BIENNIAL REPORT ON CAPACITY CALCULATION AND ALLOCATION

AUGUST 2017

European Network of
Transmission System Operators
for Electricity

entsoe

CONTENT

1 INTRODUCTION

ENTSO-E is required under Article 31(1) of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (hereafter referred to as the “CACM Regulation”) to draft a report on capacity calculation and allocation (hereafter referred to as the “Report”) and submit it to the Agency by two years after the entry into force of CACM Regulation. If the Agency requests it, in every second subsequent year ENTSO-E shall draft an updated report on capacity calculation and allocation and submit it to ACER.

The Report shall be made available by 14 August 2017 covering the period from entry into force of the CACM Regulation onwards. As the Decision of ACER on the determination of Capacity Calculation Regions (hereafter referred to as the "CCR") Nº 06/2016 was taken on 17 November 2016 the deadline for submitting a common coordinated Capacity Calculation Methodology (hereafter referred to as the "CCM") for each CCR is 17 September 2017. In light of this, the Report on capacity calculation and allocation is essentially based on the status of the CCM approval and (if applicable) implementation in the CCRs.

Regarding the quality indicators for the information used for the capacity calculation set forth in the CACM Regulation, the Report provides a description of the relevant indicators and a matrix of relevancy for each CCR. Moreover, quality indicators for the Common Grid Model process (hereafter referred to as the "CGM process") are deliniated as the CGM process is not due to become operational until thirteen months after the approval of the CGM Methodology or 14 January 2018 (whichever is later) and no data will be available until the CGM process is running.

The Report is organised into the following four chapters: Chapter 2 introduces the legal basis on this report and stipulates its relevance for the following descriptions. Chapter 3 recounts the progress made to date in respect to the CCMs in all CCRs and provides a matrix of quality indicators to be provided by the relevant CCR once the CCMs are approved and implemented. Chapter 4 recounts the progress on the pan-European CGM process and puts forward quality indicators to be provided once the CGM process is approved and implemented. Chapter 5 contains a concise summary of the previous chapters. A glossary is included at the end for convenience.

2 LEGAL REFERENCES AND REQUIREMENTS

The content of this Report is specified by Article 31(3) of the CACM Regulation as follows:

"For each bidding zone, bidding zone border and capacity calculation region, the report on capacity calculation and allocation shall contain at least:

(a) the capacity calculation approach used;

(b) statistical indicators on reliability margins;

(c) statistical indicators of cross-zonal capacity, including allocation constraints where appropriate for each capacity calculation time-frame;

(d) quality indicators for the information used for the capacity calculation;

(e) where appropriate, proposed measures to improve capacity calculation;

(f) for regions where the coordinated net transmission capacity approach is applied, an analysis of whether the conditions specified in Article 20(7) are still fulfilled.

(g) indicators for assessing and following in the longer term the efficiency of single day-ahead and intraday coupling, including the merging of capacity calculation regions in accordance with Article 15(3) where relevant;

(h) recommendations for further development of single day-ahead and intraday coupling, including further harmonisation of methodologies, processes and governance arrangements."

It is to be noted, that the data and information that have to be provided in accordance with Article 31(3) of CACM Regulation and requested by ACER in Shadow Opinion, 30 November, 2016 are highly dependent on the requirements set forth in the Common Coordinated CCM (Article 20 or CACM Regulation) and Common Grid Model Methodology (Article 17 of CACM Regulation). Since these methodologies are not approved and/or implemented at the date of submitting the Report, hereinafter only available and/or indicative indicators are described.

COMMON COORDINATED CAPACITY CALCULATION METHODOLOGY

According to Article 20(2) of CACM Regulation, TSOs in each CCR shall submit a proposal for a common coordinated CCM no later than 10 months after the approval of the proposal for a CCR in accordance with Article 15(1) of CACM Regulation. Since the CCRs were approved on 17 November 2016, the preparation of coordinated CCMs for each CCR are still in progress and will be submitted to the regulatory authorities by 17 September 2017. It follows that:

a) The description of the statistical indicators on reliability margins (Article 31(3)(b) of CACM Regulation) and statistical indicators of cross-zonal capacity, including allocation constraints where appropriate for each capacity calculation timeframe (Article 31(3)(c) of CACM Regulation) are provided in this Report. The underlying data of these indicators will only be available upon approval and implementation of CCMs;

b) Recommendations that have to be provided in accordance with Article 31(3)(e) and (f) of CACM Regulation can only be provided after a certain time of operation of relevant coordinated CCMs.

COMMON GRID MODEL METHODOLOGY

According to Article 31(d) of CACM Regulation, the Report shall contain quality indicators for the information used for the capacity calculation. The process of defining quality indicators are set forth in the Common Grid Model Methodology approved by the NRAs on 11 May 2017 (hereafter referred to as the "CGMM") as follows:

a) Article 24(4) of the CGMM: *„All TSOs shall jointly define quality indicators that make it possible to assess all stages of the CGM process including, in particular, the CGM alignment process described in Article 19. They shall monitor these quality indicators and publish the indicators and the results of the monitoring as part of the data to be provided pursuant to Article 31(3) of Regulation 2015/1222."*

b) Article 25(3)(d) of the CGMM: *"By six months after the approval of the present methodology all TSOs shall organise the process of merging the individual grid models by completing the following tasks: [...] all TSOs shall jointly define the quality criteria and quality indicators referred to in Article 24;"*

c) Article 25(5) of the CGMM: *"By thirteen months after the approval of the present methodology or 14 January 2018, whichever is later, all TSOs shall jointly ensure that the CGM process is operational and available for use by coordinated capacity calculators."*

Taking into account the provisions above and that the CGM process will be operational by the thirteen months after the approval of the CGM methodology (11 June 2018), the quality indicators for the information used for capacity calculation are not available and are not to be provided in the Report.

Indicators for assessing and following in the longer term the efficiency of single day-ahead and intraday coupling, including the merging of CCRs (Article 31(3)(g) of CACM Regulation) and recommendations for further development of single day-ahead and intraday coupling, including further harmonisation of methodologies, processes and governance arrangements (Article 31(3)(h) of CACM Regulation) are provided in the "Report on the progress and potential problems with the implementation of Single Day-ahead and Intraday Coupling" submitted to ACER under Article 82(2)(a) of CACM Regulation. Therefore, relevant data are not repeated in this Report.

All reporting done is strictly based on the relevant methodologies to be developed, approved and implemented according to the CACM Regulation. The Report will cover a period of a maximum of two years ending the last day of the previous calendar year. The baseline of this report is the All TSOs proposal of statistical indicators dated 28 April 2017.

ENERGINET CONTROL ROOM

3 CCR CAPACITY CALCULATION INDICATORS

The major part of this Report is based on the All TSOs draft proposal for statistical and quality indicators for the biennial report on capacity calculation and allocation sent to all NRAs on 28 April 2017.

This chapter contains a description of each of the indicators and a matrix of quality indicators to be provided by the relevant CCR once the CCMs are approved and implemented. In any case, NEMOs need to support TSOs in making available the underlying data for the indicators.

3.1. DESCRIPTION OF INDICATORS

3.1.1. CAPACITY CALCULATION APPROACH USED

A description of the CC approach applied (or proposed for NRA approval) in application of Art. 20 CACM Regulation is provided for each CCR in the following Chapter 3.3

3.1.2. STATISTICAL INDICATORS ON RELIABILITY MARGINS

The statistical indicators on Reliability Margin shall allow quantitative assessment of the quality and level of the reliability margin in the given time period:

a) In the coordinated net transmission capacity (hereafter referred to as "CNTC") approach, the indicators apply per bidding zone (hereafter referred to as "BZ") border, direction and timeframes (DA and ID). Granularity: yearly. The indicators are the following: average and median values, x/y % quantiles (recommended 5/95 or 10/90) of the RM set for each market time unit (hereafter referred to as "MTU").

b) For the flow-based (hereafter referred to as "FB") approach, the indicators are calculated per critical branch/critical outage (hereafter referred to as "CBCO[1)]") and comprise: average and median absolute values, x/y % quantiles (recommended 5/95 or 10/90) of the flow reliability margin (hereafter referred to as "FRM") of each particular CBCO considered into single FB capacity calculation and allocation. Granularity: yearly.

3.1.3. STATISTICAL INDICATORS OF CROSS-ZONAL CAPACITY, INCLUDING ALLOCATION CONSTRAINTS WHERE APPROPRIATE FOR EACH CAPACITY CALCULATION TIME-FRAME

a) DA and ID – Ramping constraints for single direct current interconnector/set of DC ICs to count the number of occurrences of the constraint being a limiting one per year and per DC IC or set of DC ICs. This implies a reporting of the list of DC ICs or sets of DC ICs where the constraint is active (defined) and its definition characteristics expressed in yearly averages (how many MW/MTU) per DC IC or set of DC ICs

The hourly variation of the flows through an interconnector or set of interconnectors can be constrained by a ramping limit. This limitation confines the flow in an "al-

1) In CACM Regulation also referenced as Critical Network Elements (CNE/C)

lowed band" when moving from one hour to the next. The ramping limit constrains the flow that can pass through the interconnector or set of interconnectors in hour h depending on the flow that is passing in the previous hour h-1. The ramping limits may be different for each period and flow direction.

b) DA and ID – BZ net position ramping. To count the number of occurrences of the constraint being a limiting one per year and per BZ. This implies a reporting of the list of BZ where the constraint is active (defined) and its definition characteristics expressed in yearly averages per BZ.[2)]

c) DA and ID – losses for DC IC(s). The list of DC ICs where the losses functionality is active, with the NRA-approved percentage of the losses per year and per DC IC. This percentage will be multiplied by the yearly actual flows in order to report the yearly losses per DC IC.

   "Losses functionality" covers the losses internalised in the MC algorithm so that this one works on net flows, this constraint is specifically considered for DC interconnectors/cables.

d) DA and ID – minimum stable flow constraint at single DC IC/set of DC ICs.to count the number of occurrences of the constraint being a limiting one per year and per triple category (DC IC, set of DC ICs and BZ basis). This implies a reporting of the list of the BZs where the constraint is active and its definition characteristics are expressed in yearly averages per single DC IC, set of DC ICs or net position BZ level.

e) DA and ID – DC flow tariff constraint. To count the number of occurrences of the constraint being a limiting one per year and per BZ border. This implies a reporting of the list of BZ borders where the constraint is active (defined).

   The flow tariff constraint is a constraint due to specificities of DC transmission (controllable power flow, relatively high losses compared to transmitted power). This constraint shall ensure that there is no power flow over the DC interconnector until a defined minimum price differential is not reached. The flow tariff is for the MC optimisation included as a loss with regard to the congestion rent. This will show up in the results as a threshold for the price between the connected bidding areas. If the difference between the two corresponding market clearing prices is less than the tariff then the flow will be zero. If there is a flow the price difference will be exactly the flow tariff, unless there is congestion. Once the price difference exceeds the tariff the congestion rent becomes positive.

f) DA and ID – bilateral intuitiveness constraint. To count the number of occurrences of the constraint being a limiting one per year and per BZ border. This implies a reporting of the list of BZ borders where the constraint is active (defined).

   Flow-based market coupling can lead to non-intuitive situations, i.e. energy goes from high priced areas to low priced areas. The reason is that some non-intuitive exchanges "free up" capacity, allowing even larger exchanges between other markets which have a positive effect on overall social welfare. The MC algorithm integrates a mechanism to suppress these non-intuitive exchanges. This mechanism seeks "flows" between areas which match the net positions.

g) DA – curtailment distribution. To count the number of occurrences of curtailment per BZ border and the total curtailed MWh that year per BZ border

h) DA and ID – BZ net position volume. To count the number of occurrences of the constraint being a limiting one. This implies a reporting of the list of BZs where the constraint is active and statistical information (e.g. minimum, maximum and average values) of import and export limits per year and per BZ.

   This constraint will allow definition of a positive and negative bound to the net position for each bidding zone, i.e. maximum import and/or export of BZ determined by the TSOs.

3.1.4. QUALITY INDICATORS FOR THE INFORMATION USED FOR THE CAPACITY CALCULATION

These indicators are related to the Common Grid Model; they are described in Chapter 4.

2) See indicators description 3.1.3.a

3.2. CAPACITY CALCULATION REGION AND INDICATOR OVERVIEW

Depending on the CCM developed within the CCR, the indicators described above may not be applicable. The following matrix provides an overview of which indicators are applicable in which CCR.

Day-Ahead

	Nordic	Hansa	Core	Italy North	GrIt	SWE	IU	Channel	Baltic	SEE
3.1.1										
3.1.2 a)										
3.1.2 b)										
3.1.3 a)										
3.1.3 b)										
3.1.3 c)										
3.1.3 d)										
3.1.3 e)										
3.1.3 f)										
3.1.3 g)										
3.1.3 h)										

Intraday

	Nordic	Hansa	Core	Italy North	GrIt	SWE	IU	Channel	Baltic	SEE
3.1.1										
3.1.2 a)										
3.1.2 b)										
3.1.3 a)										
3.1.3 b)										
3.1.3 c)										
3.1.3 d)										
3.1.3 e)										
3.1.3 f)										
3.1.3 h)										

Indicator is applicable once the CCM is approved and implemented
Indicator is not applicable e. g. no DC lines available in the CCR, not in line with CCM

3.3. CAPACITY CALCULATION REGION

3.3.1. NORDIC

3.3.1.1. Status of the capacity calculation methodology

The current TSOs of the CCR Nordic (Energinet, Svenska Kraftnät, Fingrid Oyj)[3] are in the public consultation process (7 April – 15 May) of their supporting document on the CCM for both the Day-Ahead and Intraday timeframes for the Nordic CCR.

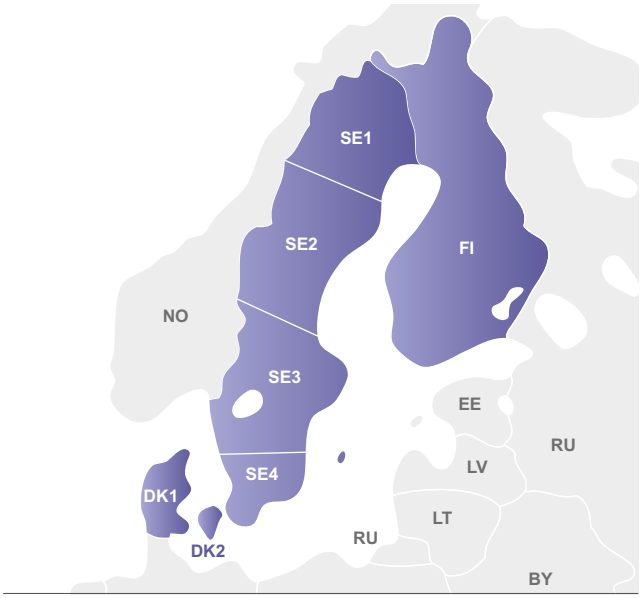


Figure 1: Nordic CCR

The CCM proposal is the following:

- For the Day-Ahead timeframe: The Nordic TSOs propose to implement a flow-based capacity calculation approach.
- For the Intraday timeframe: As a long-term solution, the Nordic TSOs propose to implement a flow-based approach, as soon as the intraday market platform is technically able to utilise flow-based capacities. As an interim solution, the Nordic TSOs propose to implement a coordinated net transmission capacity approach for the intraday market timeframe.

A stakeholder information platform, hosted by the Nordic RSC, is up and running and provides (amongst others) access to flow-based parameters and market simulation results, and a stakeholder information tool to get a grip on the flow-based parameters.

To ensure a good stakeholder dialogue, the project has established two different settings to meet and discuss questions related to the CCM project. In the Stakeholder Forum, all stakeholders are welcome to join the meetings. The other setting for stakeholder dialogue is the Stakeholder Group meeting, where the industry organizations, national regulatory authorities, and power exchanges have nominated representatives that meet and discuss issues together with representatives from the project.

An indicative high-level timeline for implementing the new CCM is visualised in the table below: it shows a go-live date of the Flow-based Day-Ahead CCM and the intermediate Intraday CNTC CCM in Q4 2019 at the earliest.

Milestone(s)	
Date	**Description**
Q3 2017	Submission of CCM proposal to NRAs
Q1 2018	Public parallel run quality criteria are met (prototype tool)
Q1 2018	CCM approval by NRAs
Q2 2018	Investment decision industrial tool
Q2 2018	D-2, D-1, ID CGMs available 24/7
Q1 2019	Public parallel run quality criteria are met (industrial tool), and all TSO input data available
Q3 2019	Go-live criteria are met
Q4 2019	Nordic Day-Ahead CCM and intermediate Intraday CCM go-live
Q1 2021	XBID able to handle flow-based constraints

[3] Statnett SF is also a member of the Nordic CCM project but is not part of the Nordic CCR as defined in the Decision Of The Agency For The Cooperation Of Energy Regulators No 06/2016 of 17 November 2017 on the electricity transmission system operators' proposal for the determination of CCRs.

3.3.1.2. Capacity calculation indicators

Given the projected timeline for the implementation of the capacity calculation methodology, it is expected that the indicators applicable to the Nordic CCR will correspond to those applicable today (i. e. as presented in the table in section 3.2).

The present NTC-based capacity calculation method used on interconnectors within the Nordic CCR mean that only a limited subset of the indicators listed in section 3.1.3 are applicable today. In the case of indicator 3.1.3a, it is only applicable to the DC interconnectors DK2 – SE3 and DK1 – DK2.

Once the new CCM is implemented, a reassessment of the applicability of the indicators listed in section 3.1.3 can take place.

Indicator applicability at the time of writing are:

Applicability of the Indicators			
Statistical indicators	**Day-Ahead**	**Intraday**	**Additional Information**
3.1.1	Yes	Yes	Indicator applicable: CCR Nordic propose to use flow-based in Day-Ahead and C-NTC in intraday.
3.1.2 a)	Yes	Yes	Indicator applicable in intraday timeframe but not Day-Ahead.
3.1.2 b)	No	No	Indicator applicable in Day-Ahead timeframe.
3.1.3 a)	Yes	Yes	Indicator applicable only for DC interconnectors DK2 – SE3 and DK1 – DK2: However, this is part of the market algorithm.
3.1.3 b)	No	No	Indicator not applicable: There are no ramping limitations currently on bidding zone level. Single limitations are not reported to the TSOs.
3.1.3 c)	No	No	Indicator not applicable: No losses functionality is implemented on DC interconnectors DK2 – SE3 and DK1 – DK2.
3.1.3 d)	No	No	Indicator not applicable: There are no minimum stable flow constraints at single DC IC/set of DC ICs currently applied
3.1.3 e)	No	No	Indicator not applicable: There are no Day-Ahead and intraday – DC flow tariff constraints currently applied.
3.1.3 f)	No	No	Indicator not applicable but may need to be reassessed once flow-based capacity calculation is implemented for Day-Ahead timeframe.
3.1.3 g)	No	No	Indicator not applicable: Curtailment distribution is not used – only firm capacity. Countertrade is used to ensure firmness.
3.1.3 h)	No	No	Indicator not applicable: There is no Day-Ahead and intraday – BZ net position volume currently applied. Part of market algorithm. Single limitations are not reported to TSOs in existing system.

3.3.2. HANSA

3.3.2.1. Status of the capacity calculation methodology

The TSOs currently in CCR Hansa are Energinet, Svenska Kraftnät, PSE S.A, TenneT TSO GmbH and 50Hertz Transmission GmbH.

It is expected that the bidding-zone border NO2-NL (TenneT B.V and Statnett SF) is added to CCR Hansa once Norway ratifies the 3rd EU liberalisation package, EU regulation 713-714/2009. At present, the owner of Baltic Cable (SE4-DE/LU) is not a certified TSO and is subsequently not part of the CCR Hansa.

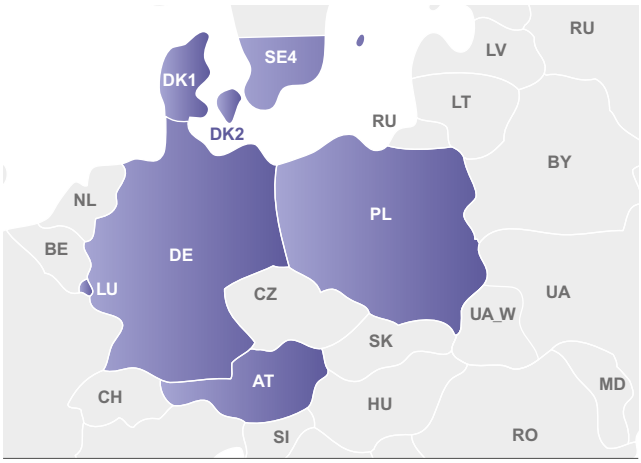


Figure 2: Hansa CCR

The CCM for CCR Hansa is, due to the scope of CCR Hansa, interlinked with the CCMs being developed in CCR Nordic and CCR Core. These conditions should all be respected when reading the following description.

CCR Hansa covers three bidding zone borders and is placed between CCR Nordic and CCR Core. Since CCR Hansa has the unique feature that all bidding zones are currently connected by means of radial lines, the assessment of cross-border capacity can be split into three separate parts, which allows the TSOs to look at the impact of cross-border trade independently on each part of the grid. The methodology for CCR Hansa is therefore a C-NTC methodology for both day-ahead and intraday. The CCM in CCR Hansa is to take advantage of the flow-based methodologies with an Advanced Hybrid Coupling (AHC) approach developed in CCR Nordic and CCR Core in order to represent the limitations in the meshed AC grids, while the actual interconnector capacities are addressed individually within CCR Hansa. While the implementation of AHC is foreseen for CCR Nordic from the beginning of Nordic Flow-based Capacity Calculation, it is planned to be applied in CCR Core in an additional step after the initial go-live.

This method ensures that the capacity calculation in CCR Hansa is as efficient as possible from a market point of view in all timeframes. The methodology is easily implementable, and from an operational and security of supply point of view it is coordinated with adjacent regions. Moreover, the proposed methodology is sustainable for expected future changes in CCR configurations.

Due to the interdependencies with other CCRs, the CCM for CCR Hansa will be implemented step-wise until the target solution is reached.

The steps include:

- Implementation of the CGM,
- Appointment of a CCC,
- Implementation of flow-based capacity calculation with AHC in CCR Nordic,
- Implementation of flow-based capacity calculation with AHC in CCR Core,
- Implementation of Intraday Market Coupling with flow-based constraints.

Milestone(s)	
Date	**Description**
Q2 2018	Implementation of Common Grid Model (CGM)
Q1 2019	Appointment of Coordinated Capacity Calculator (CCC)
Q2 2019	Implementation of flow-based capacity calculation with AHC in CCR Nordic
Q2 2020	Implementation of flow-based capacity calculation with AHC in CCR Core
Q1 2021	Implementation of Intraday Market Coupling with flow-based constraints

At the time of writing this report, there is no specific time for the completed implementation of the target model for CCR Hansa, as it relates to the development of external projects.

3.3.2.2. Capacity calculation indicators

Applicability of the Indicators			
Statistical indicators	**Day-Ahead**	**Intraday**	**Additional Information**
3.1.1	Yes	Yes	Indicator applicable: CCR Hansa plan to use a C-NTC methodology.
3.1.2 a)	Yes	Yes	Indicator applicable: The reliability margin for AC interconnector is determined, whereas reliability margin for HVDC lines is set to zero.
3.1.2 b)	No	No	Indicator not applicable.
3.1.3 a)	Yes	Yes	Indicator applicable: However, this is part of the market algorithm.
3.1.3 b)	No	No	Indicator not applicable.
3.1.3 c)	No	No	Indicator not applicable: As there currently are no losses for DC implemented (NO2-NL has, however currently not part of CCR Hansa).
3.1.3 d)	No	No	Indicator not applicable.
3.1.3 e)	No	No	Indicator not applicable.
3.1.3 f)	No	No	Indicator not applicable.
3.1.3 g)	No	No	Indicator not applicable.
3.1.3 h)	Yes	Yes	Indicator applicable: Due to allocation constraints, TSOs can apply constraints on BZ net position volume.

AMPRION CONTROL ROOM

3.3.3. CORE

3.3.3.1. Status of the capacity calculation methodology

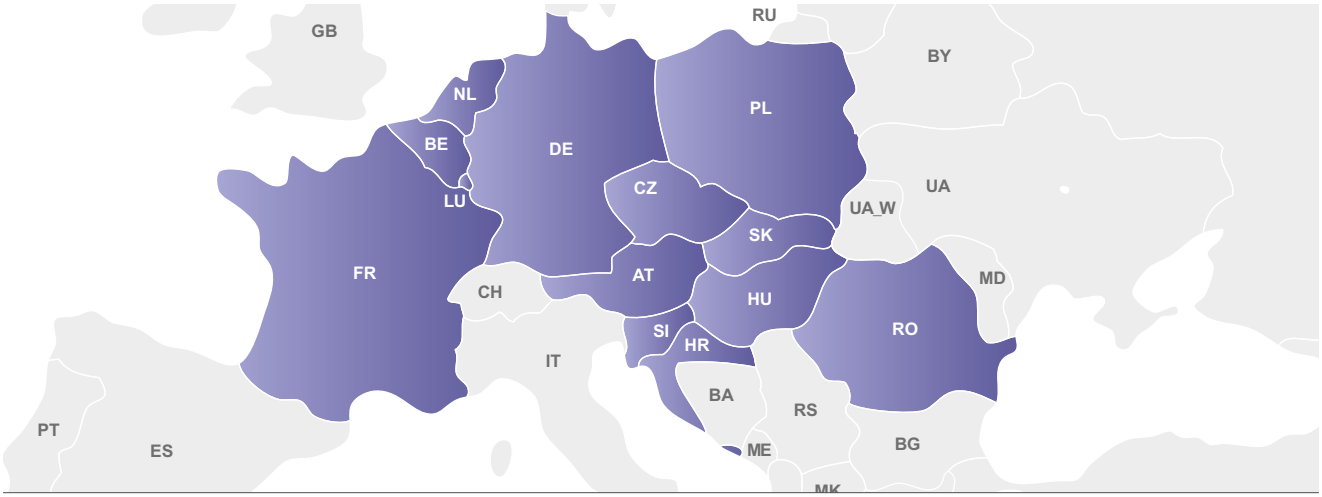


Figure 3: Core CCR

The 16 TSOs currently in CCR Core are 50Hertz Transmission GmbH, Amprion GmbH, Austrian Power Grid AG, ČEPS, a. s., Creos Luxembourg S. A., Croatian Transmission System Operator Ltd. (HOPS d.o.o.), ELES, d.o.o., Elia System Operator SA, MAVIR Hungarian Independent Transmission Operator Company Ltd, PSE S. A., C. N. Transelectrica S. A., RTE – Réseau de transport d'électricité, SEPS – Slovenská elektrizačná prenosová sústava, a. s., TenneT TSO B.V., TenneT TSO GmbH and TransnetBW GmbH.

The Core CCR includes the bidding zones borders: France-Belgium (FR-BE), Belgium-Netherlands (BE-NL), France-Germany/Luxembourg (FR-DE/LU), Netherlands-Germany/Luxembourg (NL-DE/LU), Belgium-Germany/Luxembourg (BE-DE/LU)[4], Germany/Luxembourg-Poland (DE/LU-PL), Germany/Luxembourg-Czech Republic (DE/LU-CZ), Austria-Czech Republic (AT-CZ), Austria-Hungary (AT-HU), Austria-Slovenia (AT-SI), Czech Republic-Slovakia (CZ-SK), Czech Republic-Poland (CZ-PL), Hungary-Slovakia (HU-SK), Poland-Slovakia (PL-SK), Croatia-Slovenia (HR-SI), Croatia-Hungary (HR-HU), Romania-Hungary (RO-HU), Hungary-Slovenia (HU-SI)[5] and Germany/Luxembourg-Austria (DE/LU-AT)[6].

Currently the CCM design is being finalised for the formal 'proposal' and explanatory document has been consulted on from 29 June until 31 July 2017. Studies have been launched and validation of results is planned to be finalised by Q1 2018 in parallel with the NRA approval.

Please find below the overview of the current timeline for implementation in Core CCR:

Milestone(s)*	
Date	**Description**
Q3 2017	Day-Ahead flow-based capacity calculation & Intraday flow-based CCM proposals
Q1 2018	Finish validation phase & provide feasibility report for Day-Ahead flow-based capacity calculation
Q1 2018	Approval of Day-Ahead flow-based capacity calculation and Intraday flow-based CCMs by NRAs
Q1 – Q2 2019	Start external parallel run Day-Ahead flow-based capacity calculation
Q1 – Q2 2020	Go-Live Day-Ahead flow-based capacity calculation
Q3 – Q4 2020	Start external parallel run Intraday flow-based capacity calculation
Q1 – Q2 2021	Go-Live Intraday flow-based capacity calculation

* The dates included in the table are indicative, exact implementation roadmap is under investigation.

4) Commercialization under investigation with a technical trial phase

5) Please note that this border is expected to be in operation in 2018

6) Please note that this border is expected to be in operation in 2018

3.3.3.2. Capacity calculation indicators

Applicability of the Indicators			
Statistical indicators	**Day-Ahead**	**Intraday**	**Additional Information**
3.1.1	Yes	Yes	Core CCR proposes to use Flow-based CC in Day-Ahead and Intraday
3.1.2 a)	No	No	N/A in Flow-based capacity calculation
3.1.2 b)	Yes	Yes	
3.1.3 a)	No	No	There are no ramping limits in the current configuration of the region for this moment in time
3.1.3 b)	No	No	There is no BZ NP ramping constraint considered in the current configuration of the region for this moment in time
3.1.3 c)	No	No	There are no losses considered in the current configuration of the region for this moment in time
3.1.3 d)	No	No	There is no minimum stable flow constraint considered in the current configuration of the region for this moment in time
3.1.3 e)	No	No	There is no DC flow tariff constraint considered in the current configuration of the region for this
3.1.3 f)	TBD	No	Still to be determined for Day-Ahead in the Core MC project, together with Core NEMOs. For now there is no Flow-based Intraday market-coupling development ongoing.
3.1.3 g)	Yes	No	For now there is no Flow-based Intraday market-coupling development ongoing.
3.1.3 h)	Yes	Yes	Pursuant to CCM proposal, indicator applicable: Due to allocation constraints, TSOs can apply constraints on BZ net position volume

3.3.4. ITALY NORTH

3.3.4.1. Status of the capacity calculation methodology

The TSOs participating in the capacity calculation process within this region are: Austrian Power Grid AG (AT), ELES d.o.o (SI), Réseau de transport d'électricité (FR), TERNA Rete Elettrica Nazionale S.p.A (IT) and Swissgrid ag (CH).

The "Italy North" region includes the bidding zone borders: Italy NORD – France (NORD – FR), TERNA Rete Elettrica Nazionale S.p.A. and RTE– Réseau de transport d'électricité; Italy NORD – Austria (NORD – AT), TERNA Rete Elettrica Nazionale S.p.A. and Austrian Power Grid AG; and Italy NORD – Slovenia (NORD – SI), TERNA Rete Elettrica Nazionale S.p.A. and ELES d.o.o.

Furthermore, the bidding zone border Italy NORD – Switzerland (NORD – CH), TERNA Rete Elettrica Nazionale S.p.A. and Swissgrid is included in the capacity calculation processes on the "Italy North" region.

According to the provisions set forth in the CACM Regulation, the Flow-based calculation method is the target approach for the CCR Italy North. Implementation is subject to the provisions of the Article 20(3) of the CACM Regulation.

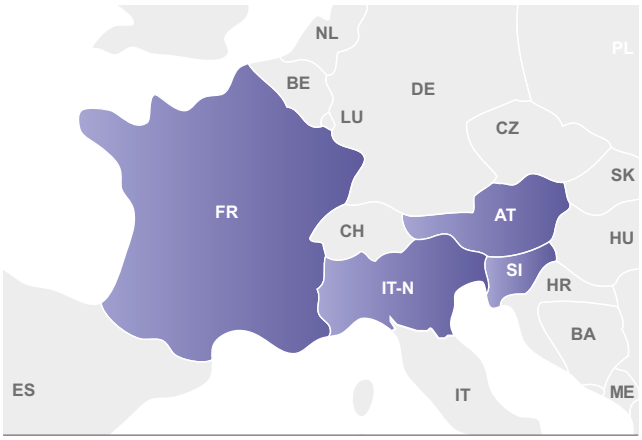


Figure 4: Italy North CCR

As an interim solution, the Italy North TSOs propose to :

- develop the current coordinated net transmission capacity approach for the day-ahead market timeframe (see milestones provided in the table below)
- in a first step, implement the coordinated net transmission capacity approach for the intraday market timeframe (capacity calculation covering hours 16 h – 24 h for XBID2 auction);
- afterwards, in a second step, perform capacity calculation covering all 24 intraday hours for the allocation design CACM Regulation compliance.

Milestone(s) for the Day-Ahead market timeframe	
Deadline	**Description**
Q3 2017	Increase the number of timestamps calculated per day from 4 to 8
Q4 2017	Increase the number of timestamps calculated per day from 8 to 12

Milestone(s) for the Intraday market timeframe	
Deadline	**Description**
Q3 2017	Implementation phase + Internal parallel run for the capacity calculation covering hours 16 h – 24 h for XBID2 auction
Q4 2017	External parallel run for the capacity calculation covering hours 16 h – 24 h for XBID2 auction
Q1 2018	Go-Live for the capacity calculation covering hours 16 h – 24 h for XBID2 auction
Q1 2018 (provisional date)	Design phase for the capacity calculation covering all 24 intraday hours for the allocation design CACM Regulation compliance
Q2 2018 (provisional date)	Implementation phase for the capacity calculation covering all 24 intraday hours for the allocation design CACM Regulation compliance
Q3 2018 (provisional date)	Internal parallel run for the capacity calculation covering all 24 intraday hours for the allocation design CACM Regulation compliance
Q4 2018 (provisional date)	External parallel run for the capacity calculation covering all 24 intraday hours for the allocation design CACM Regulation compliance
Q1 2019	Go-Live for the capacity calculation covering all intraday 24 hours for the allocation design CACM Regulation compliance

3.3.4.2. Capacity calculation indicators

Applicability of the Indicators			
Statistical indicators	**Day-Ahead**	**Intraday**	**Additional Information**
3.1.1	Yes	Yes	Indicator applicable: CCR Italy North TSOs aim at implementing the Flow-based CCM for both day-ahead and intraday market timeframe. Implementation subjected to the provisions set forth in Article 20(3) of the CACM Regulation. As an interim solution, CCR Italy North TSOs propose to use the coordinated net transmission capacity approach.
3.1.2 a)	Yes	Yes	Indicator applicable: on the basis of a statistical analysis run by Terna and acknowledged by the TSOs in the region, the transmission reliability margin (TRM) used for the whole Italian border area is 500 MW for all the timeframes.
3.1.2 b)	No	No	Indicator is not applicable
3.1.3 a)	No	No	Indicator is not applicable
3.1.3 b)	No	No	Indicator is not applicable
3.1.3 c)	No	No	Indicator is not applicable
3.1.3 d)	No	No	Indicator is not applicable
3.1.3 e)	No	No	Indicator is not applicable
3.1.3 f)	No	No	Indicator is not applicable
3.1.3 g)	No	No	Indicator is not applicable
3.1.3 h)	No	No	Indicator is not applicable

3.3.5 GREECE – ITALY

3.3.5.1. Status of the capacity calculation methodology

The TSOs currently in CCR Greece-Italy are Terna – Rete Elettrica Nazionale SpA and Independent Power Transmission Operator S.A.(IPTO).

The Net Transfer Capacity between the two control areas for the timeframe Day-Ahead is exactly set to be equal to the thermal capacity of the DC cable which is the only tie line between Italy and Greece.

Milestones for this CCR are not yet available.

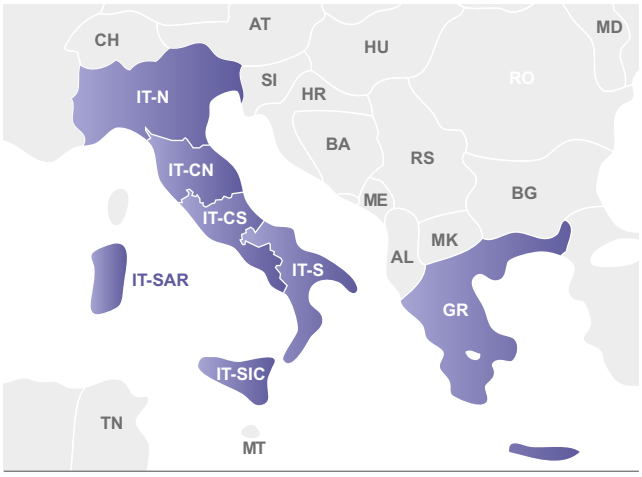


Figure 5: Greece – Italy CCR

3.3.5.2. Capacity calculation indicators

Applicability of the Indicators			
Statistical indicators	**Day-Ahead**	**Intraday**	**Additional Information**
3.1.1	Yes	Yes	Indicator applicable: CCR GRIT presently uses CNTC approach.
3.1.2 a)	Yes	Yes	Indicator is not applicable
3.1.2 b)	No	No	Indicator is not applicable
3.1.3 a)	No	No	Indicator is not applicable
3.1.3 b)	No	No	Indicator is not applicable
3.1.3 c)	No	No	Indicator is not applicable
3.1.3 d)	No	No	Indicator is not applicable
3.1.3 e)	No	No	Indicator is not applicable
3.1.3 f)	No	No	Indicator is not applicable
3.1.3 g)	No	No	Indicator is not applicable
3.1.3 h)	No	No	Indicator is not applicable

3.3.6. SOUTH WEST EUROPE

3.3.6.1. Status of the capacity calculation methodology

The TSOs currently in CCR South West Europe are RTE – Réseau de transport d'électricité, Red Eléctrica de España S.A. (REE) and Rede Eléctrica Nacional, S.A. (REN).

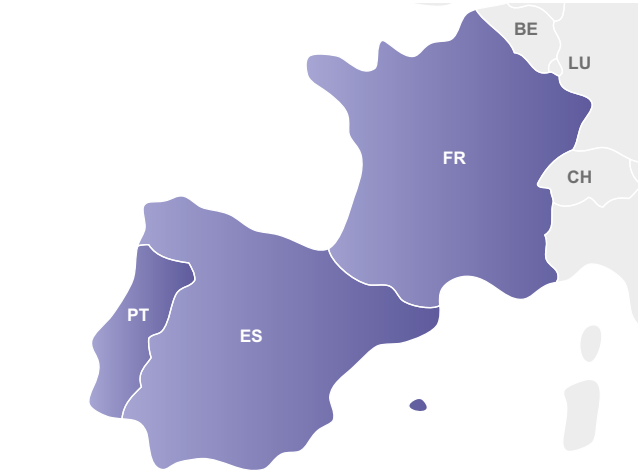


Figure 6: South West Europe CCR

At the time of writing this report, the TSOs of the SWE Region have sent to the relevant NRAs the proposal of the CCM for Day-Ahead and Intraday timeframes. This document has been available for public consultation during one month, from 14 June to 20 July 2017. To facilitate a good dialogue with the stakeholders, a workshop was organised on 5 July 2017 to answer all questions that could arise from the proposal.

The proposal states that Day-Ahead CC will be implemented no later than the first semester 2019 as a first step. A parallel run is planned in order to guarantee the robustness of the tools and process. As a second step, the proposal states that Intraday CC will be implemented no later than the second semester 2020 with the same CC approach and principles that the Day-Ahead CC has.

Milestone(s)	
Date	**Description**
Jun 2017	Start public consultation on Day-Ahead and Intraday CCM
Jul 2017	Finish public consultation on Day-Ahead and Intraday capacity calculation methodology
Sep 2017	Submit Day-Ahead and Intraday CCM final version to NRAs
S1 2018	Start Day-Ahead capacity calculation external parallel run
S1 2019	Day-Ahead capacity calculation implementation
S2 2020	Intraday capacity calculation implementation

The proposal establishes Coordinated NTC as the approach to be used for DA & ID capacity calculation. This choice has been communicated to the relevant NRAs.

3.3.6.2. Capacity calculation indicators

Given that at the time of writing of this document, day-ahead and intraday capacity calculation processes are not implemented in the SWE region, it is expected that the corresponding information for the applicable indicators will be provided in the future.

Applicability of the Indicators			
Statistical indicators	**Day-Ahead**	**Intraday**	**Additional Information**
3.1.1	Yes	Yes	Coordinated NTC approach is expected to be the chosen approach.
3.1.2 a)	Yes	Yes	all the defined statistical indicators on reliability margins will be calculated and provided.
3.1.2 b)	No	No	Indicator 3.1.2 (b) will not be applicable, as it is related to a capacity calculation approach that will not be used in the SWE region: flow-based.
3.1.3 a)	No	No	Indicators 3.1.3 (a, b, c, d, e, f, and h) are statistical indicators of cross-zonal capacity based on allocation constraints. They will not be applicable because in the Day-Ahead and Intraday CCM proposal it is written that the TSOs of SWE region shall not apply allocation constraints in the capacity calculation within the SWE region.
3.1.3 b)	No	No	
3.1.3 c)	No	No	
3.1.3 d)	No	No	
3.1.3 e)	No	No	
3.1.3 f)	No	No	
3.1.3 g)	No	No	Indicator not applicable: Allocated capacity in DA and ID timeframes is considered firm and its firmness is ensured through countertrade measures if necessary. Curtailments could only occur in case of Force Majeure or Emergency Situation, in accordance with Article 72 of CACM Regulation.
3.1.3 h)	No	No	Indicators 3.1.3 (a, b, c, d, e, f, and h) are statistical indicators of cross-zonal capacity based on allocation constraints. They will not be applicable because in the Day-Ahead and Intraday CCM proposal it is written that the TSOs of SWE region shall not apply allocation constraints in the capacity calculation within the SWE region.


PICTURE COURTESY OF REN

3.3.7. IRELAND AND UNITED KINGDOM

3.3.7.1. Status of the capacity calculation methodology

The TSOs currently in Ireland and United Kingdom CCR are: National Grid Electricity Transmission plc, System Operator for Northern Ireland Ltd, EirGrid plc, Moyle Interconnector (Moyle).

The Capacity Calculation Methodology, at the time of writing this report, has not been approved by the relevant NRAs nor presented for stakeholders in public consultation.

The IU CCR consists of the following bidding zone border: SEM – Great Britain.

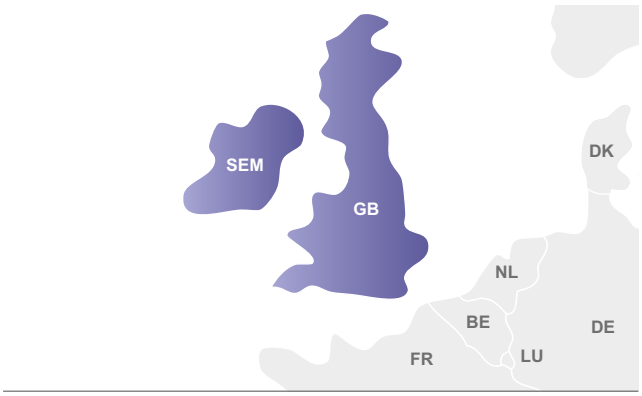


Figure 7: Ireland and United Kingdom CCR

The IU Region consists of HVDC interconnectors that can be operated in an independent way. As such, because the IU region only contains a single bidding zone border, the TSOs propose to use a CNTC method for both the Day-Ahead and Intraday timescales. A detailed coordinated calculation will be performed at the Day-Ahead and Intraday timescale based on a similar approach to the detailed calculation approach outlined in the Channel region.

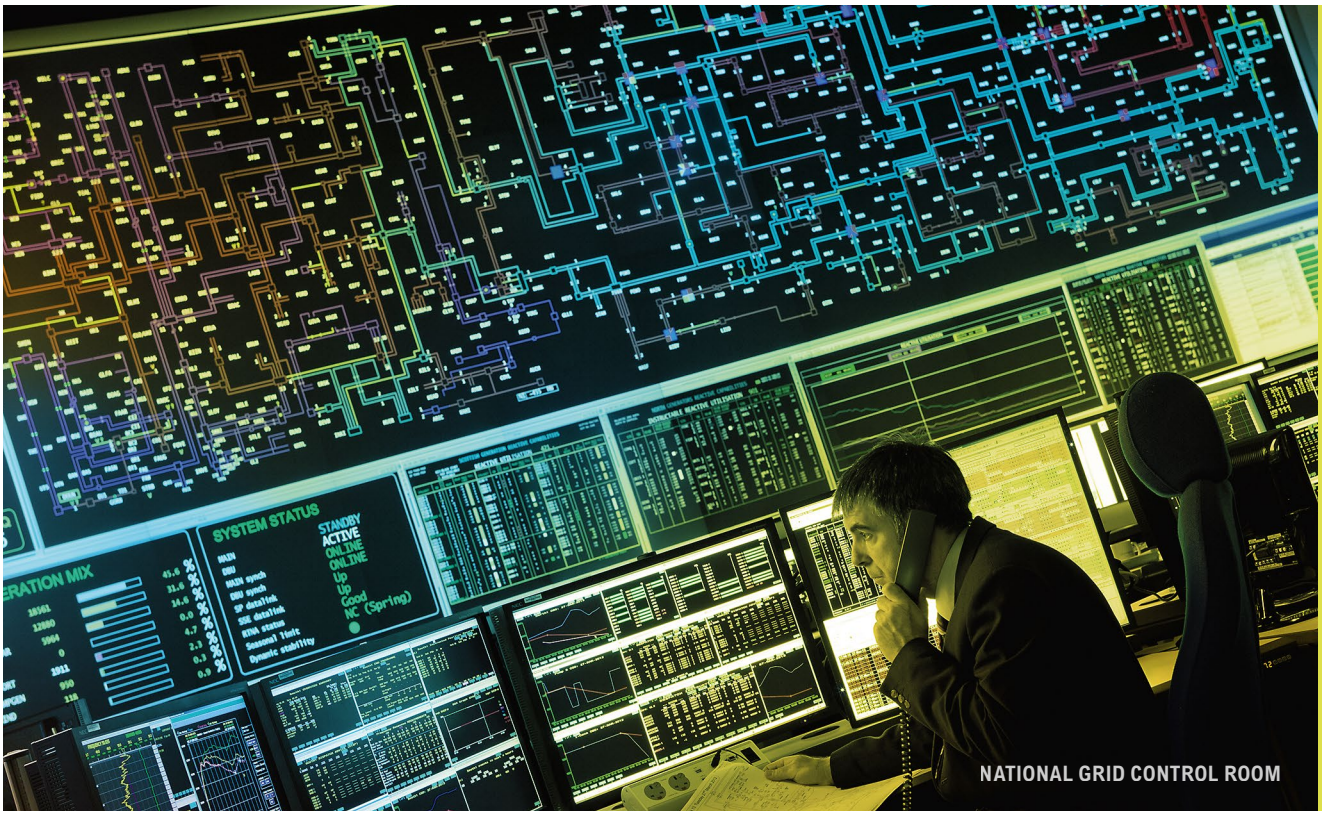
The implementation will be prepared by interactions with TSOs and CCCs. The first step will aim at defining the IT requirements based on the high-level business process and requirements resulting from the proposed methodologies and developed by the TSOs. This shall cover identification of formats, AS IS model, TO BE model and performance. IT development shall then follow. In parallel with the IT development, TSOs shall organise trial runs, where possible failure can be detected and feedback from end-user will lead to improvements. The trial run is expected to start no sooner than Q1-2018 and will continue until the go-live.

The capacity calculation process is expected to go-live in Q4-2018.

Milestone(s)	
Date	**Description**
Q3 2017	Submission of CCM approval package to NRAs
Q1 2018	Start trial run
Q2 2018	NRA decision on CCM due
Q1 2019	The capacity calculation process is expected to go-live in Q4-2018.

3.3.7.2. Capacity calculation indicators

Applicability of the Indicators			
Statistical indicators	**Day-Ahead**	**Intraday**	**Additional Information**
3.1.1	Yes	Yes	Indicator applicable: CCR IU propose to use CNTC in Day-Ahead and intraday
3.1.2 a)	Yes	Yes	Indicator applicable: the transmission reliability margin (TRM) used shall be zero.
3.1.2 b)	No	No	Indicator not applicable.
3.1.3 a)	Yes	Yes	Indicator applicable.
3.1.3 b)	No	No	Indicator not applicable: there are no ramping limitations currently on bidding zone level.
3.1.3 c)	No	No	Indicator applicable.
3.1.3 d)	No	No	Indicator not applicable: there are no minimum stable flow constraints at single DC IC / set of DC ICs currently applied.
3.1.3 e)	No	No	Indicator not applicable: there are no Day-Ahead and Intraday - DC flow tariff constraints currently applied.
3.1.3 f)	No	No	Indicator not applicable.
3.1.3 g)	No	No	Indicator not applicable: curtailment distribution is not used – only firm capacity.
3.1.3 h)	No	No	Indicator not applicable: there is no Day-Ahead and Intraday - BZ net position volume currently applied.



NATIONAL GRID CONTROL ROOM

3.3.8. CHANNEL

3.3.8.1. Status of the capacity calculation methodology

The TSOs currently in the Channel CCR are: National Grid Electricity Transmission plc, RTE – Réseau de Transport d'Electricité, National Grid Interconnectors Limited (NGIC), BritNed Development Limited and TenneT TSO B.V.

The CCM, at the time of writing this report, has not been approved by the relevant NRAs nor presented for stakeholders in public consultation.

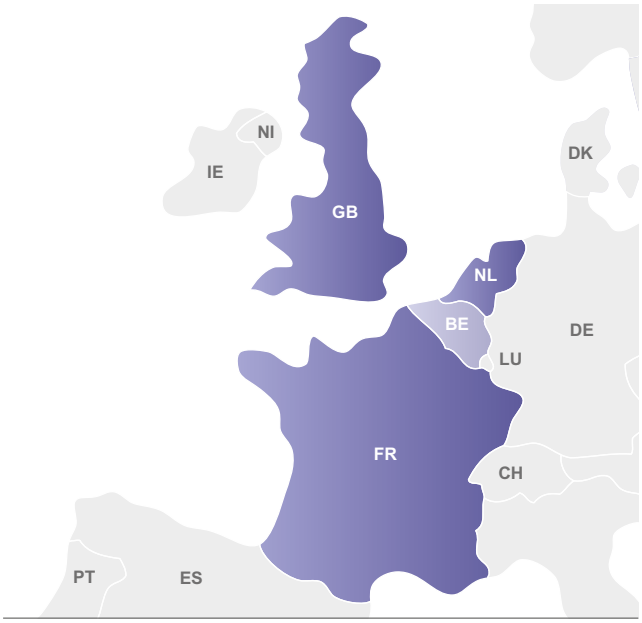


Figure 8: Channel CCR

The Channel CCR consists of the following bidding zone borders: France – Great Britain, Netherlands – Great Britain and Belgium – Great Britain[7)].

The Channel CCR consists of radial HVDC interconnectors between GB and the continent. The CCM under elaboration is based on a coordinated net transfer capacity approach.

The TSOs of the Channel Region are committed to investigate in a next stage the AHC model as a potential target model. Such a study can only be performed once such a solution would be supported in the Core region. The results of the study will be consulted with all relevant stakeholders.

From the GB side of the border. It is considered that a CNTC approach is more in line with their operational experience, as feasibility of implementing a flow-based approach should be further investigated to ensure it takes into account all operational security issues experienced in GB. The GB system faces, due to its nature, different issues that are not observed (yet) within CWE such as risks of low inertia and ROCOF.

The capacity calculation process is expected to go-live in Q4-2018.

Milestone(s)	
Date	**Description**
Q3 2017	Submission of CCM approval package to NRAs
Q1 2018	Start trial run
Q2 2018	NRA decision on CCM due
Q1 2019	The capacity calculation process is expected to go-live in Q4-2018.

7) All TSOs introduced a request for amendment in accordance with Article 9(13) of Regulation 2015/1222 to include this border in the Channel CCR.

3.3.8.2. Capacity calculation indicators

Applicability of the Indicators			
Statistical indicators	**Day-Ahead**	**Intraday**	**Additional Information**
3.1.1	Yes	Yes	Indicator applicable: CCR Channel propose to use CNTC in Day-Ahead and Intraday
3.1.2 a)	No	No	Indicator not applicable: TSOs consider the reliability margin in the form of Flow Reliability Margins (FRMs) applied on each Critical Network Element (CNE). For both the Day-Ahead and intraday capacity calculation, the TSOs of Channel Region define the FRM in line with Article 22 of the CACM Regulation.
3.1.2 b)	Yes	Yes	Indicator applicable. See the comment above.
3.1.3 a)	Yes	Yes	Indicator applicable. In the methodology, TSOs within the Channel Region define ramping limitations, which shall be provided to the NEMOs as an allocation constraint for the single day-ahead and intraday market-coupling processes.
3.1.3 b)	No	No	Indicator not applicable: there are no ramping limitations currently on bidding-zone level.
3.1.3 c)	Yes	Yes	Indicator applicable.
3.1.3 d)	No	No	Indicator not applicable: there are no minimum stable flow constraints at single DC IC/set of DC ICs currently applied.
3.1.3 e)	No	No	Indicator not applicable: there are no day-ahead and intraday – DC flow tariff constraints currently applied.
3.1.3 f)	No	No	Indicator not applicable.
3.1.3 g)	Yes	–	Indicator applicable: curtailment of capacity can occur in accordance with CACM described principles.
3.1.3 h)	Yes	Yes	Indicator applicable: external constraints are foreseen in the capacity calculation methodology under consultation at the date of this document.

3.3.9. BALTIC

3.3.9.1. Status of the capacity calculation methodology

The TSOs that are currently in the Baltic CCR are: Elering AS, Litgrid AB, AS Augstsprieguma tikls, Fingrid Oyj, Svenska krafnät and PSE S.A.

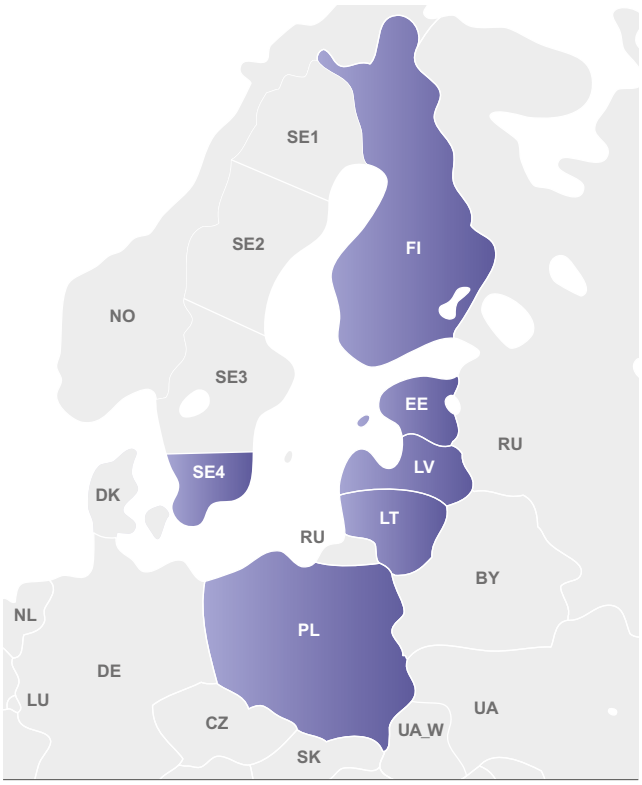


Figure 9: Baltic CCR

Timescale of CCM for the day-ahead and intraday timeframe within the Baltic CCR is given in the table below. Although according to CACM Regulation article 9 point 10 NRAs have six months to take a decision on the methodology approval, Baltic CCR invite NRAs to make a decision with the aim to implement new methodology already from the beginning of the year 2018. TSOs believe that implementing methodology from the beginning of the year is in the interests of market participants. Mainly this enables such participants to evaluate cross-zonal capacities when taking market positions. This also includes trading with long-term transmission rights (PTR-Limited) and financial instruments (EPAD or other) which are offered for the calendar year.

Public consultations are planned for at least one month, after which evaluation of public consultation responses will be performed. Submission of methodology proposal to all respective NRAs is planned in middle of September 2017, with the aim to have proposed methodology in force from 1 January 2018.

Milestone(s)	
Date	**Description**
Q3 2017	Public consultations of Baltic CCR Baltic CNTC calculation methodology
Q3 2017	Submission of the Baltic CCR CNTC calculation methodology to Baltic CCR NRAs for approval and publishing the summary and analysis from the public consultations of Baltic CNTC methodology
Q4 2017	Expected approval by Baltic CCR NRAs of CNTC calculation methodology and capacity allocation fall-back procedure
Q4 2017	Expected publication of Baltic CCR CNTC calculation and capacity allocation methodology
Q1 2018	Expected entering into force of Baltic CCR CNTC calculation methodology and capacity allocation fall-back procedure

3.3.9.2. Capacity calculation indicators

Applicability of the Indicators			
Statistical indicators	**Day-Ahead**	**Intraday**	**Additional Information**
3.1.1	Yes	Yes	
3.1.2 a)	No	No	In Baltic CCR CCM indicator not defined
3.1.2 b)	No	No	In Baltic CCR CCM indicator not defined
3.1.3 a)	Yes	Yes	Indicator is relevant for following DC interconnections Lithuania-Poland, Lithuania – Sweden, Estonia-Finland
3.1.3 b)	No	No	In Baltic CCR CCM indicator not defined
3.1.3 c)	No	No	In Baltic CCR CCM indicator not defined
3.1.3 d)	Yes	Yes	Indicator is relevant only for DC interconnection Lithuania-Poland. As intraday in this interconnection is under development, indicator is currently relevant only for day – ahead.
3.1.3 e)	No	No	In Baltic CCR CCM indicator not defined
3.1.3 f)	No	No	In Baltic CCR CCM indicator not defined
3.1.3 g)	No	No	In Baltic CCR CCM indicator not defined
3.1.3 h)	Yes	Yes	This constrain can be applied by PSE for capacity calculation only on Lithuania – Poland interconnection.

3.3.10. SOUTH EAST EUROPE

The TSOs currently in South-East Europe CCR are: Electroenergien Sistemen Operator EAD, Independent Power Transmission Operator S.A.(IPTO) and C.N. Transelectrica S.A.

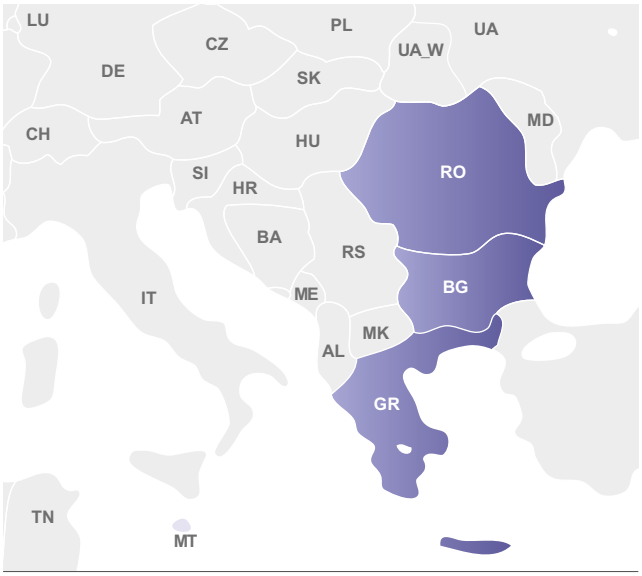


Figure 10: South – East Europe CCR

At the moment the SEE CCR TSOs have not started the development of a common Day-Ahead and Intraday CCM due to divergent opinions on the interpretation of Article 20(2) and (4) of Regulation 2015/1222. The issue has been escalated to SEE NRAs. Under the interpretation of the Romanian NRA the SEE CCR shall submit in due date a proposal for CCM based on CNTC. The feedback from the Greek and Bulgarian NRAs is still expected at the time of writing this report.

A dedicated workshop with representatives from the established RSC, TSOs of the SEE CCR and the SEE region in general was organised in July with the objective to identify the problems and to find solutions in order to go forward in fulfilling the tasks required by Article 20 of the CACM Regulation within the SEE Region. Following up to this workshop, an exchange will be initiated with the TSOs of the SEE CCR on the provisions of Article 20 of CACM Regulation and the feedback received by the NRAs on some remaining open points. Nevertheless, the three TSOs from the SEE CCR need to move forward with the CCM proposal and also involve other TSOs from SEE Region as much as possible.

4 COMMON GRID MODEL INDICATORS

Capacity calculation for those capacity calculation time-frames addressed by Article 14 of the CACM Regulation is to be based on the CGM. The CGM methodology (CGMM) sets out the principal requirements with respect to the CGM process. The CGMM also contains the requirements which aim to make it possible to monitor the overall functioning of the CGM process.

The CGM process has three stages:

1. Common Grid Model Alignment (CGMA) process,

2. Input stage (contribution of individual grid models (IGMs) by TSOs),

3. Output stage (provision of the CGM via the merging of the IGMs to create the CGM).

The quality indicators defined for these stages pursuant to the requirements in the CGMM are explained in more detail in the following chapters.

4.1. CGMA PROCESS

The CGMA process is required for those time-frames for which schedules are not available. The CGMA process provides a crucial input for the preparation of IGMs, namely a set of balanced net positions and balanced flows on DC lines, these are calculated by the CGMA algorithm based on a set of variables referred to as "pre-processing data" (PPD). The PPD are, in essence, a TSO's best estimates of its net positions and flows on DC lines. As long as these net positions do not net out to zero, they are inconsistent with each other. The CGMA algorithm adjusts the PPD such that they are "balanced"; i. e., net out to zero. In plain language, this means that exports are equal to imports.

Each TSO has to provide these PPD according to certain deadlines and the PPD have to meet particular requirements. There is a dedicated set of quality indicators related to the CGMA process which are defined separately in the "All TSOs' Common Grid Model Alignment Methodology in accordance with Article 25(3)(c) of the (draft) Common Grid Model Methodology" (CGMA Methodology), approved in November 2016.

The CGMA-related quality indicators aim at ensuring that all requirements with respect to the CGMA process are respected. Specifically, the following requirements are, inter alia, monitored per TSO and by time horizon:

1. timely submission of PPD according to the deadlines set out in the CGMA Methodology;

2. completeness of data submitted;

3. conformity with parameter restrictions/requirements defined in the CGMA Methodology;

4. substitutions and parameter adjustments required;

5. CGMA algorithm computation time;

6. timely preparation of CGMA output data (balanced net positions and balanced flows on DC lines) by alignment agents.

The results (output) of the CGMA process are an input to the subsequent stage of the CGM process; namely the preparation of IGMs by TSOs. Any serious problems with the CGMA process therefore result in problems with the preparation of IGMs. If any serious problems with the CGMA process should arise it is envisaged to describe these in the Report. If no serious issues affecting the preparation of IGMs occur the description of the monitoring in the Report will be kept to a summary statement that the CGMA process is functioning in a satisfactory manner.

4.2. INPUT AND OUTPUT STAGES OF THE CGM PROCESS

As for the input and output stages of the CGM process, the key objective of the monitoring is to ensure that TSOs and merging agents respect their legal obligations under the CGMM. Note that the quality criteria set out in the document "Quality of CGMES datasets and calculations", approved in November 2016, are binding on all TSOs and summarise the detailed technical requirements contained in the CGMM. IGMs and CGMs are checked against these requirements and are rejected if they do not meet these. This should make it possible to assess both the input and output stages of the CGM process with a small number of quality indicators.

The following IGM-related indicators for the input stage are to be monitored per TSO and by time-horizon:

7. IGMs refused (the reason for the rejection is also reported)

An IGM may be refused for any number of reasons. If the refusal of IGMs and the reasons for the refusal are monitored, this makes it possible to identify systematic problems and correct these.

8. IGMs substituted (which signifies that an IGM of sufficient quality was not available in time).

When an IGM is refused, the TSO concerned can always resubmit a corrected file before the deadline. However, if no IGM of acceptable quality is available by the deadline, a substitute IGM will be used. The substitution of IGMs is to be avoided as a substitute IGM is unlikely to have the same accuracy as an up-to-date model prepared for the specific time-stamp. Therefore, the substitution of IGMs should be monitored as well. If such substitutions are significantly more frequent for certain TSOs or certain time-stamps, this information can serve as a trigger for an in-depth analysis of the underlying problems.

9. A summary of the times at which the IGMs are delivered (including an assessment of whether the delivery was on time – i.e., respected the TSOs' deadlines – or it was not)

In order for the results of the capacity calculation to be available in a timely manner, a set of deadlines have been defined by which certain steps in the CGM process need to have been completed. The delivery of IGMs according to schedule is, of course, one very important such step. If the deadline for this step is not respected, this may result in delays in subsequent steps in the process, so IGM submission times should be monitored.

The following CGM-related indicator for the output stage is to be monitored by the merging entities and by time-horizon:

10. A summary of the times at which the CGMs are delivered (including an assessment of whether the delivery was on time – i.e., respected the TSOs' deadlines – or it was not)

The delivery of a functioning CGM is the objective of the CGM process and is the starting point for a number of subsequent processes such as capacity calculation or security analysis. If the delivery of the CGM is delayed this may have knock-on effects for such subsequent processes. Conversely, if the monitoring shows that the CGM is always delivered early, it may be possible to move forward the CGM-related deadline in order to gain more time for other tasks. Therefore, the CGM delivery times should be monitored as well.

5 SUMMARY

This report establishes the framework for reporting on CCMs and relevant indicators on a CCR level. The report also sets the reporting framework on the CGM and its associated indicators on a pan-European level.

As outlined in this Report, all CCRs continue to make progress towards the adoption of their respective CCMs. The CCRs Nordic, Hansa, Core, SWE, IU and Channel have drafted and consulted successfully on the methodologies, whereas the other CCRs are still in the development phase. The SEE CCR is still in a preparatory phase due to the fact that the application of the CACM Regulation is still under discussion. In any case, all CCRs commit to the provision of data for the relevant indicators in this Report.

In respect to the Common Grid Model Methodology, a total of ten indicators are presented in this report. Once these indicators have been jointly defined by TSOs and the CGM process is implemented and operational, the relevant indicators will be made available.

Upon request of the relevant authorities, the content of this report will be updated and resubmitted on a biennial basis.

GLOSSARY

AC	Alternative Current
ACER	Agency for the Cooperation of Energy Regulators
AHC	Advanced Hybrid Coupling
BZ	Bidding Zone
CACM	Capacity Allocation and Congestion Management
CCC	Capacity Calculation Calculator
CCR	Capacity Calculation Region
CCM	Capacity Calculation Methodology
CGM	Common Grid Model
CGMM	Common Grid Model Methodology
CNTC	Coordinated Net Transmission Capacity
CWE	Central Western Europe
DA	Day Ahead
DC	Direct Current
DC IC	Direct Current Interconnector
EU	European Union
FB	Flow-based
HVDC	High Voltage Direct Current
ID	Intraday
MC	Market Coupling
NEMO	Nominated Electricity Market Operator
NRA	National Regulatory Authorities
NTC	Net Transmission Capacity
RSC	Regional Security Coordinator
PPD	Pre Processing Data
SEE	South-East Europe
SWE	South Western Europe
TSO	Transmission System Operator
XBID	Cross-Border Intraday

The terms used in this document have the meaning of the definitions included in Article 2 of the Regulation 2015/1222.

PUBLISHER:
ENTSO-E AISBL,
Avenue de Cortenbergh 100
1000 Brussels – Belgium

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DESIGN:
DreiDreizehn GmbH, Berlin
www.313.de

Publishing date: August 2017

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