Explanatory note for amendments to the Algorithm Methodology for timing adjustments to the Intraday Auctions due to the introduction of the Flow-based implementation

11 May 2026

Disclaimer

This explanatory document is submitted by all NEMOs, in cooperation with TSOs, for information and clarification purposes of the Public Consultation proposal for the amendment of the Methodology for the price coupling algorithm, the continuous trading matching algorithm and the intraday auction algorithm also incorporating a common set of requirements in accordance with Article 37(5) of the Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management.

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1. Introduction

This explanatory document gives an overview of the background and context for All NEMOs proposed amendments to the Algorithm methodology due to the implementation of Flow-based capacity allocation in the Intraday Auctions (IDAs).

2. Background

In compliance with paragraph (3) of Article 55 of CACM, providing the high-level requirements for the implementation of the pricing of intraday capacity and the development of the relevant applicable methodologies, the Agency for the Cooperation of Energy Regulators (ACER), in coordination with National Regulatory Authorities (NRAs) and following a relevant proposal of all TSOs on the Intraday Cross-Zonal Capacity Pricing methodology (IDCZCP) by all TSOs, has approved (Decision 01/2019 of 24th of January 2019 on Establishing a Single Methodology for Pricing Intraday Cross-Zonal Capacity) the implementation of three pan-European intraday auctions (IDAs) to price cross-zonal capacity, complementing the existing continuous trading system in the Single Intraday Coupling (SIDC). These auctions aim to ensure that capacity pricing better reflects scarcity in the intraday market.

Intraday Auctions were officially implemented across Europe on 13th June 2024, forming a key part of the SIDC market mechanism, under the NTC allocation constraints option. Now, considering the introduction of flow-based capacity allocation in IDAs, the NEMOs, in cooperation with TSOs, are proposing a minimum set of adjustments in the timing of the IDAs process as currently included in the Algorithm Methodology (AM).

3. Considerations for the inclusion of flow-based allocation for IDAs

Recital (7) of the whereas section of CACM defines *"..two permissible approaches when calculating cross-zonal capacity: flow-based or based on coordinated net transmission capacity. The flow-based approach should be used as a primary approach for day-ahead and intraday capacity calculation where cross-zonal capacity between bidding zones is highly interdependent. The flow-based approach should only be introduced after market participants have been consulted and given sufficient preparation time to allow for a smooth transition…"*.

Considering the existing implementation of flow-based allocation in the Core and Nordic Regions for Single Day-Ahead Coupling (SDAC), the NEMOs and the TSOs are implementing flow-based allocation method, at the same Regions as for SDAC, also for the IDAs. It should be noted that on-top of the requirements defined in Annex-2 to the Algorithm Methodology (common set of requirements for the continuous trading matching algorithm and the intraday auction algorithm) paragraph 19 of Article 5 and paragraph 12 of Article 6 of the AM provides for the following requirements relevant to timings before and after the deadline for bid submissions (Gate Closure Time, GCT) of each IDA:

> ***Article 5, Paragraph 19***
>
> *19. In order to accommodate IDAs, the cross-zonal capacity allocation within the continuous SIDC shall be suspended for a limited period during which the cross-zonal capacities shall not be allocated through the continuous SIDC. This period for suspension shall not be longer than 40 minutes and shall consist of:*

(a) The suspension before the deadline for bid submissions of each IDA. This suspension shall not be longer than 20 minutes and allow maximum of 5 minutes for recalculating and/or updating cross-zonal capacities, which shall be published no later than 15 minutes before the deadline for bid submissions for each IDA as specified in the single Methodology for pricing intraday cross-zonal capacity adopted in accordance with Article 55 of the CACM Regulation.

(b) The suspension after the deadline for bid submissions of each IDA, which shall not be longer than 20 minutes and allow for the calculation of auction results, verification of results and the recalculation and/or update of cross-zonal capacities for the continuous SIDC.

Article 6, Paragraph 12

12. Under normal operations, all NEMOs performing the MCO functions shall provide:

a) all TSOs, all coordinated capacity calculators and all NEMOs with the results of the IDA referred to in paragraph 1(a),(b),(c) and (d) above; and

b) all NEMOs with the results specified in paragraph 1 above,

in due time to allow at least 30 minutes of cross-zonal continuous trading for any given MTU after the publication of the auction results as set out in the Methodology for pricing intraday cross-zonal capacity.

3.1 Agreed design for implementation of FB in IDA

Flow-based data for IDAs will be delivered by the CORE and Nordic CCR TSOs to the XBID CMM as zero balanced domain. This would allow the TSOs to create the FB data in reasonable time prior IDA thus avoiding risk of delays in the IDA pre-coupling phase. TSOs will use the provided FB domain data also to perform ATC extraction considering the Available Auction Capacities (AACs) at the IDA halt period. Under this extraction process: (a) the NTC data will be most compatible with up-to-date FB domain prior IDA, and (b) NTC data may be used by the TSOs in case the FB domain need to be decoupled or when an IDA session is cancelled.

The XBID Capacity Management Module (CMM) will then create shifted FB domain taking into account flows derived from allocations prior IDA (sum of DA, IDCT, previous IDAs) and submit the necessary data (RAM, PDTF) to the IDA process, together with ATC for interconnectors outside of FB domain and other constraints:

- Allocations prior IDA are used to calculate FB Net position of each BZ in FB domain, multiplying the FB Net positions vector with PTDF matrix the AAF vector is received corresponding to flows FB domain shifting
- FB domain shifting involves also mapping among the ATC and FB topology

It should be noted that, under the current working assumption of NEMOs and TSOs aiming to maintain to the most possible extent the timing requirements of IDAs and IDCT processes, that, compared to the current applicable process, the NEMOs will share the IDAs results with the TSOs prior the preliminary results validation by the NEMOs. When the IDA results will be available the XBID CMM will check that the FB constraints in the FB domain and the ATC constraints on ATC lines are not breached. This check itself does not ensure that ATC constraints in FB domain stored by XBID for continuous allocation are respected – such constraint breach would have no impact to accepting the IDA results. This situation itself does not represent an operational risk as the FB domain is representing safe operating area, but

it has impact to process after IDA, when continuous allocation should resume in FB borders (ATC borders are not impacted and continuous allocation resumes without this additional constraint).

Resuming from an IDA session to the IDCT and in order to have fully up-to-date ATC data in XBID and to avoid overallocation in continuous trading being a consequence of ATC and FB model combination, ATC extraction should be executed after the IDA results are available and validated. A normal day schedule should allow outcomes of ATC extraction delivered to XBID prior IDCT resumes. The Scheduled Exchanges from IDA are mapped to ATC topology directly in XBID creating IDA AACs.

- The following bullets highlight some exceptional operational cases:
    - Updated NTCs/AACs are not delivered by TSOs to XBID (due to issue in regional process or in data exchanges) even though IDA results are successful and finally validated (Global Final Confirmation is issued to XBID) and IDA process end time is achieved:
        - XBID will resume continuous allocations on ATC borders;
    - FB domain decoupling/IDA cancellation:
        - XBID will resume continuous allocations on ATC borders immediately (for IDA cancellation case);
        - XBID will resume continuous allocations on borders of CORE FB domain immediately → NTCs updated during ATC extraction performed at IDA halt should be in that moment already in XBID, if they are not available CORE will update NTCs later during continuous allocation;
        - XBID will resume continuous allocations on borders of Nordic FB domain immediately if NTCs updated during ATC extraction performed at IDA halt are already in XBID (should be typically the case), **if the NTCs are not there, Nordic region borders will be halted until the condition is fulfilled**.
    - IDA results reversion (case when IDA results were validated by XBID, but IDA cancellation happens after):
        - XBID will resume continuous allocations on ATC borders immediately;
        - XBID will resume continuous allocations on borders of CORE/Nordic FB domain reverting (rejecting) NTC update considering IDA results (NTCs updated during ATC extraction performed at IDA halt is restored by XBID).

3.2 Timing and regulatory requirements adjustment as impact of FB in IDAs

A. The following list the timing requirements for a "normal day IDA session":

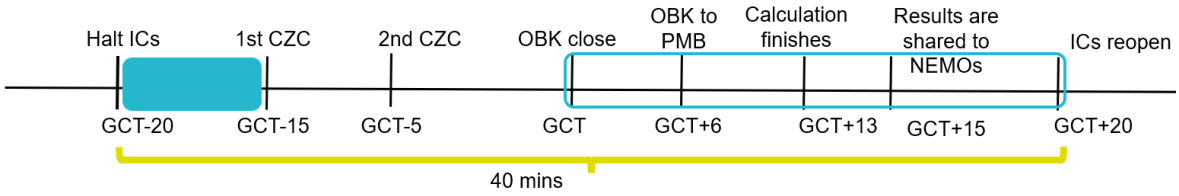
- Current timings for IDA process in PMB as defined in the Shared Configuration File (SCF) are configured in a way that:
    - **6 minutes** are considered for the submission of the Order Book (OBK) from NEMOs to PMB
    - **7 minutes** are considered as normal time duration for the calculation
    - **1 minute** is the time configured for reading the output from the calculation (minimum possible, since only integers are accepted)
    - **1 minute** for the sharing of the results among NEMOs

- ATC extraction time is assumed to consume **6.5 minutes** (subject to assumptions below especially on XBID performance capability)
    - **0.5 minute** to receive IDA results from NEMOs to XBID, XBID validate them, generate corresponding TSOs files and deliver them to TSOs
    - **5.5 minutes** regional TSOs extraction process
    - **0.5 minute** to deliver updated NTCs (AACs) to XBID and XBID to process them

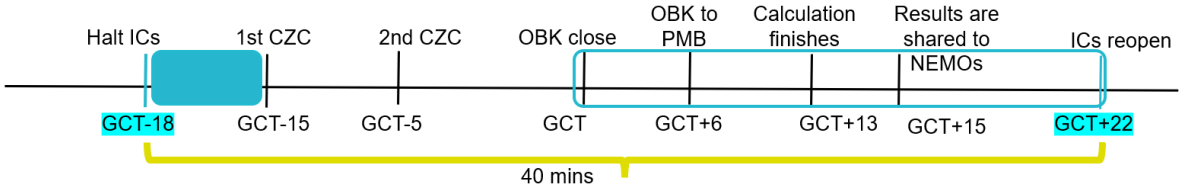
Considering the time allocated currently for the execution of the Intraday Auctions algorithm (7mins as listed above) the NEMOs and TSOs have executed an indicative set of simulations for the FB introduction in IDAs with the current version of EUPHEMIA.

Summing up the indicated/foreseen process durations, the IDA-FB will be completed, without further changes in the process, at GCT+21.5 minutes. NEMOs and TSOs consider at this moment very difficult to count further improvement of the process timing without a risk of compromising the process robustness, especially considering all the improvements introduced after the IDAs go-live. However, some improvements in the process, for example the GCT+6 for the OBK submission and the regional TSOs extraction process, could be anticipated considering extended testing results.

Normal Day IDA in NTC



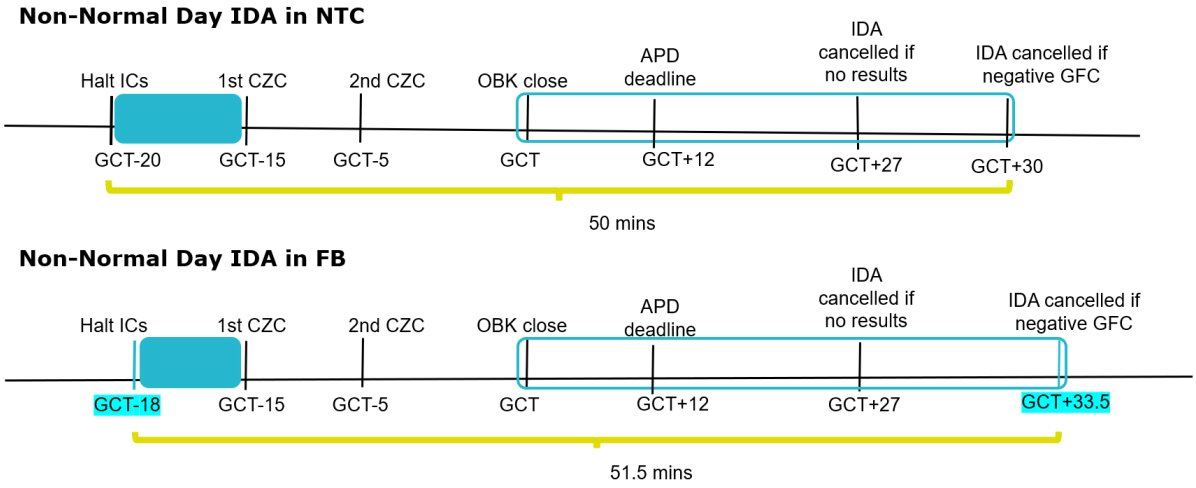
Normal Day IDA in FB



B. The following list the timing requirements for a "non-normal day IDA session":

- IDA results delivered shortly before the GCT+27:
    - Automatic IDA cancellation process was implemented for IDA go-live to ensure that, also in case of deviation from Normal Day procedures, any contract negotiated via each IDA could be traded for at least 30 minutes in continuous trading before the cross-zonal trading is closed
        - Example: IDA2 regular process 21:40 – 22:20, at the latest 22:30 cross-zonal continuous trading must resume to allow the trading of contract 00:00-01:00 as under 60min MTU the cross-zonal trading is stopped at 23:00.
    - Considering above stated automatic IDA cancellation process is triggered in XBID CMM when IDA results are not delivered by GCT+27
    - Impact of the new ATC extraction process inclusion:

- Assuming the ATC-E process time 6.5 minutes and considering the results would be delivered a 1 second before the current automatic cancellation deadline the IDA process would be completed ca at GCT+33.5. NEMOs and TSOs discussed the possibility to move the automatic cancellation deadline to earlier time or to suggest modification of the regulatory requirements especially having in mind that: (a) shortening of the time for backup processes will increase risk and frequency of the IDA cancellations, and (b) change of IDCZC GCT time to 30 minutes prior delivery which is under implementation will ensure that the requirement of 30 minutes of continuous trading after IDA will be fulfilled in the future even with extended backup process timeline, if implemented along all borders by the moment FB goes live in IDA.



4. Proposed amendments to the Algorithm methodology and configuration changes

For accommodating the proposed design consideration for the IDAs-FB implementation, while at the same time maintaining the overall disruption of IDCT up to 40 minutes, the NEMOs and TSOs are proposing the following adjustments to the pre-coupling and post coupling phases as follows for article 5 and article 6 of the AM.

Considering also the phase-out of the transitory 12 months period (after the IDAs go-live on 13th of June 2024) referenced in Article 5 par. 20 of the AM, NEMOs also propose the deletion of this paragraph.

AM, Article 5, Paragraph 19

19. In order to accommodate IDAs, the cross-zonal capacity allocation within the continuous SIDC shall be suspended for a limited period during which the cross-zonal capacities shall not be allocated through the continuous SIDC. This period for suspension shall not be longer than 40 minutes and shall consist of:

(a) The suspension before the deadline for bid submissions of each IDA. This suspension shall not be longer than 20 minutes and allow maximum of 5 minutes for recalculating and/or updating cross-zonal capacities, which shall be published no later than 15 minutes before the deadline for bid submissions for each IDA as specified in the single Methodology for pricing intraday cross-zonal capacity adopted in accordance with Article 55 of the CACM Regulation.

(b) The suspension after the deadline for bid submissions of each IDA, which shall not be longer than 25 ~~20~~ minutes and allow for the calculation of auction results, verification of results and the recalculation and/or update of cross-zonal capacities for the continuous SIDC.

~~***AM, Article 5, Paragraph 20***~~

~~*20. If all NEMOs and/or all TSOs identify during the testing of IDAs, that they are not able to implement IDAs within the time constraints provided in paragraph 19, they may start the implementation of IDAs with extended time constraints which are 30 minutes for suspension before the deadline for bid submissions of each IDA and 30 minutes for the suspension after the deadline for bid submissions of each IDA. These extended time constraints may be applied for up to maximum 12 months starting from the implementation date of IDAs and shall not affect the deadline for publication of cross-zonal capacities as referred to in paragraph 19(a). All NEMOs shall announce and publish the start and end of the application of extended deadlines at least two months before their application.*~~

AM, Article 6, Paragraph 12

12. Under normal operations, all NEMOs performing the MCO functions shall provide:

a) all TSOs, all coordinated capacity calculators and all NEMOs with the results of the IDA referred to in paragraph 1(a),(b),(c) and (d) above; and

b) all NEMOs with the results specified in paragraph 1 above,

in due time to allow at least 25 ~~30~~ minutes of cross-zonal continuous trading for any given MTU after the publication of the auction results as set out in the Methodology for pricing intraday cross-zonal capacity.

Configuration changes

The following configuration changes are also foreseen for the process in XBID:

- "IDA Halt from" will be changed from GCT-20 to GCT-18
- "IDA Halt to" will be changed from GCT+20 to GCT+22

6. Useful links

CACM

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02015R1222-20210315

IDCZCP

https://acer.europa.eu/Individual%20Decisions/ACER%20Decision%2001-2019%20on%20intraday%20cross-zonal%20capacity%20pricing%20methodology_0.pdf

https://eepublicdownloads.entsoe.eu/clean-documents/nc-tasks/EBGL/CACM_A55_190124_IDCZCP%20methodology_ACER.pdf

Algorithm Methodology (AM, last ACERs Decision, Main body and Annexes)

https://www.nemo-committee.eu/publication-detail/algorithm-methodology

7. Abbreviations

AM – Algorithm Methodology

CACM – Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on Capacity Allocation and Congestion Management (Capacity Allocation and Congestion Management)

CZC – Cross Zonal Capacity

IDA – Intraday Auction

IDCZCP – Intraday Cross-Zonal Capacity Pricing methodology

NEMO – Nominated Electricity Market Operator

OBK – Orderbook

SIDC – Single Intraday Coupling

SDAC – Single Day-Ahead Coupling

TSO – Transmission System Operator