

CWE Methodology for the Increase/Decrease process during the Intraday timeframe

CWE NRA approval package

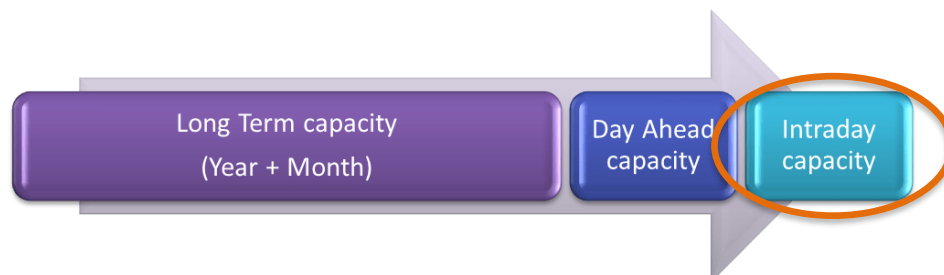
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1 Introduction and purpose

This document gives a description of the calculation of the intraday (ID) capacity for the CWE internal borders. Pursuant to Regulation (EU) 2019/943 of 5 June 2019 on the internal market for electricity (which is part of the Clean Energy Package – “CEP”) and based on regulatory approved splitting rules, TSOs allocate capacity in different market timeframes (long term, LT; day-ahead, DA; and intraday, ID). TSOs try to maximize available capacity in all time frames.



The scope of this methodology is strictly limited to the ID timeframe and to CWE countries. This model is part of a coordinated approach by the TSOs involved in accordance with the ENTSO-E policies and assumes that the day-ahead (DA) capacity, allocated to the market, is the result of the Flow Based Market Coupling (FBMC) in the Core CCR. This methodology is - in line with the Article 26.7 of the Core CCR TSOs’ Intraday Capacity Calculation Methodology- applied for the CWE internal borders after go-live of the day-ahead Flow-Based Market Coupling in the Core CCR in accordance with the timescale for implementation of Article 28.3 of the Core CCR TSOs’ Day-Ahead Capacity Calculation Methodology and until the go-live of the Core intraday capacity calculation (methodology (Core ID CCM Article 26.3)).As it refers to the Core ID CCM, this also means that there no longer is an obligation to include virtual capacity in the flow based domain used for the calculation of ID ATC parameters¹.

Up to now no capacity is reserved for ID allocation. All ID capacity given to the market is a result of non-used DA capacity, increase processes after DA allocation, or due to the netting effect.

The aim of this ID increase/decrease methodology is to have the possibility to release additional capacity in CWE countries to the market players after the Core ID ATCs domain has been calculated following Core day-ahead Flow Based Market Coupling.

This methodology is a transitional solution, allowed by the Core Intraday CCM, article 26.7, for calculating intraday cross zonal capacities, that would be applied from Core Day-Ahead Go-Live until the Go-Live of the first Core Intraday Flow-based capacity calculation.

Note: this document is an update of the Methodology for capacity calculation for ID timeframe version 3 as submitted to CWE NRAs on 03.07.2020.

The main changes compared to the version 3 are the following:

- Update of references to the CWE DA CC to the Core DA CC for the transition phase between go-live of the Core DA CC and go-live of the Core ID CC.
- Update of processes due to differences in the CWE DA CC and Core DA CC.

2 Definitions

- **CCM** : Capacity Calculation Methodology
- **CMT**: Central Matching Tool. Central tool used for intraday increase/decrease process to consolidate the increase requests and the decrease notifications.
- **CNEC**: Critical Network Element with Contingency (also known as CBCO, Critical Branch Critical Outage).

¹ Article 11.2 of the ACER decision on Core ID CCM

- **Core DA CCM:** ACER decision n°02/2019 of 21 February 2021 – Annex I – Day-ahead capacity calculation methodology for the Core capacity calculation region, as amended on 10 May 2021
- **Core ID CCM:** ACER decision n°02/2019 of 21 February 2019 – Annex II – Intraday capacity calculation methodology for the Core capacity calculation region
- **DA CGMs & ID CGMs** are the Day Ahead & Intraday Common Grid Models which are the result of the merging of the Individual Grid Models provided by TSOs in day-ahead or in intraday as their best forecast of the topology, generation and load for a given hour of the Day D.
- **Day D:** delivery day for which capacity increases or rejection are considered.
- **Day D-1:** day before Day D, day ahead.
- **DACF:** Day-Ahead Congestion Forecast.
- **Firmness:** arrangements to guarantee that capacity rights remain unchanged or are compensated.
- **Full acceptance:** situation in ID increase/decrease process when a TSO will fully accept the requested increase.
- **HVDC:** High Voltage Direct Current.
- **ID ATC:** Intraday Available Transfer Capacity.
- **Increase Feedback Deadline:** this is the latest time a CWE TSO may introduce a feedback for the request of increase on one of the borders for the applicable MTP: acceptance, partial acceptance or justified rejection.
- **Increase Request Deadline (IRD) and decrease Notification Deadline (DND):** this is the latest time a CWE TSO may introduce a request for increase or a notification of decrease on one of his own borders.
- **Initial ID ATCs:** output results of Initial ID ATC computation (left-over capacities after DA FBMC).
- **Market Coupling net positions:** sum of power flows per hub induced by the accepted orders.
- **MTP:** Market Time Period. This is a group of consecutive hours within the Day D.
- **Own border of TSO x:** bidding zone border within CWE across which TSO x has at least one (tie)-line.
- **Partial acceptance:** situation in ID increase/decrease process when a TSO will partially accept the requested increase on the borders on a non-discriminatory basis. This occurs when the requested capacity increases on different borders compete for available margin on the same network element.
- **PTDF:** Power Transfer Distribution Factor. Factors showing the impact of the various bilateral exchanges on the overloaded branch.
- **RAM:** Remaining Available Margin on CNECs.
- **Rejection:** situation in ID increase/decrease process when a TSO will reject the increase requested because the consequences of the request cannot be fully nor partially accepted by the TSO.

3 General principles of ATC ID CC after FBMC

The principle to calculate Intraday cross-zonal capacities from transitional ID CC initiatives for the CWE internal borders is based on the outcome of the initial ID ATC extraction performed in Core followed by local processes coordinated on CWE level in different steps:

1. First, the initial ID ATC of the CWE borders, based on the Core Initial ID ATCs (Core ID CCM article 11 and article 21) will be sent to the CWE TSO common tool.
2. The second step is a local evaluation by each involved TSO to request a possible increase (Basecase) or decrease (in special situations) on his own borders.

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3. The third step is a merging step by a common system. The CWE Central Matching Tool (CWE CMT, hereafter "CMT") consolidates the increase requests and the decrease notifications.
 4. During the fourth step, based on this consolidated input, each involved TSO performs a local analysis that enables him to accept fully, accept partially or reject the requested capacity increases in a justified manner.
 5. In the fifth step, these acceptance or rejection messages are then gathered and handled in a common way by the CMT. The System will distribute these consolidated acceptances and rejections back to the local TSOs.
 6. In the last and sixth step, each TSO will then be able to use these common CWE ID ATCs and NTCs as input for the capacity allocation of their respective borders.

The steps 4 to 6 can be performed several times a day for a certain period of trading. For example, the assessment can be done during the evening for the night hours and during the night for the day hours. For an overview of the proposed ID ATC capacity calculation process see Figure 1.

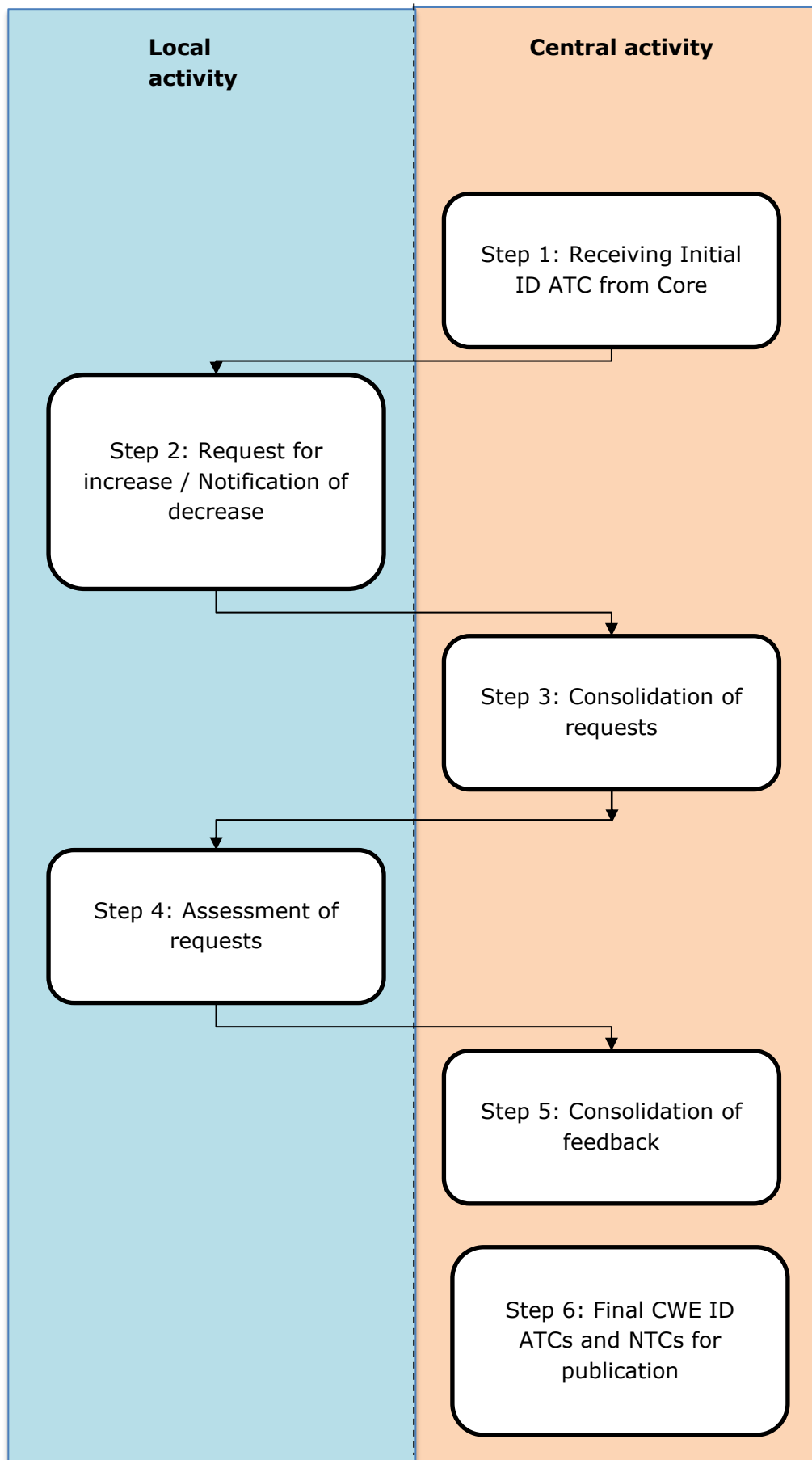


Figure 1: High-level process of ID ATC CC methodology.

4 Coordinated ID ATC CC after FBMC process

4.1 Core ID ATC extraction

At Core Day Ahead Capacity Calculation Go-Live, the CWE Flow-Based Domain won't be computed anymore. In that situation the ID ATC Capacity Calculation (step 1) will be performed from a Core Day Ahead Flow-Based Domain on each Core borders, e.g. including the CWE internal borders. This ID ATC capacity calculation is pursuant to articles 11 and 21 of Core ID CCM. The values obtained, on CWE borders, from this Core process will be fed to the CWE common tool (step 1 of the previous figure).

4.2 CWE Increase/Decrease process during intraday timeframe

4.2.1 Requesting increase or notifying decrease of capacities on own borders

4.2.1.1 Requesting increased capacities on own borders

Capacity increases can be requested by all CWE TSOs for each hour of the Day D on their own borders via the CMT.

The starting point for the local analysis to launch an increase request is the already available initial Core ID ATCs. In order to maximize the acceptance of the requests, the TSOs should favour a request for the borders and directions where the available capacity provided to the market after the FB MC is low.

Every increase request is capped with a fixed value per border and direction. These fixed values are proposed by each TSO for their own borders and commonly approved by the involved CWE TSOs.

The requested capacity increase is an intention for a capacity increase. However, due to constraints identified during the local analysis (during the fourth step of the process cf §4.2.3), it can be the case that a proposed capacity increase for a specific border is rejected by the same TSO who requested it.

The Increase Request Deadline is set for all MTP simultaneously to ensure a coordinated assessment on local side.

Every 3 months, an overview of the individual increase notifications per TSO (per oriented CWE internal border and per hour) will be provided to CWE and Core NRAs for monitoring purposes within 1.5 months after the concerned quarter, in line with the requested format and content including:

- a) the increase requests per time stamp and per TSO,
- b) the feedback from each individual TSO on each individual increase request,
- c) the justification from each individual TSO for a partial or full rejection of an individual increase request;

For transparency purposes, the quarterly report containing (a) and (b) shall be published within 1.5 months after the concerned quarter.

The CWE reporting requirements for monitoring and transparency are without prejudice to the upcoming Core process, i.e. will be subject to discussion within the Core framework.

4.2.1.2 Notification of a decrease of capacities on own borders

All TSOs have the possibility to take the necessary steps to guarantee the security of the grid. Intraday capacity reduction is a pragmatic process that allows involved TSOs for any hour of the Day D to reduce Intraday ATCs, on their own borders, in cases operational security issues arise.

As the notification for decrease is an emergency process, a capacity reduction is an input to the assessment of capacity increases and cannot be rejected by other TSOs.

As firmness of the trades applies, only capacity that was not yet allocated will be reduced, even if a higher decrease is requested.

The overview of the decrease process is described in the same report mentioned in the previous section, therefore all assertions of the previous section on transparency and the reporting are also valid concerning the decrease process.

4.2.2 Consolidation of the requests of increase and notification of decrease

When the Increase Request/Decrease Notification deadline is reached, the CMT will immediately proceed for each hour of the Day D with the consolidation per border and direction of the received information respecting the following rules:

- In case only Increase Request have been sent, the CMT will take the maximum of the requests. If this value is higher than the fixed maximum increase authorized on this border, the CMT will cap the request to this maximum authorized increase.
- In case a Decrease Notification has been sent, the notification for decrease will prevail over an increase request for the same hour. The CMT will consider the minimum value of the notified decrease².
- Increase request for borders connected via HVDC links will be capped to the maximum transmission capacity of the HVDC links.

The CMT will then send for each hour of the Day D and for each CWE internal border and direction (which is covered by the re-computation process) the resulting increase or decrease to the CWE TSOs.

4.2.3 Assessing the feasibility of requested increases

After receiving the requests of increase and notification for decrease, the involved TSOs have to assess locally the feasibility of the requests.

A request for increase can be:

- **Fully accepted**
- **Partially accepted**

There are situations when requested capacity increases on different borders compete for available margin on the same network element.

In this case, the TSO will partially accept increases on the borders on non-discriminatory basis.

- **Rejected** in case the consequences of the requests cannot be fully nor partially accepted by the TSO.

After the assessment, the TSO will notify the CMT with the status of each request for each MPT before the Increase Feedback Deadlines.

4.2.4 Local implementation

This section lists a short summary of each TSO's local implementation of the evaluation of increase requests. A more detailed description of the increase/decrease functionality can be found in the "Explanatory Note on individual TSO's increase/decrease process for ID Capacity Calculation".

Amprion

Amprion checks upon the feasibility of capacity increases via a local simulation tool that models the effect of capacity increases of Amprion's network. The tool uses the latest available DA CGMs or ID CGMs before starting the assessment and models the impact of capacity increases via linear sensitivities.

APG

² For example, the CMT will receive two requests for decrease (-100 MW and -200 MW) and one increase request (100 MW), in this case the CMT will consider the minimum value, namely -200 MW, as consolidated notification of decrease.

APG assesses the increase requests with a load flow tool that uses day ahead models (DACF) and the D-1 market clearing point. The security assessments considers the second or if not available the first DA CGM and models the impact of capacity increases via linear sensitivities. The assessment of increase requests for all MTPs takes place when the DACF files are available. In case full acceptance is not possible, the values are checked for partial increase requests according to the common rules.

Elia

ELIA assesses ATC around the SDAC market clearing point in D-1 and in intraday on Belgian borders and in all directions based on the latest available DA CGMs or ID CGMs. Calculation will be performed for a given MTP on representative hour(s) for this period. In this assessment, realistic values in the direction of the likely corner(s) are considered for the non-Belgian borders. Based on this, ELIA defines for this period the (partial) increase ID ATC possible on the Belgian borders and motivated (partial) acceptances or rejections for other borders, if any.

For the assessment, the same set of acceptance criteria and non-costly remedial actions as the ones used locally at Elia for the DACF process are considered. The available non-costly remedial actions are both preventive and curative PST taps as well as preventive and curative non-linear topological actions.

On request of ELIA, Coreso may be in charge for Elia of the assessment whether or not to increase capacity for the aforementioned time periods. Based on this information Elia's operator will decide about possible rejections of capacity increases. Increase requests are rejected if they create an overload, either in basecase or in N-1, which cannot be solved with the available remedial actions.

RTE

For each hour of the day, RTE checks the inclusion of the increased ATC domain into a Flow Based domain.

The ATC domain is the initial ATC domain centrally computed increased by the requests on each border. If the resulting domain is larger than the normal behaviour of the market players in the intraday timeframe, the domain is reduced in this market direction.

The Flow Based domain used for the inclusion is the Flow Based domain with only the CNECs of RTE within the Core Day Ahead Capacity Calculation, taking into account Final PTDF and Remaining available margin for ID ATC Extraction (RAM_ID). It also means that none of the CNECs of other CWE TSOs and none of the external constraints are in this domain.

TenneT TSO B.V.

For the Dutch-German and Dutch-Belgian borders harmonized procedures were already developed, meaning that the capacity analyses are running in parallel and use identical parameters for the decision making for the intraday capacity.

For both borders, several timeframes are used to analyse the capacity increases for the forthcoming hours. The analyses is in line with the agreed feedback deadlines.

The current local assessment looks at the thermal loading of a predefined set of network elements (CNEC) under all relevant (n-1)-contingencies. If thermal loadings per CNEC are below a certain threshold (I_{max} of a certain CNEC in the N-1 situation), the capacity increase is permitted. The local assessment makes use of information from the latest available common grid model. Depending on the time that the increase request is received, the local assessment is performed on the basis of information from the merged DACF or IDCF models. In case operational security issues are expected/arise for the coming hours, operators can take these results into account when releasing intraday capacity. Consequently, a decision whether or not to accept an increase request is made hour-wise.

TenneT TSO GmbH

The increase requests are assessed starting from DA CGM (first or second merge, depending on availability) and the D-1 clearing point. Maximum utilization of potential ID ATCs (total of initial ATCs, decrease notifications and increase requests) is simulated for the most likely combinations of simultaneous exchanges on all five

borders. Security assessment is performed using AC load flow and CNECs of TenneT TSO GmbH. If the network security assessment fails for at least one likely market direction, it is repeated with reduced increase requests in order to check for the possibility of partial acceptance.

The assessment of increase requests takes place for all MTPs simultaneously.

TransnetBW

TransnetBW assesses the increase requests with the help of local load flow tool that uses DA CGMs as basis for the security analysis which starts shortly after the CGMs are available for the dedicated Business Day. The latest DA CGM version is used that still allows to submit the acceptance/rejection of the increase requests before the Increase Feedback Deadline. The focus of increase assessment is on the internal and cross-border CNECs in the control area. Requests are checked simultaneously in likely market directions, meaning simultaneous (increased) exchanges on all borders. In case full acceptance is not possible, the process is repeated with partial increase requests according to the common rules. The results of possible reductions of the local assessment are sent to CMT.

4.2.5 Consolidation of acceptances/rejections

When an Increase Feedback Deadline is reached, the CMT will immediately proceed for each hour of the applicable MTP with the consolidation per border and direction of the received information respecting the following rule:

- In case justified rejections are received, the CMT will consider the lowest value as the result of the applicable increase.

The CMT will then send for each hour of the Day D and for each CWE border and direction to the CWE TSOs the resulting ID ATCs/NTCs as the sum of the initial ID ATCs and the consolidated increase/decrease for the applicable MTP.

4.2.6 Providing ID ATCs for allocation

After receiving the updated capacity from the CMT, the responsible TSOs offer the capacity to the market players with the allocation rules and platforms.