

CCR Nordic:
Methodology for coordinated
redispatching and countertrading

-Explanatory Document

List of abbreviations:

CACM	Capacity Allocation and Capacity Management Guideline
SOGL	System Operation Guideline
CCM	Capacity Calculation Methodology
IGM	Individual Grid Model
CGM	Common Grid Model
CRC	Coordinated Redispatching and Countertrading
CCR	Capacity Calculation Region
CCC	Coordinated Capacity Calculator
NEMO	Nominated Electricity Market Operator
GCT	Gate closure Time
TSO	Transmission System Operator
RD	Redispatching
CT	Countertrading
DA	Day Ahead timeframe
ID	Intraday timeframe
RT	Real Time
RPM	Regulating Power Market
MOL	Merit of Order List
RA	Remedial Actions
NRA	National Regulatory Authorities

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1. Introduction

The Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on Capacity Allocation and Congestion Management (hereafter referred to as “CACM Regulation”) sets out rules to ensure optimal use of the transmission infrastructure, operational security and optimizing the calculation and allocation of cross-zonal capacity.

To implement the CACM Regulation, the TSOs are required to develop a common methodology for coordinated redispatching and countertrading (hereafter referred to as “CRC Methodology”). Pursuant to Article 35 of the CACM Regulation, all TSOs in the CCR Nordic have established a proposal for coordinated redispatching and countertrading. This document provides additional information and an explanation of the proposal.

The proposal for the CRC methodology in CCR Nordic has to be submitted for approval to all national regulatory authorities (hereinafter “NRAs”) within CCR Nordic no later than 16 months after the regulatory approval of capacity calculation regions referred to in Article 15 of the CACM Regulation. The date of submission of this proposal for NRA approval is therefore to be 17 March 2018 at the latest. Moreover, the proposal shall be subject to consultation in accordance with Article 12 of the CACM Regulation.

In regards to Norway, the CACM Regulation is not yet implemented in Norwegian legislation due to Regulation (EC) No 714/2009 not yet being implemented. . However this document is written under the assumption that Norway will implement the CACM Regulation prior to the implementation deadline for this methodology.

This document is built up as follows. Chapter 2 describes the legal references and requirements relevant for this proposal. The legal context is used to interpret the scope of this proposal and notably what “redispatching” and “countertrading” is to cover. Chapter 3 focuses on explaining current application of RD and CT and chapter 4 explains the essence of the proposal and the foreseen implementation. Lastly, the results of the consultation will be covered in chapter 5 in the final proposal submitted to NRAs for approval.

2. Legal references and requirements

This chapter provides the legal background for the CRC methodology, including the TSOs interpretation of article 35, which are the central legal framework for the CRC Methodology. Thus, the document and the proposed methodology should be read and understood according to this interpretation.

Except articles 35, the legal framework for RD and CT is also defined by other Guidelines and Methodologies, mainly within CACM, Nordic CCM and SO GL. The TSOs interpretation on these GL and Methodologies is also included below.

2.1 Legal requirements and their interpretations in article 35 of CACM

Article 35 of CACM: Coordinated redispatching and countertrading

1. Within 16 months after the regulatory approval on capacity calculation regions referred to in Article 15, all the TSOs in each capacity calculation region shall develop a proposal for a common methodology for coordinated redispatching and countertrading. The proposal shall be subject to consultation in accordance with Article 12.

TSO Interpretation: The CRC methodology is developed in cooperation by the TSOs in CCR-Nordic and Statnett. According to CACM, the CRC Methodology proposal shall be consulted with stakeholders, including the relevant authorities of each Member State before handed over to Nordic NRAs for approval. The consultation shall last for a period of not less than one month. The TSOs are obliged to consider the views of the Stakeholders.

2. The methodology for coordinated redispatching and countertrading shall include actions of cross-border relevance and shall enable all TSOs in each capacity calculation region to effectively relieve physical congestion irrespective of whether the reasons for the physical congestion fall mainly outside their control area or not. The methodology for coordinated redispatching and countertrading shall address the fact that its application may significantly influence flows outside the TSO's control area.

TSO Interpretation: The TSOs are required to in a coordinated manner make sure that RD and CT resources are available to manage physical congestions that are influencing cross border flows irrespective of the source of the overload. The TSOs should provide the most efficient solution to relieve congestions, from an operational and economical point of view, in order to relieve congestions in the most efficient manner. The TSOs are also required to assess potential influence on neighbouring CCRs in a coordinated and consistent manner.

2.2 Related legal requirements affecting the scope of article 35 in CACM

SO GL Article 23.2 and 23.5: Preparation, activation and coordination of remedial actions

2. When preparing and activating a remedial action, including redispatching or countertrading pursuant to Articles 25 and 35 of Regulation (EU) 2015/1222, or a procedure of a TSO's system defense plan which affects other TSOs, the relevant TSO shall assess, in coordination with the TSOs concerned, the impact of such remedial action or measure within and outside of its control area, in accordance with Article 75(1), Article 76(1)(b) and Article 78(1), (2) and (4) and shall provide the TSOs concerned with the information about this impact.

TSO Interpretation: Paragraph 23(2) ensure coordination between TSO before committing a Remedial action with cross border relevance

5. Where constraints have only consequences on the local state within the TSO's control area and the operational security violation does not need to be managed in a coordinated way, the TSO responsible for its management may decide not to activate remedial actions with costs to relieve them.

TSO Interpretation: Paragraph 23(5) enables TSOs to use costly RC and CT inside its control area if it does not affect adjacent TSOs.

SO GL Article 78.1(b), 78.2(a), 78.4: Regional operational security coordination

1. Each TSO shall provide the regional security coordinator with all the information and data required to perform the coordinated regional operational security assessment, including at least:

- (a) the updated contingency list, established according to the criteria defined in the methodology for coordinating operational security analysis adopted in accordance with Article 75(1);
- (b) the updated list of possible remedial actions, among the categories listed in Article 22, and their anticipated costs provided in accordance with Article 35 of Regulation (EU) 2015/1222 if a remedial action includes redispatching or countertrading, aimed at contributing to relieve any constraint identified in the region; and

TSO Interpretation: According to paragraph 1(b) for all identified constraints in the national grid each TSO needs to provide a list with RD and CT that can relieve each identified constraint and this list needs to be sent together with the IGM to the CCC.

2. Each regional security coordinator shall:

- (a) perform the coordinated regional operational security assessment in accordance with Article 76 on the basis of the common grid models established in accordance with Article 79, the contingency list and the operational security limits provided by each TSOs in paragraph 1. It shall deliver the results of the coordinated regional operational security assessment at least to all TSOs of the capacity calculation region. Where it detects a constraint, it shall recommend to the relevant TSOs the most effective and economically efficient remedial actions and may also recommend remedial actions other than those provided by the TSOs. This recommendation for remedial actions shall be accompanied by explanations as to its rationale;

4. When a TSO receives from the relevant regional security coordinator the results of the coordinated regional operational security assessment with a proposal for a remedial action, it shall evaluate the recommended remedial action for the elements involved in that remedial action and located in its control area. In so doing, it shall apply the provisions of Article 20. The TSO shall decide whether to implement the recommended remedial action. Where it decides not to implement the recommended remedial action, it shall provide an explanation for this decision to the RSC. Where the TSO decides to implement the recommended remedial action, it shall apply this action for the elements located in its control area provided that it is compatible with real-time conditions.

CCM Article 8.1, 8.2 and 8.3: Methodology for determining remedial actions to be considered in capacity calculation

1. Each TSO shall individually define the remedial actions (hereafter referred to as "RA") to be applied in capacity calculation. The applied remedial actions shall be clearly described, communicated to other TSOs and, where appropriate, coordinated between all TSOs.

TSO Interpretation: Paragraph 8(1) ensure that each TSO is responsible to define which RAs to be used in capacity calculation

2. Each TSO shall take into account RA in capacity calculation to allow for an increase in remaining available margin (hereafter referred to as "RAM") on grid constraints or cross-zonal borders. This is reflected in the equation in Article 15(1) of this Proposal. Costly RAs may only be applied in the case that they are available, more efficient, and do not compromise operational security, in accordance with Article 21(1)(b)(iv) of the CACM Regulation.

3. TSOs shall apply the following RAs to fulfil the requirements set in Article 8(2) of this Proposal:

- a) Redispatching;
- b) Automatic tripping of generation, consumption or grid components in case of fault (System protection schemes);
- c) Changes in grid topology to minimize the effect of faults; and
- d) Emergency power and runback on HVDC interconnections

TSO Interpretation: Paragraph 8(3) Define which RAs that can be used in the Nordic CCR in capacity calculation and CT is not one of the RAs to be used.

CACM Article 21.1 (iv): Capacity calculation methodology

1. *The proposal for a common capacity calculation methodology for a capacity calculation region determined in accordance with Article 20(2) shall include at least the following items for each capacity calculation time-frame:*

(a) methodologies for the calculation of the inputs to capacity calculation, which shall include the following parameters:

(i) a methodology for determining the reliability margin in accordance with Article 22;

(ii) the methodologies for determining operational security limits, contingencies relevant to capacity calculation and allocation constraints that may be applied in accordance with Article 23;

(iii) the methodology for determining the generation shift keys in accordance with Article 24;

(iv) the methodology for determining remedial actions to be considered in capacity calculation in accordance with Article 25.

TSO Interpretation: Paragraph 21.1(iv) defines that which Remedial actions that may be used in capacity calculation shall be defined in the CC Methodology

CACM Article 25.6: Methodology for remedial actions in capacity calculation

6. *Each TSO shall ensure that the remedial actions to be taken into account in capacity calculation are the same for all capacity calculation time-frames, taking into account their technical availabilities for each capacity calculation time-frame.*

TSO Interpretation: Paragraph 25(6) also ensures coordination of Remedial actions between time frames.

2.3 Definitions

2.3.1 Redispatching and countertrading

According to the Commission Regulation (EU) 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex 1 to Regulation (EC) No 714/2009 of the European Parliament and of the Council (hereafter referred to as “Transparency Regulation”) Article 2(13):

“countertrading’ means a cross zonal exchange initiated by system operators between two bidding zones to relieve physical congestion.”

Countertrading (CT) is therefore considered as follows in this document and also in the legal document according to article 35 of CACM:

- CT is the acquisition of upward or downward regulation between bidding zones in order to eliminate congestions during operation.

Article 2(26) of the Transparency Regulation further clarifies that:

“Redispatching’ means a measure activated by one or several system operators by altering the generation and/or load pattern in order to change physical flows in the transmission system and relieve a physical congestion.”

Redispatching (RD) is therefore considered as follows in this document and also in the legal document according to article 35:

- RD is the application or acquisition of upward or downward regulation to eliminate congestion inside a bidding zone during operation.

RD and CT are also mentioned in Article 22 of SO GL as categories of remedial actions¹, which is in line with the definitions specified in the above mentioned section.

2.3.2 *Timeframes*

Planning time frame is in this document defined as:

- The time from D-2 capacity calculation until the operational time frame

Operational time frame is in this document defined as:

- The last 60 minutes until, and including, real time operations

¹ "Remedial action" is defined in Article 2 (13) of the CACM Regulation as 'any measure applied by a TSO or several TSOs, manually or automatically, in order to maintain operational security'.

3. Current application of Redispatching and Countertrading

The Nordic TSOs can apply RD and CT during the operation time frame in order to maintain operational stability and to keep power flows within the operational security limits. In rare cases, TSO can also apply non-costly RD during planning time frame in order to maximize the commercial exchange capacities provided for the power markets. CT on the other hand, is not applied during the planning phase. The acquisition of costly RD and CT recourses during operations is based on the bids in the RPM at offered prices for the relevant unit. GCT for bids offered to the RPM is currently 45 minutes before real time.

3.1 Use of RD & CT in planning and operational time frame

3.1.1 Planning time frame

Non-costly Ra are considered in the planning time frame in order to maximize the exchange capacity for the power markets. Costly RD and CT are rarely applied during the planning time frame due to lack of information of bids available in real time operations. The TSO can guess on available volume and prices based on Merit of order list (MOL) from previous day RPM but this information can only serve the purpose of maximizing exchanges capacity on the expense of operational security. If costly RD and CT where to be used in the planning time frame the TSOs would not be able to guarantee that the resources would be available for activation in real time, which would pose a risk for system security in operations and also evoke the potential for excessive costs.

3.1.2 Operational time frame

In the operational timeframe RD and CT are used to mitigate congestions. The TSOs identifies the requirements in advance of activation and the effective activation off recourses is be done at the shortest time compatible with delay needed to implement, often less than 15 minutes prior to the operational hour, and only after the requirement is confirmed by the last available information on the expected situation. For example, RD and CT might be considered necessary to secure the grid under specific market scenarios, but will not be activated if the real time flows diverges in a positive way from the estimated situation concluded in when the need was identified.

4. The CRC methodology

This proposal is limited to CCR Nordic and applies to bidding areas, between internal bidding zones, and to bidding zone borders between the Nordic TSOs. The CRC methodology is to be applicable to any future bidding areas and bidding zone border, internal and external which is to be added by NRA or ACER decision to CCR Nordic.

According to Article 35 of the CACM Regulation, the methodology shall include actions of cross-border relevance. CT has cross-border relevance in all situations due to the definition, as described in chapter 2.3.1, whereas RD should only be part of this methodology if the action has cross border relevance.

RD and CT and can be prepared in different processes and in different timeframes according to table (1) shown below.

Process	Planning time frame(D-2 to H-1)	Operational time frame (H-1 until and including real time operations)	Comment
CCM	X		Application
SO GL	X	X	Activation
CRC Methodology	X	X	Coordination

Table 1: Methodologies and Guidelines managing RD and CT

Since the above processes influence each other an enduring process pursuant to article 35 in CACM is needed to guarantee coordination between time frames, and the main target of the coordination process is to ensure that RD and CT, which have been identified in one time frame are also taken into account in the following time frames.

As RD and CT are remedial actions which are also a part of methodologies according to SO GL, this proposal aim to coordinate actions taken into account in the planning time frame according to CACM. The SO GL and its subsequent methodologies (including Article 75 and 76 of SO GL) cover coordination in the operational time frame and since article 23 in SO GL is cover for preparation, activation and coordination this CRC methodology does not describe the preparation and activation of RAs and nor processes for coordination developed by the CCC. Thus, the purpose and scope of the CRC methodology is only to describe the enduring coordination process between time frames and the use of RD and CT in the planning time frame.

4.1 Coordination process

The CRC methodology is centred on cooperation of the TSOs in CCR Nordic via the CCC. Specific requirements in SO GL already require to large extent coordination in respect to remedial actions. As RD and CT are remedial actions these are implicitly included.

Coordination is done during different timeframes in relation to different markets. Preparing of RD and CT actions starts at D-1. First, TSOs shall individually assess possible RD and CT actions and supply a list of these actions, including their anticipated costs to the CCC. The CCC needs such a list, amongst other data such as common grid models, the contingency list and the operational security limits, in order to carry out a coordinated regional operational security assessment. The CCC then delivers the results of the coordinated regional operational security assessment to the Nordic TSOs.

The CCC shall, where it detects a constraint recommend to the relevant TSOs the most effective and economically efficient RD and CT actions. Any recommendation received from the CCC for a particular RD or CT action shall be evaluated by the TSO for the elements involved in that action and located in its control area. The decision-making right on the implementation of a RD or CT action remains with the TSO but there shall be a duty to inform and explain the TSO's decision to the CCC in case the recommendation by the CCC for a particular action is not accepted. The accepted recommended actions shall be included by the TSOs in the forthcoming individual grid model.

The process described leads to a considerable degree of coordination of RD and CT actions as assessment for needed actions will be done on a regional level, by a third party, the CCC and this neutral entity will ensure efficient dispatching of relevant resources on a regional level.

4.2 Implementation

The implementation of this proposal is dependent on a number of conditions and the TSOs shall implement this methodology following:

- a. the implementation of the Nordic CCM
- b. the Regulatory approval of RD and CT Cost Sharing Methodology required by Article 74 of the CACM Regulation in accordance with Article 9 of the CACM Regulation;
- c. the implementation and operation of the Coordinated Operational Security Analysis Methodology according to Article 75 of SO GL.

The implementation of this methodology requires that the Nordic CCM has been implemented and it also requires that the coordinated operational Security analysis Methodology according to article 75 in SO GL has been implemented. The methodology for the coordinated operational security analysis will be submitted for NRA approval in September 2018. From past experience NRA approval processes take at least 6 months, at most 15 months if ACER needs to be involved in the decision-making process Since it is at present unknown what implementation timeline the coordinated operational security analysis methodology will follow it is at present time not possible to give an indicative timing for when the CRC Methodology will be implemented.

5. Summary of stakeholder comments