

Explanatory note for the all-NEMOs amendments proposal on the terms and conditions applied for the “Products That Can be Taken into Account in the Single Day-Ahead Coupling” in accordance with Article 40 of Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management

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Disclaimer

This explanatory document is submitted by all NEMOs to the European Union Agency for the Cooperation of Energy Regulators for information and clarification purposes only accompanying the “All NEMOs” proposal for amendment of the terms and conditions applied for the “Products That Can be Taken into Account in the Single Day-Ahead Coupling”, in accordance with Article 40 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 a high-level overview of the background and context for the amendments proposed by the All NEMOs for the terms and conditions applied to the “*Products That Can be Taken into Account in the Single Day-Ahead Coupling*” (hereinafter “the SDAC Products Methodology”) as currently in force according to the ACER Decision 37/2020. Besides any phrasing improvements, terms definitions and usage in the document, this proposal concentrates on the amendments required for the smooth introduction of the 15min MTU products in the SDAC. Such amendments are already supported by relevant R&D reports provided by all-NEMOs and all-TSOs to the market stakeholders and ACER.

2. Background

Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on the capacity allocation and congestion management (the ‘CACM Regulation’) laid down a range of requirements for the cross-zonal capacity allocation and congestion management on the day-ahead and intra-day markets in electricity. Chapter 5 of the CACM Regulation specifies requirements for the SDAC, including products that can be taken into account in the SDAC (‘SDAC Products’).

Pursuant to Articles 9(1), 9(6)(h) and 40(1) of the CACM Regulation, all NEMOs are required to propose products that can be taken into account in the SDAC and submit their proposal for approval to all regulatory authorities. Also, pursuant to Article 9(13) of the CACM Regulation, the NEMOs responsible for developing a proposal for terms and conditions or methodologies may request amendments of these terms and conditions or methodologies. Such proposals for amendments to the terms and conditions or methodologies shall be submitted to consultation in accordance with the procedure set out in Article 12 of the CACM Regulation. The SDAC Products Methodology concerns products and order types that can be taken into account and used when submitting sell and buy orders in the SDAC as provided for under Article 40 (1) of CACM Regulation.

According to Article 8(4) of the Commission Regulation (EU) 2019/943 of 5 June 2019 on the internal market for electricity (recast), as of January 1, 2025, the imbalance settlement period will be 15 minutes in all scheduling areas, unless regulatory authorities have granted a derogation or an exception. Also, Article 8(2) of the Regulation 2019/943 requires NEMOs to offer market participants the opportunity to trade energy at intervals at least as short as the imbalance settlement period in both the day-ahead and intraday markets.

As part of the 3-year long implementation project for the introduction of 15min MTU products in SDAC, NEMOs have in 2023 cooperated with Market Participants to define and finetune these products setup in SDAC. This setup was also discussed with market participants in the Market Coupling Consultative Group on 20 October 2023. NEMOs have also received input from market participants via biennial consultation on the SDAC Products Methodology in the beginning of 2023.

Pursuant to Article 12 of the CACM Regulation All NEMOs conducted, in the period 5 February 2024 to 4 March 2024, a public consultation with market participants ([available at the NEMO Committee website](#)) for introducing in the SDAC Products Methodology necessary several improvement/clarification modifications and amendments allowing the introduction of 15min MTU products in the SDAC. NEMOs took into consideration the feedback of the respondents of the public consultation in their proposal for amendments submitted to ACER for approval.

3. Implementation of 15min MTU in SDAC

3.1 Background R&D and remarks for efficient 15min MTU introduction in SDAC

Taking into consideration the provisions of the regulatory framework (EU Regulation 2019/943) all-NEMOs, in cooperation with all-TSOs, have performed during the last 3 years extensive R&D and developments for making available 15min MTU products in the SDAC algorithm. This extensive R&D, ranging from hardware architecture improvements to improvements in the implementation of the SDAC algorithm itself, aimed at providing a stable production-scale environment for the day-to-day operations of SDAC, maintaining the performance of the algorithm and of the procedures applied by the NEMOs and the TSOs for SDAC, under the relevant performance provisions defined by the CACM. Extensive simulation runs of NEMOs for evaluating the algorithm performance clearly indicated that when making the 15min MTU products available, the SDAC algorithm performance is certainly affected by the mix of the products/MTUs available for each bidding zone and by the availability of certain type of products/order types.

The implementation of the 15min MTU on a big-bang approach would require specific adaptations from the side of the NEMOs to the optional products available and the conditions considered for the composition of the products/MTUs mix at the Order Books available for each bidding zone, so as to maintain certain provisions of SDAC Algorithm Methodology and CACM Regulation for the availability of different kind of MTUs (Cross Product Matching) and performance. The NEMOs and TSOs have clearly and transparently reported to the market stakeholders such R&D scenarios and results pointing out that, besides any product/order type availability consideration, the introduction and usage of 15min MTU products should also be stimulated/incentivized at a local level.

3.2 Removal of PUN

The Single National Price (PUN) is the consumption-weighted average price of zonal prices applied to all consumption regardless of their geographic location. It has been an important equalization tool for purchasing market operators in the different Italian zones, in an energy and technological context in which

consumers were passive subjects, unable to dynamically control their consumption and actively interact with the market.

On the contrary, in the framework of the ecological transition path envisaged by EU Regulation 943/2019 and by EU Directive 944/2019, which in Italy have been transposed by Legislative Decree 210/21, the current technological context is characterized by a progressive development of the active participation of demand in the market (Demand Side Response - DSR) and by the increasing diffusion of "prosumers". In this context, the symmetrical application of the same price on both the generation and consumption side is therefore required in order to define correct price signals that can incentivize/disincentivize the development of energy intensive industries and differentiate the cost of energy among small/medium consumers according to the prices that are recorded in different areas of the Market.

Furthermore, according to Article 8(4) of the Regulation 943/2019, as of January 1, 2025, the adjustment period for imbalances will be 15 minutes in all scheduling areas. Article 8(2) of the Regulation 943/2019 requires NEMOs to offer market participants the opportunity to trade energy at intervals at least as-short-as the imbalance adjustment period in both the day-ahead and intraday markets. Technical evaluation conducted by NEMOs showed that the introduction of 15min MTUs in SDAC would imply an increase in the computational complexity for the running of the price-coupling algorithm, affecting the performance of the algorithm. In particular, it has been shown that, based on the available simulations, any calculation including the PUN product orders in association with 15min MTUs, takes too long to reach a result. In order to maintain the value of the algorithm performance at the proper level, the PUN orders will be removed from the price coupling algorithm with the introduction of the 15min MTU product in SDAC.

From an Italian legal and regulatory standpoint, the Italian law n.11 of February 2, 2024 amended Article 13 of the Italian Decree 210/21, establishing that the Minister of Environment and Energy security, after hearing ARERA, shall issue a decree to establish the conditions and criteria for application of zonal prices as of January 1, 2025. This implies that, starting from January 1, 2025, PUN will no longer be an outcome of the SDAC Algorithm, and can then be removed from the list of Optional products of the terms and conditions on SDAC products.

3.3 Rewording of the (Scalable) MIC/MP orders and load gradient orders sections into better structured (Scalable) Complex Order sections.

In the first version of SDAC Products Methodology there were the MIC orders (respectively, MP orders) and the Load Gradient Orders. This classification was initially chosen with the aim of providing a breakdown of the available features, as well as facilitating understanding, exposing the similarities between the Simple Block Orders (SBOs) and the MIC/MP orders, understood as orders expanding through different periods of time and with an economic condition for acceptance. On the other hand, Load Gradient Orders were provided separately as it is a feature for allowing the modelling of a technical limitation regarding the change between two consecutive MTUs.

At a later stage, the Scalable MIC Orders (respectively, MP orders) were introduced as a similar product to MIC/MP orders that were proposed as a potential replacement for the MIC/MP orders.

In the real application of these products, the features provided in MIC/MP Orders and Load Gradient Orders can be used separately or combined. It happens similarly to Scalable MICs/MPs Orders and Load Gradient Orders.

Documents that were either more technical or written afterwards (EUPHEMIA public description, Algorithm Monitoring Methodology, ...) follow a different naming convention, which is closer to the way the product is implemented in the SDAC algorithm and the way these products are offered to market participants. This misalignment, creating confusion among stakeholders, can be easily avoided by adapting the terminology used in the SDAC Products Methodology document to the terminology used in the other existing documents.

The new rewording in Complex Orders (COs) and Scalable Complex Orders (SCOs) sections aims to provide a better structure for the features that can be used with these orders, expose how they can be combined, make the description closer to the implementation of the SDAC algorithm, and align the terminology with all the other documents that have already been published.

3.4 Replacement of Complex Orders (COs) with Scalable Complex Orders (SCOs)

The introduction of 15min MTU requirement has a significant impact on performance and requires the application of measures that guarantee an adequate level of performance. R&D on 15min MTU requirement concluded that to facilitate the achievement of that adequate level of performance in the usage of this requirement, it is required, among other measures, to replace the usage of some existing products in favor of others that can offer better performance. Scalable Complex Orders (SCOs) were proposed as an improved version of Complex Orders (COs) that, having many similarities with them, deliver a better scalable product that is also capable of delivering additional benefits.

The Scalable Complex Orders (SCOs) are more easily scalable, because due to the lack of the Variable Term (VT), it is possible to embed all the economic conditions of the order (the price asked in each step of the curves and the Fixed Term (FT)) in the primal problem. This change allows to directly apply search heuristics in the branch and cut search. Additionally, the withdrawal of Complex Orders in favor of other products opens the door to use the optimality gap indicator as a meaningful value to measure the distance to the potential optimal solution.

In the CACM Annual Report, the studies on the individual impact of products show that using SCOs in replacement of COs or using Simple Block Orders and curves in replacement of COs provides a significant improvement in performance. Despite the individual impact of products is prepared using historical data, it suggests that an immediate performance improvement can be achieved by such a replacement. According to the simulations that were run during the 15min R&D phase, it is expected that when the 15min MTU requirement is in use, this impact is even more relevant. This later statement is to be validated in 2024 with more precise scenarios prepared for the validation of the RfC for the go-live of the 15min

MTU.

It is expected that the areas in which the usage of COs still remains will abandon this product and will shift towards the usage of SCOs at the same moment than the go-live of 15min MTU. The current proposal amendment of the SDAC Products Methodology sets an expiration date for the COs, which is linked to the go-live of the 15min MTU requirement and considers an additional time for the application of fallbacks in case the 15min MTU change is reverted, as a safety measure.

It should be understood that in the case of issues with the 15 min MTU go-live, the preference will be to move ahead solving the problems that might appear by applying the less intrusive corrective measures as described in the Article 12 for the Algorithm Methodology. Therefore, the proposed support by the Algorithm for reversal from SCOs to COs within the 6 months is to be considered as a last resort and extreme solution that could be used if anything else fails.

NEMOs currently in use of COs orders have the freedom to offer either SCOs or other products listed in the current proposal to their market participants as part of the process of retirement of available COs products. This process shall be done following algorithm change management processes already in place, according to the Algorithm Methodology.

Once the expiration date for COs and the additional time for the application of fallbacks is finished, the COs can be removed first from the SDAC Products Methodology document and later removed from the SDAC algorithm implementation.

4. Amendments to the SDAC products methodology

This section provides an executive summary of the amendments provided for the SDAC Products methodology.

4.1 Whereas

Updated for supporting the basic considerations for the proposed amendments due to the 15min MTU products activation and certain Optional Products removal and replacement.

4.2 Article 1

Included a reference to Appendix 1, added for listing the NEMOs to which this SDAC Products Methodology applies for.

4.2 Article 2

Proposed rephrasing/clarification improvements of existing content and adaptation of certain terms defined for usage in the SDAC Products Methodology.

4.3 Article 3

Included rephrasing/clarification improvements of existing content and terms. Added content relevant to the acceptance/rejection criteria demand/supply curves due to the Cross Product Matching. It should be noticed that further technical details considering the implementation of Cross-Product Matching will be provided in the EUPHEMIA public description.

4.4 Article 4

Proposed rephrasing/clarification improvements for the supported MTUs and the imbalance settlement period in accordance with the requirements set by EU Regulation 943/2019. The term "calendar day" is also replaced by the "delivery day" as the relevant power contracts are defined in the physical delivery day domain (uniformly in CET/CEST time for each bidding zone).

Provided clarifications for the definition of the mandatory Simple Block Orders (usage of abbreviations, replacement of purchase vs buy orders).

4.5 Article 5

Provided rephrasing/clarification improvement in the acceptance rules of Linked Block Orders. Added explicit reference on possible combinations of Linked Block and Exclusive Group Orders. It should be understood that, provided the definition of Simple Block Orders at any possible MTU resolution available (60min, 30min, 15min MTUs), and the fact that Complex Block Orders are constructed by using combinations of Simple Block Orders with additional characteristics, the Complex Block Orders (frequently referenced also as "smart blocks") may link/group Block Orders defined at different MTU resolutions.

Provided a complete re-writing of the Complex Orders (MIC/MP/Load gradient and conditions) description, their acceptance/rejection criteria, and proposed setting an ad-hoc fallback period of 6 months for their SDAC algorithm support retention.

Provided the Scalable Complex Orders (MIC/MP/Load gradient and conditions) description and their acceptance/rejection criteria.

The PUN Orders are removed from Article 5 in accordance with arguments provided in the whereas section. Provided clarification for the in-out the money rules applicable for the Merit Orders due to Cross Product Matching.

4.6 Article 6

Beyond the removal of PUN Orders, the usage drop of which is already decided prior 1st January 2025, the commercial activation for the rest of the 15min MTU products provisions is expected with the 15min MTU go-live date.

Appendix 1

Included the list of NEMOs to which the SDAC Products methodology applies for.

5. Useful links

Commission Regulation (EU) 2015/1222 (CACM)

<https://eur-lex.europa.eu/eli/reg/2015/1222/2021-03-15>

Regulation (EU) 2019/943

<https://eur-lex.europa.eu/eli/reg/2019/943/oj>

ACER Decision 37-2020 (Products That Can be Taken into Account in the Single Day-Ahead Coupling)

[ACER Decision 37-2020 \(Annex-I\)](#)

6. 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

CO – Complex Order

DA – Day-ahead

DAM – Day Ahead Market

EC – European Commission

MCSC – Market Coupling Steering Committee

MIC – Minimum Income Condition

MTU – Market Time Unit

NEMO – Nominated Electricity Market Operator

OBK – Orderbook

PRMIC – Paradoxically Rejected Minimum Income Condition

R&D – Research and Development

SCO – Scalable Complex Order

SDAC – Single Day-Ahead Coupling

SDAC MSD – SDAC Market System Design working group

TSO – Transmission System Operator

