never below a minimum RAM, except in cases of validation reductions as defined in Article 15.
- (b) Additionally to previous paragraph, the minimum RAM available for SNB trade on each CNEC shall be higher than 20% of F_{max} .
- (c) RAM is thus calculated as follows:

$$F_{SNB} = PTDF_{z2z,SNB} * NTC_{SNB}$$

$$F_{0,SNB} = F_{ref} - F_{SNB}$$

$$F_{0,all} = F_{ref} - PTDF_{all} * NP_{all}$$

$$F_{uaf} = F_{0,SNB} - F_{0,all}$$

$$RAM_{init} = F_{max} - FRM - F_{ref}$$

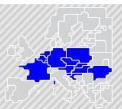
$$AMR = \max(R_{AMR} * F_{max} - F_{uaf} - F_{SNB} - RAM_{init}, 0.2 * F_{max} - F_{SNB} - RAM_{init}, 0)$$

$$RAM = RAM_{init} + AMR$$

with

NTC_{SNB}	Exchange level in each SNB border
$PTDF_{z2z,SNB}$	power transfer distribution factor matrix for all SNB borders (zone-to-zone)
F_{SNB}	flow per CNEC induced by a certain SNB exchange level
F_{ref}	flow per CNEC in the CGM
$F_{0,SNB}$	flow per CNEC in a situation without any commercial exchanges between bidding zones within SNB
$PTDF_{all}$	power transfer distribution factor matrix for all bidding zones in Continental Europe and all SNB CNECs (zone-to-slack)
NP_{all}	total net positions per bidding zone in Continental Europe included in the CGM
$F_{0,all}$	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
F_{uaf}	flow per CNEC assumed to result from commercial exchanges outside SNB
F_{max}	maximum admissible power flow
FRM	flow reliability margin
R_{AMR}	minimum RAM factor
RAM_{init}	RAM before adjustment to minimum RAM per CNEC
RAM	RAM per CNEC

4. In case of negative RAM, a NRAO is performed in accordance to Article 13 to attempt securing the studied exchange level using the remedial actions according to Article 9(1), and the RAM is re-computed as in paragraph (3(c)), based on the updated F_{ref} (after NRAO).



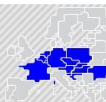
5. After NRAO, in case RAM is positive for all CNECs, exchange level is considered secure and can be further increased as given in paragraph 2. Otherwise, exchange level is considered unsecure, and a lower exchange level shall be studied.
6. The calculation ends when the difference between the found secure and not secure exchange level is below 50MW. The calculated NTCs corresponds to the highest obtained secure exchange level.
7. The SNB CCC shall then distribute the final NTC per SNB border, by making use of the Splitting Keys agreed among SNB TSOs, to obtain the NTC domain with respect to the calculated corner.
8. Once all corners in pursuant to paragraph 1 are computed by the SNB CCC following the methodology described from paragraphs 2 to 7, the SNB CCC shall determine the final NTC domain before validation by intersecting all calculated NTC domains pursuant to paragraph 7 for each MTU, while ensuring that final NTC domain respects provisions given in paragraphs 3a) and 3b)
9. SNB TSO's may insert a maximum cap to the final calculated NTCs, to rule out unrealistic capacity values. The value shall be agreed among SNB TSOs and respective NRAs. The resulting NTCs must comply with the provisions given by paragraph 3.a) and 3.b) for all CNECs.

Article 15 Validation of NTCs

1. The SNB NTCs calculated pursuant to Article 14 shall be validated within the Cross-Regional Validation process. The SNB CCC shall provide the following outputs of the SNB NTC calculation as inputs to the Cross-Regional Validation operator:
 - a) Final NTC domain before validation pursuant to Article 14(8) and 14(9).
 - b) SNB CNECs considered in the SNB day-ahead capacity calculation.
 - c) SNB non-costly RAs considered in the SNB day-ahead capacity calculation
 - d) Set of non-costly RAs determined by the NRAO module associated to the NTC values that are provided for Cross-Regional Validation
2. For the opposite direction, the respective NTCs from the final NTC domain before validation pursuant to Article 14(8), shall be put forward directly by the SNB CCC to the SNB TSO's individual validation.
3. In the individual validation, SNB TSO's may reduce the NTCs in case of unforeseen issues and grid security risks in line with the principles of the Core individual validation as set out in Article 20(5) of the DA CCM. SNB TSOs shall consider all available costly and non-costly RAs to ensure operational security.
4. SNB TSOs may provide the necessary reduction value to the whole SNB NTC (the reduction shall be split across the different borders by the SNB CCC by using the splitting key) or just the reduced NTC on its respective border.
5. In case of reduction, justification on the individual validation shall be provided by the SNB TSO to the SNB CCC.

Article 16 Consideration of long-term products

1. Before the SNB CCC submits the NTCs to the SNB day-ahead allocation platform, the long-term (LT) products need to be considered and removed accordingly. The SNB CCC shall deduct the long-term



allocated capacities (LTAs) and the existing long-term contracts (LTCs) from the NTCs to obtain the ATCs. In case of negative ATCs, ATCs shall be set to 0 by the SNB CCC for that MTU.

Article 17 Fallback procedure

1. The calculation of default values shall be based on long-term allocated capacities and long-term contracts. The capacities on the bilateral SNB bidding zones shall be defined based on the LTA and LTCs for each oriented bidding zone border, increased by the minimum of the two adjustments provided by the TSO(s) on each side of the bidding zone border. The adjustment values are positive values given by TSO on each SNB bidding zone border to enlarge the default values beyond the LTAs and LTCs.
2. In case of failure during the SNB NTC process, the Cross-Regional Validation process shall not be performed and the default NTC values shall be forwarded by the SNB CCC to the SNB TSOs for the SNB NTC individual validation as per Article 15(3).

TITLE 5 DATA PROVISION

Article 18 Publication of data

1. The SNB TSOs shall publish at least the following CC relevant data items, on a daily basis at latest one hour before the day-ahead market gate closure.
 - a. For each market time unit
 - i. Information on what corners were calculated
 - ii. NTC values per border of the final NTC domain (as a result of the intersection of all the calculated NTC domains);
 - iii. Optimised non-costly remedial actions consistent with the final NTC domain
 - b. For each market time unit and SNB bidding zone
 - i. Forecasted net position from CGM
 - ii. Splitting Key
 - iii. Vertical load from CGM
 - iv. Production from CGM
 - v. Final net position
 - c. For each market time unit and limiting CNEC:
 - i. Timestamp of the associated hour;
 - ii. Clear name and EIC code of both CNE and Contingency.
 - iii. Maximum flow of a CNE (F_{max});
 - iv. Reference flow in base case scenario (F_{ref});
 - v. Flows assuming no cross-border exchange ($F_{0,all}$)
 - vi. All cross-border flows outside SNB (F_{uaf})
 - vii. Flows without SNB exchanges ($F_{0,SNB}$)
 - viii. Flows corresponding to the studied SNB exchange level (F_{SNB})
 - ix. Adjustment for Minimum RAM (AMR)
 - x. Zone to Zone PTDF for all the different SNB borders;



- xi. Part of MACZT within SNB (MCCC);
 - xii. Part of MACZT outside SNB (MNCC);
 - xiii. Total MACZT;
 - xiv. Flow reliability margin (FRM)
 - xv. Remaining available margin (RAM);
- d. For each corner calculation, the items from paragraphs b, c and d shall be provided along with the information on the optimised non-costly remedial actions consistent with the final NTC values per corner calculation.
- e. Long-term nomination on each bidding zone border;
- f. Every six months, the publication of an up-to-date static grid model by each SNB TSO.
2. The SNB NRAs may request additional information to be published by the TSOs. For this purpose, all SNB NRAs shall coordinate their requests among themselves. Each SNB TSO may decide not to publish the additional information, which was not requested by its competent NRA.

TITLE 6 IMPLEMENTATION

Article 19 Timescale for implementation

1. The SNB TSOs shall continue to monitor the effects and the performance of this methodology. This will be done under dedicated internal and external parallel run as well as in continuous manner once the methodology is operational. The monitoring criteria will be defined in alignment with NRAs and other stakeholders. The SNB TSOs shall 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 an annual report.
2. The SNB TSOs aim to implement this methodology as of forty-two months after the implementation of the Core DA capacity calculation methodology in accordance with Article 28(3) of the Core DA CCM.
3. The deadlines defined in the above Article 19(2) can be modified on request of the SNB TSOs to their NRAs.
4. In line with Article 13(2) of the DA CCM, this methodology shall be reviewed by all Core TSOs regularly and these reviews shall be followed by a validation by all relevant NRAs. A next submission for validation shall be done 12 months after the first validation of all relevant NRAs. Afterwards, each subsequent submission shall be done 24 months after the previous validation of all relevant NRAs.
5. The TSOs shall publish this methodology without undue delay after the validation of SNB and Core NRAs.