Handbook of the Business Processes for the Coordinated Capacity Calculation of the Southeast Europe Region

CCC

March 2023

Version 1.0

Glossary of Terms

Acronym	*Definition*
BC	Base Case
BD	Business Day
CCC	Coordinated Capacity calculation
CGM	Common Grid Model
CNE	Critical Network Element
CNEC	Critical Network Element Contingency
DA	Day Ahead
GLSK	Generation and Load Shift Key
ID	Intraday
IGM	Individual Grid Model
NTC	Net Transmission Capacity
RA	Remedial Action
RAO	Remedial Action Optimizer
RCC	Regional Coordination Center
RM	Reliability Margin
SA	Security Analysis
SEE	South-East Europe
SG	Swiss Grid
TH	Time horizon
TS	Timestamp
TSO	Transmission System Operator
TTC	Total Transmission Capacity

1 Contents

2 Document History and Status

This section provides an overview of the Coordinated Capacity Calculation handbook history.

Note that this handbook is updated by SEleNe CC every time transmission system operators (TSOs) and/or the SEleNe CC decide to update/modify/enhance the existing procedures.

Table 1. Document History

Version	Date	Notes
1.0	March 2023	Public version of the CCC handbook.

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3 Introduction

The main scope of this handbook is to provide all necessary details concerning the business processes that should be implemented by all South-East Europe (SEE) Transmission System Operators (TSOs), namely ESO, IPTO, and TEL, as well as the Southeast Electricity Network Coordination Center (SEleNe CC) in order to perform the CCC of the SEE. CCC for the SEE is computed according to "SEE CCR Common capacity calculation methodology for the day-ahead and intraday market time-frame" (SEE CCM).

4 Provision of Required Inputs

The CCC process is integrated in the CCC module of the SEleNe CC Tool. The CCC module of the SEleNe CC Tool uses multiple inputs, which must be all available prior to the starting of the process. More specifically, for CCC the following inputs are required:

- ✓ CGM
- ✓ GSLK files
- ✓ CNEC files
- ✓ AAC files
- ✓ ANC file
- ✓ Splitting factors: define splitting ratios for each border and direction.
  - GSK splitting factors
  - TTC splitting factors
- ✓ Long term NTC
- ✓ RM

In case there are no CNEC and/or GSK files, then the last available ones are considered.

The following inputs are mandatory for CCC:

- ✓ CGM
- ✓ GSLK files
- ✓ CNEC files
- ✓ Splitting factors
- ✓ Long term NTC (only for the DA TH)
- ✓ RM

4.1 CGM

The CGMs used for the CCC process are created after the Merging of the IGM files. For ID1 (D-1 TH) and ID2 (ID TH) processes, IGM files from all EU and non-EU TSOs are received in daily basis (DACF and IDCF files, respectively). The resulting CGM is scaled based on the net position information provided on the Vulcanus file. The Vulcanus file contains the market data related to the Schedules between control zones and it is received (and constantly updated) automatically by the SEleNe CC Tool, for D-1 and ID THs. For the DA (D-2 TH) CGM creation, DA IGM files of, only, the involved SEE TSOs (D2CF files) are received daily. For the rest of the EU and non-

EU TSOs, IGM files are substituted using the latest available from the previous TH (D-1). The Vulcanus is also taken from the D-1 TH (or latest available).

4.2 GSLK file

The purpose of the GLSK file is the definition of the generators or loads which will be used for generation and load shifting. A GLSK file is used for all THs (ID1, ID2 and DA). The system supports two methods for shifting that can be specified in GLSK file:

- Proportional shifting according to actual base case generation in the model (PROP).
- Proportional shifting based on remaining available generation margin (PRAG).

4.3 CNEC file

The file defines the monitored elements (CNE), the single and multi-contingencies (-C), and the RAs. Each involved SEE TSO has to provide a CNEC file which is used for all THs (ID1, ID2 and DA).

4.4 AAC and ANC

AAC and ANC files are provided for each border on a daily basis for two days ahead (D-2) and for the day ahead (D-1), respectively. AAC files provide information on the Already Allocated Capacities, while ANC provide information regarding the Already Nominated Capacities.

4.5 Splitting Factors & RM

GSK splitting factors, TTC splitting factors and RM are defined by the involved SEE TSOs every year for the next calendar year. However, they can be different during the weeks of the year if the TSOs want to update them.

4.6 Long Term NTC

Long Term NTC values are specified for all borders and directions and are used as a fallback solution in the Day-ahead (D-2 TH) Capacity Validation procedure. They are computed based on the Long Term CCC procedure of the SEE according to the "SEE CCR TSOs' common capacity calculation methodology for the long term market time-frame" (SEE LT CCM)

5 CCC

The CCC is an iterative process aiming to achieve the highest possible TTC on every TS, for each border and direction while maintaining grid security. The iterative process shifts power generation from one zone to the other, increasing the transferred power on the interconnection between these zones. The process starts with an initial TTC value and increases or decreases the next candidate TTC value if the grid is secure or unsecure, respectively. Grid security is checked on every iteration for both the BC and the predefined N-1 contingencies. For each iteration the loading on every CNE, defined in the corresponding CNEC file, is monitored. In case of violations on grid constraints, RAs are applied. The RAs are applied via a fully transparent and automated optimization procedure. The optimized RAs are selected from a pool of

available RAs. This pool of RAs is defined by the SEE TSOs prior to the initialization of the CCC. The CCC converges to a TTC value during the iterative process and concludes when the difference between two consecutive TTC candidate values becomes smaller than a predefined threshold.

The CCC processes are presented as they are performed by the Operator on shift each calendar day, starting with the ID2, followed by the ID1 and the DA THs. All processes and deadlines are stated in Eastern Europe Time (EET/EEST). The aggregated Timeline for all CCC THs is depicted on Figure 1. In the DA (D-2) the capacity for the next two days-ahead BD is calculated, for the ID1 (D-1) the capacity for the next BD is calculated and for ID2 (ID) the capacity is calculated for the last 12 TSs of the current BD.
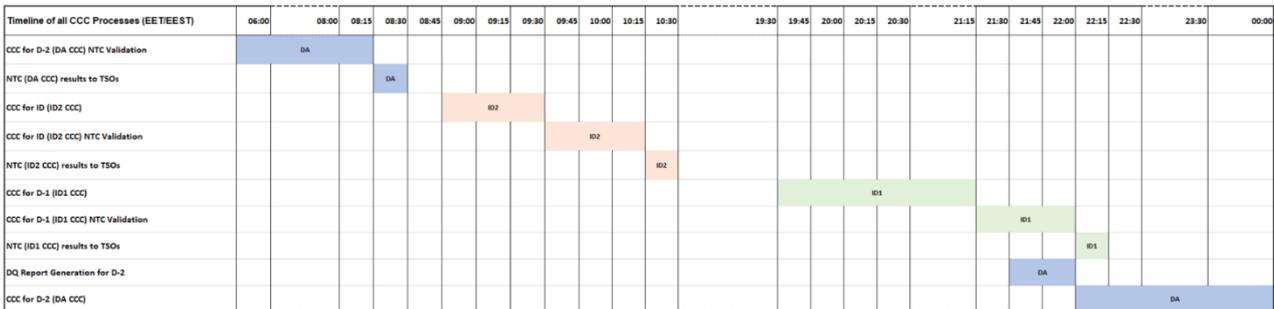
Timeline of all CCC Processes (EET/EEST)	06:00	08:00	08:15	08:30	08:45	09:00	09:15	09:30	09:45	10:00	10:15	10:30	19:30	19:45	20:00	20:15	20:30	21:15	21:30	21:45	22:00	22:15	22:30	23:30	00:00
CCC for D-2 (DA CCC) NTC Validation		DA																							
NTC (DA CCC) results to TSOs			DA																						
CCC for ID (ID2 CCC)							ID2																		
CCC for ID (ID2 CCC) NTC Validation									ID2																
NTC (ID2 CCC) results to TSOs												ID2													
CCC for D-1 (ID1 CCC)															ID1										
CCC for D-1 (ID1 CCC) NTC Validation																		ID1							
NTC (ID1 CCC) results to TSOs																						ID1			
DQ Report Generation for D-2																					DA				
CCC for D-2 (DA CCC)																								DA	

Figure 1. CCC Timeline for all THs.

5.1 CCC execution and NTC validation

The CCC execution as well as the report generation, email notification and NTC Validation procedures are identical for all three THs. Once the CCC is finished, the SEleNe CC operator extracts all relevant reports for all borders and directions and sends them to the SEE TSOs containing the data of Art. 16 of the SEE CCM. Until the NTC Validation window closure, all involved SEE TSOs shall access the CCC results and validate the NTC values for each TS of the examined TH. In case that for specific TSs, the calculated NTC values are lower than the corresponding fallback NTC values, then the fallback value is considered as the outcome of the CCC. Fallback values are summarized below per TH:

- DA CCC: fallback solutions are LT NTC values (the monthly values).
- ID1 CCC: fallback solutions are the already validated values from the DA CCC of the examined BD.
- ID2 CCC: fallback solutions are the already validated values from the ID1 CCC of the examined BD

During the validation, SEE TSOs can validate either higher or lower NTC values compared to those computed by the SEleNe CC Tool. In case of NTC reduction, TSOs has to provide the reasons of the reduction and justify them accordingly.

As soon as the Validation window has elapsed, there is a **15 minute** period for the SEleNe CC operator to submit the validated NTC values to the Market Departments of the TSOs.

SEleNe CC operator shall publish the validated results on SEleNe CC website, for all borders and directions, including the following reports:

- Detailed Reports
- Overview Reports
- Forecast Report
- Results Summary Reports

5.2 2nd ID CCC (ID2) execution & NTC Validation

The 2nd ID CCC process is initiated by **08:45** for TSs 12:30-23:30. By **09:30** and up until **10:15**, all involved SEE TSOs shall validate the 2nd ID NTC results for each TS of all borders and directions. The NTC Validation process can be performed until **10:15**. At **10:15**, the validation window is closed and no changes can be performed on the NTC results afterwards.

From **10:15** to **10:30** SEleNe CC operator submits the results to the Market Departments of the TSOs.

5.3 1st ID CCC (ID1) execution & NTC Validation

The 1st ID CCC process is initiated by **19:30** for all TSs. By **21:15** and up until **22:00**, all involved SEE TSOs shall validate the 1st ID NTC results for each TS of all borders and directions. The NTC Validation process can be performed until **22:00**. At 22:00, the validation window is closed and no changes can be performed on the NTC results afterwards.

From **22:00** to **22:15** SEleNe CC operator submits the results to the Market Departments of the TSOs.

5.4 DA CCC (DA) execution & NTC Validation

The DA CCC process is started at **21:30,** by initially assessing the quality of the provided data. For this purpose, a quality check is performed by SEleNe CC and a data quality report is submitted to all TSOs. Data quality reports contain information regarding the input files that are used for the CCC (i.e. CGMs, GLSKs, CNECs). Moreover, in the report is presented if the contingencies, the CNEs, and the RAs (i.e. the data of the CNEC files) exist in the CGMs and if declared elements have the same status as in the CGM.

The DA CCC process is started at **22:00**. Please note that the timeline, described below, is stated with reference to the calendar date on which the DA CCC process is executed. By **00:00** (beginning of the next calendar day), or as soon as the CCC process is finished, all involved SEE TSOs may access the CCC results and validate NTC values for each TS of the examined day. The validation window is open until **08:15** in the morning of the next calendar date. From **08:15** to **08:30** SEleNe CC operator submits the results to the Market Departments of the TSOs.