ACER
Agency for the Cooperation of Energy Regulators

Capacity Calculation Methodologies Redispatching and Countertrading Methodologies

State of Play

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TERMS

- **CCM** – Capacity Calculation Methodology
- **RDCT CM** – Redispatching and countertrading coordination methodology
- **RDCT CSM** – Redispatching and countertrading cost sharing methodology

CCM Status: 3 / 10 Methodologies approved

Status	Region	Comment
Approved	• NORDIC (12.07) • GR-IT (12.07) • IU (23.07)	
Referred to ACER	• CORE (19.08)	
Extension	• HANSA (RfA 19.07) • BALTIC (until 23.10)	6+4 month to issue RfA 2+3 month to approve amended proposal
2nd Request for Amendment	• SWE (13.07) • CHANNEL (27.07)	The Agency does not share the view that the 2nd RfA is a legally valid option
Delayed process	• Italy North - first TSO proposal (24.05) • SEE – amended proposal (27.08)	Initial delay following a request to clarify the legal basis

RDCT CM and CSM Status: 3 CCRs failed

Status	Region	Comment
First proposal	• NORDIC (16.03) • HANSA (04.04) • GRIT (19.03) • SWE (16.03) • IU (16.03) • CHANNEL (16.03) • BALTIC RDCT CM (19.03)	NRA opinion (approval or request for amendment) expected in the autumn.
Delayed process	• Italy North - first TSO proposal (14.05)	Initial delay following a request to clarify the legal basis;
	• CORE, failure to deliver on both methodologies	On-going discussions involving EC, ACER on the next steps.
	• SEE, BALTIC – failure to deliver RDCT CSM	On-going discussions involving EC, ACER on the next steps.

Main aspects of CCM (1/2)

- CORE, NORDIC apply Flow-based – other regions apply CNTC
- Level of complexity :
  - » differences in quality from the more detailed (NORDIC) and less detailed (e.g. HANSA, GRIT);
  - » CNTC methods generally of lower quality than FB.
- Non discrimination:
  - » most methodologies simply refer to the general principle in point 1.7 of Annex I to Regulation (EC) No 714/2009 but without further explanation as to how this principle is actually implemented;
  - » The Baltic region promotes a voluntary, transparent approach to long-term solutions for short term deviations.
- Exclusion of non-significant lines
  - » Hansa, Baltic do not provide a selection method nor a sensitivity threshold;
  - » Other regions define a sensitivity threshold (generally 5%).
- Use of remedial actions in capacity calculation
  - » Most regions do not differentiate between costly and non-costly remedial actions, and do not set an obligation for TSOs to use remedial actions;
  - » Channel and IU set such an obligation but only for 'relevant available' **non-costly** remedial actions.

Main aspects of CCM (2/2)

Topic	Baltic	Channel	GRIT	HANSA	IT NORTH	IU	NORDIC	SEE	SWE
Capacity Calculation and non-discrimination - insufficient level of detail **e.g. CNE selection, timing of calculation**	■		■	■	■	■		■	■
Reliability Margin - insufficient level of detail	■			■	■			■	
Operational Security Limits - insufficient level of detail		■		■		■	■		
Remedial Actions – insufficient level of detail **e.g. Cross-border maximisation, Cost Benefit analysis**	■	■		■					
Allocation constraints not properly listed and justified					■			■	
GSK rules not resulting in harmonisation	■	■		■	■	■		■	
Non binding implementation timeline		■		■		■	■	■	■

Main aspects of RDCT CM

- **The level of detail of all methodologies submitted is insufficient.** All requirements in Article 35 of CACM should be detailed.
- **Scope :** all constraints of cross-border relevance should be included, and not just CNECs included in CCM.
- Definition of "Cross-border relevant" :
  - A remedial action is cross-border relevant if (and only if) it significantly impacts interconnectors or neighbouring grids (physical test, similar to PTDF threshold)
  - A constraint is cross-border relevant if it is significantly affected by allocated or loop flows (physical test) or it cannot be efficiently solved relying only on internal (i.e. non-cross border relevant) remedial actions (economic efficiency test)
- Collection of all available remedial actions and optimisation
  - The RSC optimises on the basis of all available remedial actions communicated by TSOs;
  - To that end, TSOs submit RAs in a way that allows optimisation, e.g. up- and down- generation separately;
- Communication
  - The proposal must clearly define communication channels between generation units and loads, TSOs and RSC.

Agency's key messages

- CNTC methodologies must be of similar detail as FB methodologies (Article 29(8) should be respected)
- ACER Recommendation on internal congestions and loop flows should be respected
- Deviations from ACER Recommendation should be justified and temporary – long term solutions must be developed to terminate the deviations
- The redispatching and countertrading cost sharing should apply the polluter-pays principle – loop flows are the main polluters
- Implementation timelines should be more ambitions, binding and compatible with the objective of pan-EU harmonised methodologies by 31 December 2020, as set in CACM Art. 21(4)

THANK YOU!

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BALTIC (amended proposal) (1/2)

- **Reliability margin (Art. 7) - methodology not sufficiently detailed:**
  - » Missing statistical analysis of the differences between predicted and observed flows, namely a probability distribution including input data, process and methodology as a first step;
  - » Missing second step - risk level definition, i.e. probability threshold below which flow levels will not be considered.
- **Operational security limits: Article 3 is linked to SOGL;**
- **Allocation constraints should be listed and justified;**
- **Generation Shift Keys (Art. 4): no harmonisation** - sets the use of proportional GSKs as a principle but offers the possibility to deviate from this principle without constraint beyond communication (Art. 4(1)).

BALTIC (amended proposal) (2/2)

- **Remedial actions (Art. 5),** none of the details required in Article 25 of the CACM Regulation.
  - » no methodology, no differentiation between the treatment of costly and non-costly remedial action – merely a definition of the two types of remedial actions. No consideration of cost efficiency. No detailed list of remedial actions.
- **Validation of cross-zonal capacity (Art. 10):** TSOs reducing Cross-Zonal Capacity (Art. 10.2) should be obliged to justify why Capacity calculators were not in a position to properly assess the constraint in the first place, namely which of the inputs to the methodology was modified between the calculation and the validation phase.
- **Non-discrimination related to Day ahead and intraday capacity calculation (Art. 6), i):** the proposal does not comply with Art. 29 of the CACM Regulation, in particular its paragraph (8); ii) the proposal does not include any mathematical description required by Article 21(1)(b)(i); iii) the proposal does not include rules for avoiding undue discrimination between internal and cross-zonal exchanges to ensure compliance with point 1.7 of Annex I to Regulation (EC) No 714/2009; and iv) the timings of calculation should be specified.

CHANNEL (amended proposal) 1/3

- **Cross-zonal capacities for the intraday market (Art.6):** the text should clarify why detailed capacity calculation is necessary in the absence of a planned or unplanned outage, instead of assuming that the NTC is equal to the MPTC.
- **Selection of critical network elements (CNE) (Art. 7): the rules for the selection of the CNE will be the ones in CORE when those are known.** See relevant comments for the CCR CORE. On non-discrimination related to Day ahead and intraday capacity calculation (Art. 7, 15 and 16), i) the methodology is linked to CORE (see relevant CORE comments); and ii) the timings of calculation should be specified.
- **Operational and security limits - Art. 9 is insufficiently detailed** and in particular does not describe how contingencies are selected. The text should clarify whether there is a link between the maximum permanent allowable current and MPTC.
- **Generation Shift Keys (Art. 11) - no calculation methodology** – no harmonisation. Lists approaches per country. Lists current practices.

CHANNEL (amended proposal) 2/3

- **Remedial actions (Art. 12) - does not describe how remedial actions will be used in order to maximise cross-zonal capacities.** The decision to use costly remedial actions is not explicitly driven by a cost-benefit analysis (Art. 12.2).
- Inputs for Day-ahead (Art. 13) and Intraday (Art.14) Capacity Calculation, Art. 13(4) and Art. 14(3) state that coordinated capacity calculators will merge Individual Grid Models (IGMs). This contradicts the CACM regulation stating that all IGMs are merged at EU level and not at the level of the Capacity Calculation Region.
- **Coordinated Net Transmission Capacity process (Art. 17), the CGM base case is mentioned but not defined.** From the context, the base case may introduce a maximum export value (Art. 17(1)). This value is assessed in the context of a contingency analysis (Art. 17(2)) to identify whether it is compatible with network constraints, or needs to be reduced in order to accommodate those. **The text should clarify i) how maximum import and export values are calculated; ii) if those maximum import and export values encompass all borders or are divided among each border and iii) similarly, when a constraint is applied, how it is divided among the bidding zone borders. In addition, Art. 17 does not include the steps mentioned in article 29(8) of the CACM regulation (see the general remarks above)**

CHANNEL (amended proposal) 3/3

- **Implementation of reductions of the Import/Export (Art. 18) – not enough details -** does not explain what a binary approach consists in, the nature of the reduction resulting from such approach, and how it should be split among interconnectors.
- **Implementation of a shift of import/export (Art. 19),** from the current description, it is **not clear whether and where such step fits in a capacity calculation methodology.**
- **N-1 security assessment of maximum import/export** (Art. 20), Art. 20(2) sets deviations from the hourly recalculation. **Not strictly in line with the requirement from the CACM regulation (Art. 14.2) where capacity calculation must performed for all the market time units.** Further, according to Art. 21(3) of the CACM regulation, deviations from 24 MTU calculation should be part of fall-back procedures in capacity calculation.
- Exceptional measures to protect system security (Art. 24(7)) should be allowed “if and only if” the availability of the interconnector drops below the already allocated capacities (“AAC”).
- Art. 28(4) offers the possibility to postpone implementation indefinitely.

CORE (amended methodology)

- **The Agency will discuss with CORE NRAs detailed views**
- In general, **the text reflects the current situation.** The Agency would reverse the logic of the text, according to its recommendation, by setting the ultimate goal as a default option and the transitory steps as deviations.
- As a principle: ACER Recommendation on internal congestions and loop flows should be respected: Deviations from ACER Recommendation should be justified and temporary – long term solutions (investment and bidding zone review)
- Second look at the approach to allocation constraints and GSK.

GRIT (approved methodology)

- Methodology improved compared to the first proposal, still about 30% improvements needed to improve clarity, enforceability
- No clarity on the treatment of DA leftovers at IDCZGOT
- Discriminations between internal and cross-zonal exchanges adressed by the application of:
  a) A proper Bidding Zones configuration;
  b) A CNEC identification methodology
- The Italian TSO can apply upper limits to TTC values – without explaining legal basis – are allocation constraints allowed when the operational security limits cannot be translated into Fmax?
- TTC calculation is better, but still unclear. No connection between the steps in the algorithm and the starting/final TTC.

HANSA (initial proposal) 1/2

- **Advanced Hybrid Coupling (recital 11 and Art. 2) - allocation constraints may be applied only among the bidding zone borders within a single Capacity Calculation Region** and not among the bidding zone borders belonging to different CCRs;
- **Critical network elements (CNE) selection (recital 14) - rules for the selection of the CNE are not sufficiently clear** to guaranty the application of the ACER recommendation;
- Mathematical description of the computation (Art. 3) - **the Total Transfer Capacity computation is not described with a sufficient level of detail,** in particular concerning the AC lines;
- **Reliability margin (Art. 4) - the methodology is not sufficiently detailed.** The methodology defines steps but with little or no additional detail compared to the wording of the Code;
- **Operational security limits and allocation constraints - the proposal in Article 5 needs to be improved.** The proposal is open, due to i) a conditionality to those contingencies of CORE and Nordic regions (Art. 5(3)), and ii) the possibility to re-evaluate operational security limits, without sufficient detail about the context of this re-evaluation (Art. 5(4), where the use of “but not limited to” results in a total freedom for re-evaluation).

HANSA (initial proposal) 2/2

- **Generation Shift Keys (Art. 6) - the proposal does not details any calculation methodology;**
- **Regarding remedial actions (Art. 7), the methodology is not detailed.** It does not describe how remedial actions will be used in order to maximise cross-zonal capacities;
- **Regarding non-discrimination related to Day ahead and intraday capacity calculation** (Art. 8 of the methodology proposal and Art. 4.1 of the supporting document) i) the methodology does not comply with Art. 29, in particular its paragraph (8); ii) the methodology consists in general principles translated in general mathematical equations, but does not explain how the various elements of the equation are determined; iii) the methodology does not include rules for avoiding undue discrimination between internal and cross-zonal exchanges to ensure compliance with point 1.7 of Annex I to Regulation (EC) No 714/2009; and vi) the timings of calculation should be specified;
- **Implementation timeline (Art. 13), should be clarified** to mention when the methodology will be implemented. At the moment it is conditioned to the adoption of the methodology in the CORE region.

ITALY NORTH (initial proposal) 1/2

- Reliability Margin defined at 99 percentile, whereas in GRIT at 0 percentile (i.e. zero RM):
- Not clear whether (T)RM is calculated per border or for the whole CCR?
- Not clear how the probability function for RM calculation is calculated
- Discrimination between internal and cross-zonal exchanges only adressed by 5% rule of significance;
- No clarity on Italian voltage and dynamic stability and their transformation to allocation constraints - no methodology.
- Terms used in GSK are not defined, e.g. the GSK Reserves
- No DA and ID capacity calculatipn in the export direction. Foresseen for future for „at least one Italian border“.

ITALY NORTH (initial proposal) 2/2

- Allocation constraints impact TTC calculation – CACM requires that they are independent from NTC calculation – allocation constraints represent constraints that cannot be considered in NTC calculaiton.
- Two years implementation time to use the CGM after it has been implemented.
- Undefined TTC calculation:
  - Calculation of TTC: is it per border or for whole IT NORTH. If it is for the whole IT NORTH, how is it split per border?
  - If calculation is per whole CCR, not clear how GSKs are defined for whole import/export area – what is the share for each exporting TSO?
  - How is the interdependency between borders taken into account?
  - It refers to splitting factors, but they are not defined.
- Not clear how much capacity is offered at IDCZGOT

IU (approved methodology)

- **Operational and security limits - Art. 8 defines responsibilities, but no methodology**. In addition, Art. 8(b) and 8(c) refer to contingencies "when applicable", without further details of who deems that they are applicable, under which conditions, and justification.
- **Generation Shift Keys (Art. 10), the proposal does not detail any calculation methodology. It is unclear whether the document results in harmonisation**: Art. 10(2) and Art. 10(3) apply the same principle separately to SEM and Great Britain GSK, while Art. 10(4) lists the possible approaches under which GSKs will be developed. The current text allows diverging approaches within the region. The final definition of GSK is conditioned to a public consultation which is currently not associated with a timeline.
- Regarding non-discrimination related to Day ahead and intraday capacity calculation (Art. 4, 14 and 15), the articles provide no detail on the calculation: i) the methodology does not comply with Art. 29, in particular its paragraph (8); ii) the methodology does not include any mathematical description are required by Article 21(1)(b)(i); iii) the methodology does not include rules for avoiding undue discrimination between internal and cross-zonal exchanges to ensure compliance with point 1.7 of Annex I to Regulation (EC) No 714/2009; and iv) the timings of calculation should be specified.
- **Art. 26(5) offers the possibility of indefinite postponing of the implementation**

NORDIC (approved methodology)

- Operational security limits (Art.4) are not explicitly defined – only with reference to an operational security analysis;
- Avoidance of discrimination (Art. 8) – the steps are there but mid-term and long-term steps are non-binding;
- The implementation timeline is voluntary.

SEE (amended proposal) (1/2)

- Methodology is not sufficiently detailed and gives TSOs too many options.
- RM:
  - » No percentile for the probability distribution defined;
  - » How is probability distribution calculated?
  - » Transitory period not clear.
- Non-discrimination: monitoring the operational security limits and contingencies on network elements significantly influenced by cross-zonal power exchanges.
- **Allocation constraints allowed in general but no clarity and methodology on them**
- **For GSK, the text does not result in harmonisation.**

SEE (amended proposal) (2/2)

- **The coordinated capacity calculator is to merge the individual grid model provided by each TSO of the SEE region. This contradicts the CACM regulation** stating that all IGMs are merged at EU level and not at the level of the Capacity Calculation Region.
- No detail and methodology on TTC calculation – everything is missing
- It is unclear how much capacity is offered at IDCZGOT.

SWE (amended proposal)

- Non-discrimination: monitored elements inside a bidding zones that are significantly taking part in the cross-zonal exchange.
- 5% threshold for selecting relevant CNECs
- **The core of the methodology (i.e. NTC calculation) is a description of the process rather than a mathematical description** (with inputs, calculation process and outputs) – GR-IT methodology has at least the picture with the calculation process
- **Not clear what happens at IDCZGOT with DA leftovers.**
- **Unclear implementation timelines for reliability margins, undefined transitory period.**
- **Undefined timings for intraday CC**, first calculation, second calculation.