

CCR Nordic:  
Methodology for coordinated  
redispatching and countertrading  
and methodology for redispatching  
and countertrading cost sharing

-Explanatory Document

14<sup>th</sup> of November 2018

**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
CRCCS	Coordinated Redispatching and Countertrading cost sharing
CCR	Capacity Calculation Region
CCC	Coordinated Capacity Calculator
TSO	Transmission System Operator
DA	Day Ahead timeframe
ID	Intraday timeframe
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, all TSOs within each Capacity Calculation Region are according to article 35 and 74 in the CACM required to develop a common methodology for coordinated redispatching and countertrading (hereafter referred to as “CRC Methodology”) and also a common methodology for cost sharing of coordinated redispatching and countertrading (hereafter referred to as “CRCCS Methodology”). This document provides additional information and explanation of the two methodologies developed by all TSOs within CCR Nordic.

The CRC and CRCCS methodology in CCR Nordic was submitted for approval to all national regulatory authorities (hereafter referred to as “NRAs”) within CCR Nordic no on the 17<sup>th</sup> of March 2018. Before the CRC Methodology was submitted for approval by the NRAs of CCR Nordic, the methodology was exposed to public consultation in accordance to article 12 in the CACM Regulation. On the 14<sup>th</sup> of September 2018 CCR Nordic TSO received a Request for amendment (hereafter referred to as “Rfa”) from the NRAs on both methodologies. CCR Nordic TSO amended the methodologies according to the Rfas and submitted the two methodologies for final approval to NRAs on the 14<sup>th</sup> of November 2018.

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 the CRC methodology. The legal context is used to interpret the scope of the methodology and notably what “redispatching” and “countertrading” is to cover. Chapter 4 is focus on explaining the essence of the CRC methodology and the foreseen implementation. In chapter 4 the results of the public consultation of the CRC methodology is covered. In chapter 5 the CRCCS methodology will shortly be explained and discussed.

## 2. Legal references and requirements CRC Methodology

This chapter provides the legal references and requirements for the CRC methodology.

Except articles 35, the legal framework for RD and CT is also defined by other Guidelines and Methodologies, mainly within CACM, CCR Nordic CCM and SO GL. The below listed requirements and references are highly linked and should be taken into account when reading to properly interpret and understand the scope and meaning of this methodology.

### 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.*
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.*

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

The CRC Methodology following Article 35 of the CACM Regulation is also interlinked with Articles of Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as "SO Regulation")

#### SO GL Article 21 Principles and criteria applicable to remedial actions

*Each TSO shall apply the following principles when activating and coordinating remedial actions in accordance with Article 23:*

*(a) for operational security violations which do not need to be managed in a coordinated way, a TSO shall design, prepare and activate remedial actions to restore the system to the normal state and to prevent the propagation of the alert or emergency state outside of the TSO's control area from the categories defined in Article 22;*

*b) for operational security violations which need to be managed in a coordinated way, a TSO shall design, prepare and activate remedial actions in coordination with other concerned TSOs, following the methodology for the preparation of remedial actions in a coordinated way under Article 76(1) (b) and taking into account the recommendation of a regional security coordinator in accordance with Article 78(4).*

2. *When selecting the appropriate remedial actions, each TSO shall apply the following criteria:*

- (a) Activate the most effective and economically efficient remedial actions;*
- (b) Activate remedial actions as close as possible to real-time taking into account the expected time of activation and the urgency of the system operation situation they intend to resolve*
- (c) Consider the risks of failures in applying the available remedial actions and their impact on operational security such as:*
  - (i) The risks of failure or short-circuit caused by topology changes*
  - (ii) The risks of outages caused by active or reactive power changes on power generating modules or demand facilities; and*
  - (iii) The risks of malfunction caused by equipment behaviour;*

*(d) Give preference to remedial actions which make available the largest cross-zonal capacity for capacity allocation, while satisfying all operational security limits.*

**SO GL Article 22 Categories of remedial actions**

1. Each TSO shall use the following categories of remedial actions:

*(a) Modify the duration of a planned outage or return to service transmission system elements to achieve the operational availability of those transmission system elements;*

*(b) Actively impact power flows by means of:*

- (i) tap changes of the power transformers;*
- (ii) Tap changes of the phase-shifting transformers;*
- (iii) Modifying topologies;*

*(c) Control voltage and manage reactive power by means of:*

- (i) tap changes of the power transformers;*
- (ii) Switching of the capacitors and reactors;*
- (iii) Switching of the power-electronics-based devices used for voltage and reactive power management;*
- (iv) instructing transmission-connected DSOs and significant grid users to block automatic voltage and reactive power control of transformers or to activate on their facilities the remedial actions set out in points (i) to (iii) if voltage deterioration jeopardises operational security or threatens to lead to a voltage collapse in a transmission system;*
- (v) Requesting the change of reactive power output or voltage set point of the transmission-connected synchronous power generating modules;*
- (vi) Requesting the change of reactive power output of the converters of transmission-connected non-synchronous power generating modules;*

*(d) Re-calculate day-ahead and intra-day cross-zonal capacities in accordance with Regulation (EU) 2015/1222;*

*(e) Redispatch transmission or distribution-connected system users within the TSO's control area, between two or more TSOs;*

*(f) Countertrade between two or more bidding zones;*

*(g) Adjust active power flows through HVDC systems;*

*(h) Activate frequency deviation management procedures;*

- (i) curtail, pursuant to Article 16(2) of Regulation (EC) No 714/2009, the already allocated cross-zonal capacity in an emergency situation where using that capacity endangers operational security, all TSOs at a given interconnector agree to such adjustment, and re-dispatching or countertrading is not possible; and*

*(j) Where applicable, include the normal or alert state, manually controlled load-shedding.*

**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.*

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.*

**SO GL Article 75 (1) Methodology for coordinating operational security analysis**<sup>1</sup>. By 12 months after entry into force of this Regulation, all TSOs shall jointly develop a proposal for a methodology for coordinating operational security analysis. That methodology shall aim at the standardisation of operational security analysis at least per synchronous area and shall include at least:

(a) methods for assessing the influence of transmission system elements and SGUs located outside of a TSO's control area in order to identify those elements included in the TSO's observability area and the contingency influence thresholds above which contingencies of those elements constitute external contingencies;

(b) Principles for common risk assessment, covering at least, for the contingencies referred to in Article 33:

(i) Associated probability;

(ii) Transitory admissible overloads; and

(iii) Impact of contingencies;

(c) Principles for assessing and dealing with uncertainties of generation and load, taking into account a reliability margin in line with Article 22 of Regulation (EU) 2015/1222;

(d) Requirements on coordination and information exchange between regional security coordinators in relation to the tasks listed in Article 77(3);

(e) Role of ENTSO for Electricity in the governance of common tools, data quality rules improvement, monitoring of the methodology for coordinated operational security analysis and of the common provisions for regional operational security coordination in each capacity calculation region

**SO GL Article 76 (1) Proposal for regional operational security coordination**

1. By 3 months after the approval of the methodology for coordinating operational security analysis in Article 75(1), all TSOs of each capacity calculation region shall jointly develop a proposal for common provisions for regional operational security coordination, to be applied by the regional security coordinators and the TSOs of the capacity calculation region. The proposal shall respect the methodologies for coordinating operational security analysis developed in accordance with Article 75(1) and complement where necessary the methodologies developed in accordance with Articles 35 and 74 of Regulation (EU) 2015/1222.

**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*

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.

**CCR Nordic CCM Article 9.1, 9.2 and 9.3: Methodology for determining remedial actions to be considered in capacity calculation**

1. Each TSO shall define RAs to be applied in capacity calculation. The relevant RAs shall be coordinated between TSOs, clearly described, and communicated to other TSOs and the CCC.
2. Each TSO shall take into account RAs in capacity calculation to allow for an increase in remaining available margin (hereafter referred to as "RAM") on CNEs in line with the equation in Article 15(1) or for increase in cross-zonal capacity due to CNEs in line with equation in Article 19(3). Costly RAs shall be applied for internal CNEs, if foreseen to be available for each capacity calculation timeframe and to contribute to an increased economic welfare at the EU-level, in accordance with Article 11.
3. TSOs shall apply any of, or a combination of, the following RAs to fulfil Article 9(2):
  - a. System protection schemes, being an automatic tripping of generation, consumption or grid elements in case of fault;
  - b. Topology changes, being any changes in grid topology in order to minimise the effect of faults;
  - c. Redispatching; and
  - d. Countertrading.

**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.*

**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.*

## 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 (hereafter referred to as "CT") is therefore considered as follows in this document and also in the legal documents according to article 35 and 74 of CACM:

- CT is the acquisition of upward or downward regulation between bidding zones in order to eliminate congestions during operation where the precise generation or load pattern alteration is not predefined

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

*"Redispatching" (hereafter referred to as "RD") 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."*

RD is therefore considered as follows in this document and also in the legal documents according to article 35 and 74 of CACM:

- RD is the application or acquisition of upward or downward regulation to eliminate congestion inside a bidding zone during operation by altering a particular generation and/or load pattern. RD can in rare cases be done cross zonal.

With regards of the above mentioned definitions, the general idea of RD and CT is to in operations alter generation and/or load pattern by one or several TSOs in order to change physical flow and thereby relieve physical congestions.

RD and CT are also mentioned in Article 22 of SO GL as categories of remedial actions<sup>1</sup>, which is in line with the definitions specified in the above mentioned section.

### 2.3.2 Timeframes

The timeframes in which the CCR Nordic CRC methodology is valid corresponds to the timeframe covered by the CCR Nordic CCM proposal i.e. the day-ahead and intra-day time frame.

Important to note is that the CRC methodology is about planning for costly RD and CT actions in the day-ahead and intra-day time frame. However, no costs are incurred by the planning for RD and CT itself. The actual cost to be shared between CCR Nordic TSO according to this CRCCS methodology will only arise when planned RD and CT actions are actually activated in real time operation.

### 2.3.3 Cross border relevance

Since the application of the CRC methodologies is for RD and CT with cross border relevance only, the necessary definition of "cross border relevance" is;

An action of "cross-border relevance" is an action that relieves congestions on internal CNE or PTC which will provide increased transmission capacity for the day-ahead and intra-day market in CCR Nordic.

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<sup>1</sup> "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'.

#### 2.3.4 *Appropriate mechanisms and agreements*

“appropriate mechanisms and agreements” means any formalised mechanism and agreement entered into by TSO in CCR Nordic or between TSOs in CCR Nordic and TSOs in adjacent CCRs giving the opportunity to apply redispatching or countertrading in capacity calculation for the day-ahead and intra-day or in the operational time frame.

#### 2.3.5 *Adjacent CCR*

“adjacent CCR” means a CCR directly connected to CCR Nordic. e.g CCR Baltic or CCR Hansa.

### **2.4 Interpretation and scope of the CRC methodology**

This proposal is limited to CCR Nordic, meaning that the geographical scope of this proposal is confined to the cross zonal borders within the CCR Nordic. The CRC Methodology is to be applicable to CNEs and PTCs with cross border relevance for borders that are included in capacity calculation of CCR Nordic in accordance with article 2 in the CCR Nordic CCM.

The legal framework stated above needs to be given an interpretation in order to formulate a legally sound methodology to define the scope of the methodology and to make the methodology implementable.

According to Article 35 of the CACM Regulation, the CRC Methodology shall include actions of cross-zonal relevance. CT has cross-zonal relevance in all situations due to the definitions, as described in chapter 2.3, whereas RD should only be part of this CRC Methodology as far as the action has cross-zonal relevance. RD is considered to have cross border relevance when the measure can effectively influence the flow on a CCR Nordic bidding zone border.

CT and RD are, as mentioned above, considered remedial actions as defined in the SO Regulation and can be prepared in different time frames i.e. day-ahead, intra-day close to real time and real time.

If CT and RD are used in capacity calculation to increase RAM, the TSOs need to identify the potential need in advance, while the effective application on the network will be done at the shortest time compatible, and if the TSOs’ need is confirmed by the last available information of the expected situation. For example, CT and RD can be considered necessary to secure the grid under specific market scenarios but will not be used in real time if the market results turn out to be different from the assumption made in the planning phase.

Since application of RD and CT with cross border relevance has an effect on control areas of several TSOs an enduring coordination process is needed and this coordination is ensured through the CRC Methodology. The coordination will largely be done through the Regional Security Coordinator (hereafter referred to as “RSC”) since the capacity calculation for day-ahead and intra-day and the system security analyses will take place at RSC office.

#### 2.4.1 *What factors is application of RD and CT measures based on and how is it insured that the action is effective?*

The CRC methodology is about coordination between CCR Nordic TSOs and between TSOs and CCR Nordic RSC. CCR Nordic TSOs are responsible to give resources with their anticipated costs to the CCR Nordic RSC. The CCR Nordic RSC is responsible for the security analysis Art 23, 76(1)(b) in SO Regulation and coordination with other RSCs according to article 75 the of SO Regulation this means that the factors of application and the effectiveness is out of scope of this methodology.

### **3. The CRC methodology**

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 when applied and activated due to the definition, as described in chapter 2.3.1, whereas RD should only be part of this methodology if the application and activation has cross border

relevance. It is important to understand the overlapping nature of this CRC methodology with the coordinated use of remedial actions in system operation in general as described in the SO Regulation.

RD and CT and can be applied in different processes and in different timeframes according to table (1) shown below and depending on in which time frame different regulations and methodologies will be relevant to consider to get the whole picture of the application and tuse of RD and CT measures.

Process	Planning time frame	Operational time frame	Comment
CCR Nordic CCM	X		Application
SO GL	X	X	Activation
CRC Methodology	X		Coordination

**Table 1: Methodologies and Guidelines managing RD and CT**

Since the above processes are overlapping each other the methodology developed pursuant to article 35 in CACM aims to guarantee coordination between time frames and between CCR Nordic TSOs and the appointed RSC in CCR Nordic.

RD and CT are remedial actions which are also a part of methodologies to be developed according to SO GL, this CRC methodology according to art 35 in CACM Regulation aim to coordinate RD and CT taken into account in the capacity calculation according to CCR Nordic CCM. The SO GL and its subsequent methodologies including article 75 and 76 of SO GL covers coordination in the operational time frame and since article 23 in SO GL is covering for preparation, activation and coordination this CRC methodology does not describe the preparation and activation of RAs and nor processes for coordination between RSCs since that coordination is to be developed according to article 75 in the SO Regulation. Thus, the purpose and scope of this CRC methodology is only to describe the enduring coordination process between CCR Nordic TSOs and CCR Nordic TSOs and the CCR Nordic RSC if RD and CT are applied in the capacity calculation.

### 3.1 Coordination process

The CRC methodology is centred on cooperation between TSOs in CCR Nordic via the CCR Nordic RSC. Specific requirements in SO Regulation already require to a large extent coordination in respect to remedial actions. As RD and CT are remedial actions these are implicitly included. The SO Regulation will in the Articles 75 to 78 further require TSOs to elaborate on the coordinated operational security analysis which serves as the foundation for determining whether RD and CT is needed.

Coordination is needed during different timeframes related to the day-ahead, intra-day and the operational timeframe. Preparing of RD and CT actions starts at D-1. Firstly, TSOs shall individually assess possible remedial action including RD and CT that can be used by the CCR Nordic RSC in capacity calculation to increase exchange capacities for the market and accordingly to relieve potential violations in real time. Each CCR Nordic TSO shall recommend and, provide the CCR Nordic RSC with an updated list in accordance with article 78.1(b) of SO Regulation of possible remedial actions and their anticipated costs among the categories listed in Article 22 of SO Regulation before each capacity calculation timeframe. The CCR Nordic RSC 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 CCR Nordic RSC then delivers the results of the coordinated regional operational security assessment to the Nordic CCR TSOs and a recommendation of RD and CT measures that can be used. The recommendation shall be based on the list of possible remedial actions provided by the TSOs in CCR Nordic in accordance to the CCR Nordic CCM.

The CCR Nordic RSC will run a coordinated operational security analysis. In case the operational security analysis finds violations of operational security limits, the CCR Nordic RSC shall recommend the most effective and economically efficient RD and CT resources to relieve the violations to CCR Nordic TSOs.

Any recommendation received from the CCR Nordic RSC for a particular RD or CT action shall be evaluated by the TSO with regard to 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 decision to the CCR Nordic RSC in case the recommendation by the CCR Nordic RSC for a particular action is not accepted. Accepted recommended actions will be activated in real time operations or as close to the time of operation if the need for activation remains.

If RD or CT has been applied in the capacity calculation for the day-ahead and intra-day timeframe, the relevant resources will be activated based on real time requirement according to article 21.1 in SO Regulation in the balancing timeframe. In CCR Nordic RD and CT resources is activated by the TSOs from the Common Merit Order List (CMOL) in the balancing market or according to other appropriate mechanisms and agreements. When choosing bids to be activated from the common balancing market, the bids shall be selected by merit order taking regards of technical efficiency and operational security of each resource in relieving the relevant violation.

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 RSC and this neutral entity will ensure efficient dispatching of relevant resources on a regional level in comparison to the current situation where violations is relieved bilaterally by involved TSOs.

### *3.1.1 Use of RD and CT in capacity calculation*

TSOs in CCR Nordic cannot with today's regime guarantee availability of resources in the capacity calculation process of day-ahead and intraday since RD and CT resources with current practice in the Nordic regulation power market not are available until 45 minutes (or less) before real time. When introducing RD and CT in capacity calculation in accordance with CCR Nordic CCM and article 78.1 in the SO Regulation CCR Nordic TSOs and CCR Nordic RSC needs to handle the operational security risk that comes with the application of RD and CT if applied resources in capacity calculation to increase trading capacities are not available for activation in real time. How to deal with this risk will be developed within the CCR Nordic CCM implementation.

### *3.1.2 How will CRC Methodology work together with SOGL art 75 and art 76?*

The all TSO proposal under art 75 and art 76 in SO Regulation is about coordinating Operational Security analysis between RSCs in different CCRs. The CRC Methodology developed according to article 35 in CACM is about coordination of RD and CT measures between TSOs and between TSOs and the RSC within a CCR Nordic.

## **3.2 Coordination between RSC's of different regions.**

When creating the RSCs in 2015, the TSOs in Europe decided that the objective was not only to ensure cooperation and coordination between TSOs but also between the RSCs. This has been stipulated in the Multilateral Agreement on Participation in Regional Security Coordination Initiatives between 37 European TSOs. RSCs shall aim at developing coordination between them for each service they provide. This coordination is agreed to cover the following aspects at operational level:

- Exchange all relevant operational information available useful to improve consistency and precision of analysis and recommendations provided to TSOs;
- Update and share grid models with remedial actions or improvement of electrical system (at least PST tap choices and secure topology) already agreed by TSOs within one region;
- Exchange results of analyses for checking and consolidating them, notably for cross-regional impact assessment;
- Search for cross-regional coordinated remedial actions to be proposed to TSOs when these remedial actions are more efficient than remedial actions that can be coordinated among TSOs served by a single RSC.

Details on how the coordination in reality will be carried out in relation to the operational security analysis and the coordination between RSCs are to be specified in the methodology developed under the System Operation Guideline art 75 and art 76.

### **3.3 Timeframes for application and activation of redispatching and countertrading**

If RD and CT are applied in capacity calculation it is important to ensure feasibility from an operational point of view. It is in this methodology proposal assumed that the CCR Nordic RSC (in the CCR Nordic RSC is the same entity as the CCC) will carry out coordinated operational security analysis after each time a new CGM is available, between D-1 and until about 2 hours before time of operations. On this basis the application of RD and CT will be planned for in advance by the CCR Nordic RSC and proposed to the TSOs. The TSOs can then activate RD and CT resources at the shortest time compatible with the daily needed to their implementation, as long the RD and CT measures proposed by the CCR Nordic RSC is still relevant.

### **3.4 Implementation of the CRC Methodology**

CCR Nordic TSOs shall implement this methodology following:

- a. 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;
- b. Coordinated Operational Security Analysis Methodology according to Article 75 of SO Regulation has been implemented and is in operation for CCR Nordic.
- c. The implementation of the common provisions of article 76 of SO Regulation, Regional Operational Security Coordination

Implementation of this methodology will start with undue delay after the provisions of (a-c) are fulfilled.

The implementation of this methodology requires that the coordinated operational security analysis methodology according to article 75 in SO GL has been implemented. Since it is at present unknown what implementation timeline the coordinated operational security analysis will follow it is at present time not possible to give an indicative timing for when the CRC Methodology will be implemented.

#### *3.4.1 Why implementation is depended on article 75 and article 76 in the SO Regulation*

The articles in the SO Regulation are about coordination of operational security analysis between TSO within CCRs and between TSOs of different CCRs and the analysis will be performed by the RSC of each CCR. The CACM art 35 is about roles and responsibilities of each TSO when providing RD and CT resources to the RSC. The CRC Methodology needs to be implemented in coordination with the implementation of the RSC function since coordination of RD and CT mostly take within the RSC capacity calculation and security analyses.

## 4. Summary of stakeholder comments from public consultation

This document contains the responses from the stakeholder consultation, based on the version of the proposal for CRC Methodology for the Nordic CCR published on January 2 2018. This section provides an overview of the responses received, and the names of the stakeholders that submitted the response.

### Name of stakeholders

Stakeholder #	Name of stakeholder
1	Nord Energi
2	EFET
3	Statkraft Energi AS

### 4.1 Individual responses to the external consultation and TSO answers

The responses are listed in column 1 of the table in the following section. The stakeholder making the comment has been mentioned in column 2 according to the numbering in the table above. Column 3 indicates whether the Nordic TSOs will take the comment into account either in the explanatory or the legal document. Column 4 includes the TSOs answers:

- If the comment is not taken into account in the explanatory or legal document, a reasoning why;
- When the comment is taken into account in the explanatory or legal document, an explanation how the comment is reflected and where.

Response	Stakeholder(s)	Considered action to be taken	TSO answer
According to the proposed CCM methodology it seems that TSOs can move internal congestion to the border in the day ahead capacity calculation and if no violations of operational security limits appear in the subsequent security analysis, nothing further will be done, ref whereas (11).	1,3	No	<ul style="list-style-type: none"> <li>• If not taken into account in the supporting or legal document, a reasoning why</li> <li>• When taken into account, an explanation how and where</li> </ul> <p>This is out of scope of this methodology. It is an ongoing work in the Nordic CCM project to go more in to detail on how to assess the use of redispatch and countertrade and when to include these measures in the capacity calculation</p>
There is not a firm procedure to incentivize TSOs to use redispatch or countertrade. As there is no obligation on TSOs to use redispatching/countertrading day ahead or at	1,3	No	TSO will use redispatch and countertrade in capacity calculation with respect of operational security an economic efficiency analysis. How to

<p>least test the economic efficiency of using it in the capacity calculation for day ahead, it remains unclear what mechanism will ensure that remedial actions are used to increase the capacity given to the market when it is economically efficient.</p>			<p>perform the efficiency analysis is being developed in CCR Nordic CCM project.</p>
<p>We do not view the methodology proposal as sufficiently taking into account ACER's recommendation that "As a general principle, limitations on internal network elements should not be considered in the cross-zonal capacity calculation methods. If congestion appears on internal network elements, it should be resolved with remedial actions in the short term".</p>	1,3	No	<p>TSO will use redispatch and countertrade in capacity calculation with respect of operational security an economic efficiency analysis. How to perform the efficiency analysis is being developed in CCR Nordic CCM project.</p>
<p>The TSOs should include a procedure to continuously assess efficiency of the use of costly remedial actions to increase the capacity given to the market – particularly in the day ahead time frame. This procedure should be subject to the regulator's approval and the operational choices on including or excluding remedial actions in the capacity calculation should be reported regularly to the regulator.</p>	1,3	No/Yes	<p>Out of scope of this methodology, how to handle CNEs and when to use redispatch and countertrade in capacity calculation is dealt with in the CCR Nordic CCM of the Nordic CCRs.</p> <p>To meet the comment about reporting to NRAs the legal document on art 35 has be updated with an article describing how the documentation is done when proposing and using redispatch and countertrade. (new article 4)</p>
<p>The documentation and main analyses that form the basis for the operational choices by the TSOs should also be made public to ensure transparency. This is particularly important for stakeholder since the methodology is new and since it is proposed to allow TSOs to deviate from actions proposed by the RSC.</p>	1,3	No/Yes	<p>TSO do fulfill the obligations according to transparency regulation and data that needs to be published can and will be found on the transparency platform</p> <p>but</p> <p>To meet the comment about documentation the legal document on art. 35 will be updated with an article describing the how the documentation is done when proposing and using redispatch and countertrade. (new article 4)</p>
<p>There is a fundamental lack of including remedial actions to avoid undue discrimination. In applying grid constraints on cross-border trade, TSOs must continuously document and justify that it is economically efficient or ensuring</p>	1,3		<p>TSO will use redispatch and countertrade in capacity calculation with respect of operational security an economic efficiency analysis. How to</p>

<p>operational security to curtail interconnectors rather than using remedial actions.</p>			<p>perform the efficiency analysis is being developed in the CCR Nordic CCM project.</p>
<p>The CACM guidelines refer to »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«. It remains unclear to us, how it is ensured that the proposed methodology does not discriminate between internal and cross zonal exchanges or involve the moving of internal congestions to the border.</p>	<p>1,3</p>		<p>TSO will use redispatch and countertrade in capacity calculation with respect of operational security an economic efficiency analysis. How to perform the efficiency analysis is being developed in CCR Nordic CCM project.</p>
<p>The proposed CRCM allows TSOs to deviate from the actions as proposed by the RSC. There are no restrictive conditions that would need to be met to allow for such deviation from the RSC proposal. An explanation of the individual TSO towards the RSC is not sufficient; instead a transparent justification is required.</p>	<p>3</p>	<p>Yes</p>	<p>The methodology has been updated with a new paragraph describing how a TSO can decline a remedial action proposal from the CCC. The proposed methodology has also been updated with an article describing how the documentation is done when using redispatch and countertrade, new article 4.</p>
<p>In our view the methodology described fails to document how the aim with it is achieved, namely that a better coordination of redispatch and countertrading will ensure optimal use of the transmission infrastructure, ref where (5). The methodology draft states that this is specified in the Nordic CCM, but after our opinion this is not the case since there is a lack of procedure for use of redispatch/countertrade to facilitate cross-border trade. Hence, in our opinion this is currently not sufficiently dealt with anywhere. Statkraft is of the opinion that the proposed CRCM can only be properly reviewed and assessed in combination with the proposed CCM.</p>	<p>3</p>	<p>No</p>	<p>This is out of scope of this methodology since article 35 is about coordination. It is an ongoing work in the CCR Nordic CCM project to go more in to detail on how to assess the use of redispatch and countertrade and when to include these measures in the capacity calculation.</p>
<p>1. How redispatching and countertrading on the one hand, and restrictions of cross-border capacities allocated to the market on the other hand are treated on an equal footing. In our joint response to the consultations on regional capacity calculation methodologies (<a href="http://www.efet.org/Files/Documents/Downloads/EFET_Eurelectric_MPP_Nordenergi-TSOs%20consultation%20CCM_14122017.pdf">http://www.efet.org/Files/Documents/Downloads/EFET_Eurelectric_MPP_Nordenergi-TSOs%20consultation%20CCM_14122017.pdf</a>) , we insisted on the importance for TSOs to</p>	<p>2</p>	<p>No</p>	<p>This is out of scope of this methodology since article 35 is about coordination. It is an ongoing work in the CCR Nordic CCM project to go more in to detail on how to assess the use of redispatch and countertrade and when to include these measures in the capacity calculation.</p>

<p>systematically consider redispatching and countertrading when still facing congestion after applying non-costly remedial actions: indeed, any decision to restrict cross-border transmission capacities for reasons other than system security should be based on an analysis comparing the costs/benefits of applying redispatching or countertrading vs. limiting the availability of cross- border capacities to the market, in order to achieve a welfare optimum. This requires that both redispatching and countertrading are fully part of the possible means for TSOs to deal with congestions in each CCR, and mandatorily considered by the TSOs alongside topology measures.</p>			
<p>2. How the scheduled exchanges, NTC/FB domain, and balance positions are simultaneously generated and handled by the relevant market and system operators.</p>	2	No	Out of scope of this proposal
<p>3. How the operation scheme ensures full transparency and conforms to Transparency (ex-post) and REMIT Regulations, in terms of how much redispatching and countertrading is activated. This information should be available to market participants as soon as those actions are decided; full transparency on deviations from merit order activation (in case of joint congestion management and balancing) is also required.</p>	2	No	Out of scope of this proposal  We follow the transparency regulation and REMIT requirements for publication today. This is not changed with the introduction of coordinated countertrade and redispatch
<p>4. How open positions generated by redispatching or countertrading are to be counterbalanced in a market-based manner to deliver appropriate economic signals. In this regard, we see three main options:</p>	2	No	Out of scope of this proposal
<p>a. TSOs managing the counterbalance in the framework of the balancing mechanism</p>	2	No	Out of scope of this proposal
<p>b. TSOs managing the counter balance within the intraday markets</p>	2	No	Out of scope of this proposal
<p>c. Activation through a dedicated congestion management mechanism The methodologies to be developed on the basis of the CACM and SO Guidelines need to assess the pros and cons of these options as well as justify the choice of the option(s) that has (have) been retained.</p>	2	No	Out of scope of this proposal
<p>5. How actions on specific assets based on their location are remunerated. In our view, any network user being redispatched or constrained</p>	2	No	In regards to the remuneration and providing economic signals, CACM article 35(5) states that

<p>must be fully financially compensated (full costs and opportunity loss) so as to leave the asset owner is left financially indifferent to the TSO action.</p>			<p>pricing of redispatching and countertrading shall be based on  a) prices in the relevant electricity market for the relevant time frame  or b) the cost of redispatching and countertrading resources calculated transparently on the basis of incurred costs. This ensures that the incurred costs for the market participant for providing the flexibility is covered.</p> <p>This requirement from CACM is considered by the TSOs in the cost-sharing methodology following article 74 of the CACM.</p>
<p>Going more in depth into redispatching and countertrading actions themselves, we believe that the proposals should be accompanied by a thorough evaluation of the advantages and drawbacks of the various options, so as to justify the choice of the preferred one (or the preferred combination of options). In our view, there are three basic types of redispatching and countertrading (in the following part of the document, “asset” should be understood as a generic/technology neutral term covering all sources of flexibility – generation, demand, storage):</p>	<p>2</p>	<p>No</p>	<p>Out of scope of this proposal</p>
<p>1. Constraining the dispatch of a specific asset: This means part of the flexibility of the asset around its scheduled set point is disabled by the relevant network operator. This may represent a loss of opportunity for the asset that should be fully financially compensated (full costs and opportunity loss), for instance in case offers for standard balancing products are “filtered” and consequently not shared on the European balancing platforms. In terms of system balance, such an intervention has no immediate impact on the asset and does not require any complementary action. We note however that the measure may have an impact on balancing markets, as some assets potentially contracted as reserves may be disabled because of the measure, leading to more expensive balancing activations or potentially to a lack of reserves, affecting</p>	<p>2</p>	<p>No</p>	<p>Out of scope of this proposal</p>

<p>subsequently imbalance settlement prices. When it has a potential to affect balancing reserves or balancing energy activation, the congestion management process needs to ensure that there is sufficient transparency on what is used for which purpose, that balancing energy bids activated for congestion management purposes do not impact the imbalance price, and that full compensation for congestion management actions is ensured.</p>			
<p>2. Modifying the scheduled dispatch of a specific asset: This means requesting a set point different than the scheduled one for a specific asset based on its location within a bidding zone. This may represent extra costs and/or loss of opportunity for the asset that must be fully financially compensated (full costs and opportunity loss). In terms of system balance, the activation of a specific asset opens a balance position in the same bidding zone that should be counterbalanced as discussed in point 4.</p>	2	No	Out of scope of this proposal
<p>3. Countertrading: This means updating the net export/import of two bidding zones, by simultaneously updating the scheduled cross-border exchanges, updating the NTC or FB domain for the same market time units, and opening opposite balance positions in the corresponding bidding zones. In terms of system balance, the opened balance position in each bidding zone will have to be managed as discussed in point 4.</p>	2	No	Out of scope of this proposal
<p>Unfortunately, the methodologies already submitted by TSOs in several CCRs as part of the CACM implementation do not include such an evaluation so far. In our view, this evaluation is a pre-requisite to allow real progress on the optimisation of countertrading and redispatching and the improvement of market functioning at European level.</p>	2	No	Out of scope of this proposal

## 5. The CRCCS Methodology

### 5.1 Interpretation and scope of the CRCCS methodology

According to CCR Nordic CCM remedial actions including RD and CT can be applied in capacity calculation to increase the capacity (RAM) of a CNE or PTC. A cost or an income will occur if RD and CT resources that has been applied in CC result in a real time activation. This costs and incomes must be distributed in a fair way between TSOs of CCR Nordic. This CRCCS methodology covers cost sharing of RD and CT which has been applied in the capacity calculation process and activated in real time but the methodology also covers for costs and income of using RD and CT for unexpected events in real time within CCR Nordic.

#### 5.1.1 Definitions CRCCS methodology

"Requesting TSO" means the TSO for whose control area redispatching and countertrading is required.

"costs" are the actual costs and income incurred by application and activation of redispatching and countertrading resources for CNEs or PTCs in capacity calculation or in operations to relive congestions.

Depending on whether a RD or CT action is up- or down regulation the TSO will face a cost or recive an income.

- An up-regulation will provide a cost for the relevant TSO related to the TSOs procurement of either power production or reduced consumption from a market participant in real time.
- A down-regulation will provide an income for the relevant TSO related to market participants buying back power from the TSOs in real time

The total cost for the redispatch or countertradie is the difference in price for up-regulation on one side of the constraint and the down-regulation on the other side of the constraint.

### 5.2 Cost sharing principle

The cost sharing principle used in CCR Nordic distinguishes between costs only paid by one TSO or cost divided between two (or more) TSOs. Cost for RD and CT does not occur until activation of resources and activation is normally done in real time or close to real time.

Requester means the TSO who is requiring CT and RD to be applied in capacity calculation in accordance with the CCR Nordic CCM methodology. Thus, the owner of the congested CNE or PTC is the requester. If costly RD and CT are applied to managing congestions on interconnectors within CCR Nordic, the cost will be shared among the owners of the interconnector (50/50 share on interconnectors within CCR Nordic).

CCR Nordic TSOs acknowledge that the ENTSO-e guidance in theory will provide the TSOs with the correct economic incentives to manage grid constraints and flows. However, applying the polluter-pay principle is extremely complicated, and by expectation, without a significant gain in efficiency and/or fairness. In applying the polluter-pay principle, the CCR Nordic TSO will have to devlope a load flow model able to decompose a given flow on a particular internal CNE into loop flows, internal flows, real time balancing flows, DA/ID, allocated flows, where the individual flows my originate and end in potentially many bidding zones.

In reality, and in practice, such decomposition will be close to impossible, and also highly inaccurate. And further, the actual problem of loop flows in CCR Nordic is rather modest due to the many small bidding areas in the Nordic market; hence loop flows are at a low level compared to the rest of Europe. In the Nordics one could also argue that due to the low level of loop flows, the proposed requester pay principle is a close approximation of the polluter pay principle. Congestions in one TSOs control area is not due to flows from other control areas but due to actual flows within in the congested area. If the CCR Nordic TSO in the futher would expericent an increase in loop flows the first measure would not to be to develop a loop flow model but rather to to divide into more bidding zones as a first step.

On this background the Nordic CCR TSOs have found that implementing and operating the requester pay principle is a sufficient approximation for the polluter-pay principle for cost sharing. Thus, as a general principle, all costs for RAs related to managing internal CNE or PTCs are covered by the owner of the internal CNE och PTCs.