BLAŽEVIĆ

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**REPUBLIKA HRVATSKA**

**HRVATSKA ENERGETSKA REGULATORNA AGENCIJA**
**Ulica grada Vukovara 14**
**10000 Zagreb**

**PRIJEMNI ŠTAMBILJ**
**Hrvatski operator prijenosnog sustava d.d.**
**ZGRADA OPERATORA PRIJENOSNOG SUSTAVA**

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**KLASA: 391-11/23-01/2**
**URBROJ: 371-06-23-4**
**Zagreb, 7. prosinca 2023.**

Na temelju članka 9. stavka 5. Uredbe Komisije (EU) 2015/1222 od 24. srpnja 2015. o uspostavljanju smjernica za dodjelu kapaciteta i upravljanje zagušenjima i članka 1. Provedbene uredbe Komisije (EU) br. 2021/280 od 22. veljače 2021. o izmjeni uredaba (EU) 2015/1222, (EU) 2016/1719, (EU) 2017/2195 i (EU) 2017/1485 radi njihova usklađivanja s Uredbom (EU) 2019/943, Hrvatska energetska regulatorna agencija je na 29. sjednici Upravnog vijeća održanoj 29. i 30. studenoga 2023. i 7. prosinca 2023. donijela

# ODLUKU

**o davanju odobrenja na *Prijedlog druge izmjene Metodologije koordiniranog proračuna kapaciteta za dan unaprijed u Core regiji u skladu s člankom 20. i nadalje Uredbe Komisije (EU) 2015/1222***

1. Daje se odobrenje *na Prijedlog druge izmjene Metodologije koordiniranog proračuna kapaciteta za dan unaprijed u Core regiji u skladu s člankom 20. i nadalje Uredbe Komisije (EU) 2015/1222* (engl. *Second amendment of the Day-Ahead Capacity Calculation Methodology of the Core Capacity Calculation Region in accordance with Articles 20ff. of the Commission Regulation (EU) 2015/1222 of 24th July 2015 establishing a guideline on capacity allocation and congestion management*) koji je Hrvatski operator prijenosnog sustava d.d., Kupska 4, Zagreb dostavio Hrvatskoj energetskoj regulatornoj agenciji dopisom Klasa: 700/23-15/203, Urbroj: 3-300/BM-23-01, od 6. travnja 2023.

2. Nalaže se Hrvatskom operatoru prijenosnog sustava d.d., Kupska 4, Zagreb da, na temelju članka 9. stavka 14. Uredbe Komisije (EU) 2015/1222 od 24. srpnja 2015. o uspostavljanju smjernica za dodjelu kapaciteta i upravljanje zagušenjima i članka 1. Provedbene uredbe Komisije (EU) br. 2021/280 od 22. veljače 2021. o izmjeni uredaba (EU) 2015/1222, (EU) 2016/1719, (EU) 2017/2195 i (EU) 2017/1485 radi njihova usklađivanja s Uredbom (EU) 2019/943, na svojoj internetskoj stranici objavi *Druge izmjene Metodologije koordiniranog proračuna kapaciteta za dan unaprijed u Core regiji u skladu s člankom 20. i nadalje Uredbe Komisije (EU) 2015/1222.*

3. Ova Odluka objavit će se na internetskoj stranici Hrvatske energetske regulatorne agencije.

4. Ova Odluka stupa na snagu danom donošenja.

**Zamjenik predsjednika Upravnog vijeća**


**mr. sc. Željko Vrban**

# Second amendment of the Day-Ahead Capacity Calculation Methodology of the Core Capacity Calculation Region

in accordance with Articles 20ff. of the Commission Regulation (EU) 2015/1222 of 24th July 2015 establishing a guideline on capacity allocation and congestion management

31st March 2023

## Whereas

TSOs of the Core CCR ("Core TSOs"), taking into account the following:

(1) Hybrid coupling refers to the combined use of Flow-Based (FB) and Available Transmission Capacity (ATC) constraints in one single capacity allocation mechanism. There are two forms of hybrid coupling: Standard Hybrid Coupling (SHC) and Advanced Hybrid Coupling (AHC). The difference between SHC and AHC is how power flows on interconnectors between the Core CCR and adjacent CCRs are mapped onto Core CNECs. The SHC grants access to the scarce CNEC capacity by reserving capacity on the Core CNECs based on the forecasted power flows on the interconnectors. On the other hand, in the AHC, the power flows on the interconnectors between the Core CCR and adjacent CCRs are subject to non-discriminatory competition for CNEC capacity with all other power flows within the Core CCR. Besides ensuring a non-discriminatory competition for the scarce CNEC capacity, the expectation is that Core FB DA MC will benefit from the implementation of AHC in terms of socio-economic welfare as well;
(2) Six months after Core FB DA MC Go-Live, Core TSO need to submit to Core NRAs a proposal for amendment of this methodology detailing the implementation of AHC. In order to elaborate and discuss this proposal for amendment in detail, it was agreed with the Core NRAs to extend this deadline to the end of March 2023;
(3) With this amendment, Core TSOs aim to both detail the AHC methodology and set a timeline for the technical readiness of the tools used in the Core FB DA CC and MC processes for the introduction of AHC;
(4) The following changes fulfil the objectives set out in Article 3 CACM. In particular, an improvement will be made in relation to Article 3 (b), (d) and (j) improving the allocation of capacity at borders to other CCRs. The aim of the measures is to create a level playing field in Single Day Ahead Coupling ('SDAC') with regard to flows resulting from intra-CCR trade and flows resulting from trade with bidding zones outside the core CCR.

For the purposes of this second amendment to the Core CCR TSOs' Day-Ahead Capacity Calculation Methodology, terms used in this document shall have the meaning of the definitions included in Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity, Directive (EU) 2019/944 of the European Parliament and of the Council of 5 June 2019 on common rules for the internal market for electricity and amending Directive 2012/27/EU (recast), Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (CACM Regulation), Commission Regulation (EU) 2016/1719 of 26 September 2016 establishing a guideline on forward capacity allocation (FCA Regulation), Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing (EB Regulation) and Commission Regulation (EU) No 543/2013 of 14 June 2013 on submission and publication of data in electricity markets and amending Annex I to Regulation (EC) No 714/2009 of the European Parliament and of the Council and the definitions set out in Article 2 Annex I of the Decision No 02/2019 of the Agency for the Cooperation of the Energy Regulators of 21 February 2019 on the Core CCR TSOs' proposal for the regional design of the day-ahead and intraday common capacity calculation methodologies.

## Article 1
## Implementation of Advanced Hybrid Coupling

1. Article 2. Definitions and interpretation shall be amended by introducing a new number 1a and 1b accordingly:

> "1a. 'AHC border' means a border between a bidding zone within and outside of Core CCR where both bidding zones are part of Single-Day-Ahead Coupling and the AHC is applied;"
>
> "1b 'external virtual hub' means a virtual bidding zone without any buy and sell orders, used to represent the imports and exports on an AHC border as specified in article 13 of this Methodology;"

2. Article 13. Consideration of non-Core bidding zone borders shall be amended accordingly:

1. Paragraph 3 letter (b) shall be replaced and be read accordingly:

> "(b) In the AHC, the CNECs of the Core Day-ahead capacity calculation region shall not only limit the net positions of Core bidding zones due to exchanges on bidding zone borders of the Core CCR but also the exchanges on bidding zone borders between the Core CCR and adjacent BZs. Core TSOs applying AHC shall apply the following rules:
>
> i. For each AHC border, the Core TSOs shall introduce at least one single external virtual hub.
>
> ii. The CCC shall define GSKs for the external virtual hubs according to Article 9 (1) as follows:
>
> > b.ii.1. In case an AHC border contains only HVDC interconnectors, the GSK shall be defined by all converter stations of the HVDC interconnectors, weighted based on the respective transmission capacity.
> >
> > b.ii.2. In case an AHC border contains only AC interconnectors, the CCC shall use the GSK of the adjacent bidding zone provided by the TSOs of that bidding zone. When this GSK is not available, the CCC shall define a GSK based on all positive injections in the IGM of the adjacent bidding zone.
> >
> > b.ii.3. In case an AHC border contains both HVDC interconnectors and AC interconnectors, the respective Core TSO shall define a single combined GSK based on the GSK for the HVDC interconnectors and the GSK for the AC interconnectors.
>
> iii. The CCC shall compute zone-to-slack PTDFs and zone-to-zone PTDFs for the external virtual hubs in accordance with Article 11.
>
> iv. The Core TSOs shall send to the CCC adjustment values for each

AHC border according to Article 4 (4) (b).

v. The FRMs shall not cover forecast uncertainties according to Article 8 (1) (a) induced by AHC borders.

vi. The maximum zone-to-zone PTDF of a CNEC ($PTDF_{z2zmax,l}$) according to Article 11 (5) shall additionally consider the PTDFs of the external virtual hubs.

vii. Cross-zonal network elements pursuant to Article 5 (1) shall additionally include those on AHC borders. In case the capacity constraints resulting from cross-zonal network elements on an AHC border are already considered in another CCR, a Core TSO may decide not to define such network elements as CNE or CNEC in Core. Such a CNE or CNEC on an AHC border shall be regularly monitored only in a single CCR. Any deviation from this rule shall be subject to a sound justification.

viii. Core TSOs may impose a limit to the net position of the external virtual hubs for AHC borders consisting of at least one cross-border HVDC interconnector to account for the physical limitations of the HVDC cables on that border and the converter stations on the Core side.

ix. The zone-to-zone PTDFs used to compute $RAM_{rel}$ for the non-costly remedial actions optimisation pursuant to Article 16 (3) shall additionally consider the PTDFs of the external virtual hubs.

x. The situation for the computation of $\vec{F}_{0,Core}$ according to Article 17 shall exclude the commercial exchange on the AHC borders. The computation of $\text{PTDF}_f$ shall include the external virtual hubs. The $\overrightarrow{NP}_{ref,Core}$ shall include the net positions of the external virtual hubs. $\vec{F}_{uaf}$ shall not include flows resulting from commercial exchanges on the AHC borders.

xi. The RAM as referred to in Article 17 (5) shall be the capacity offered within the Core CCR and to the AHC borders. $\vec{F}_{uaf}$ shall be the flow per CNEC assumed to result from commercial exchanges outside the Core CCR except the AHC borders.

xii. When applying the rules for LTA inclusion according to Article 18, Core TSOs shall additionally take into account the previously-allocated cross-zonal capacity of AHC borders. $\overrightarrow{NP}_{LTAi}$ and $\overrightarrow{NP}_{ref}$ shall include the net position of the external virtual hubs.

xiii. The PTDFs of the external virtual hubs shall be included in the flow-based parameters according to Article 21. The CCC shall include the exchanges on the AHC borders resulting from LTN as net position of the external virtual hubs when computing the $\overrightarrow{NP}_{LTN}$.

xiv. The computations performed according to Article 22 shall also be performed for the external virtual hubs. In case of application of default

flow-based parameters, the bilateral capacities on the AHC borders shall be defined based on the LTA capacity increased by the adjustment provided pursuant to Article 13 (3) (b) (iv).

xv. The ATCs for the SDAC fallback procedure according to Article 23 shall be based on the LTA capacity increased by the adjustment provided pursuant to Article 13 (3) (b) (iv).”

2. Paragraph 3 letter (c) shall be replaced and be read accordingly:

“(c) Core TSOs shall introduce the AHC until 2025 for borders to bidding zones adjacent to the Core CCR insofar as these bidding zones are part of the Single Day Ahead Coupling (‘SDAC’), subject to the prioritisation of its implementation in SDAC. Until the AHC is implemented, the Core TSOs shall monitor the accuracy of non-Core exchanges in the CGM. The Core TSOs shall report in the annual report to all Core regulatory authorities the accuracy of such forecasts.”

## Article 2
## Amendments to ensure correct handling of HVDC interconnectors

1. Article 11. Calculation of power transfer distribution factors and reference flows shall be amended accordingly

Paragraph 5 shall be replaced and be read accordingly:

“The maximum zone-to-zone $PTDF$ of a CNEC ($PTDF_{z2zmax,l}$) is the maximum influence that any Core exchange has on the respective CNEC, including exchanges over HVDC interconnectors which are integrated pursuant to Article 12:

$$PTDF_{z2zmax,l} = max\Big(\max_{A\in BZ}\big(PTDF_{A,l}\big) - \min_{A\in BZ}\big(PTDF_{A,l}\big), \max_{H\in HVDC,}\big(|(PTDF_{A,l} - PTDF_{VH_1,l}) - (PTDF_{B,l} - PTDF_{VH_2,l})|, |PTDF_{VH_1,l,H} - PTDF_{VH\_2,l}|\big)\Big)$$

*Equation 1*

with

| | |
|---|---|
| $PTDF_{A,l}$ | zone-to-slack $PTDF$ of bidding zone A on a CNEC $l$ |
| HVDC | set of HVDC interconnectors integrated pursuant to Article 12 |
| $BZ$ | set of all Core bidding zones |
| $\max_{A\in BZ}(PTDF_{A,l})$ | maximum zone-to-slack PTDF of Core bidding zones on a CNEC $l$ |
| $\min_{A\in BZ}(PTDF_{A,l})$ | minimum zone-to-slack PTDF of Core bidding zones on a CNEC $l$ |

| | |
|---|---|
| $PTDF_{VH\_1,l}$ | zone-to-slack $PTDF$ of Virtual hub 1 on a CNEC $l$, with virtual hub 1 representing the converter station at the sending end of the HVDC interconnector located in bidding zone A |
| $PTDF_{VH\_2,l}$ | zone-to-slack $PTDF$ of Virtual hub 2 on a CNEC $l$, with virtual hub 2 representing the converter station at the sending end of the HVDC interconnector located in bidding zone B" |

2. Article 12. Integration of HVDC interconnectors on bidding zone borders of the Core CCR:

Paragraph 1 shall be replaced and be read accordingly:

> "The Core TSOs shall apply the evolved flow-based (EFB) methodology when including HVDC interconnectors on the bidding zone borders of the Core CCR . According to this methodology, a cross-zonal exchange over an HVDC interconnector on the bidding zone borders of the Core CCR is modelled and optimised explicitly as a bilateral exchange in capacity allocation, and is constrained by the physical impact that this exchange has on all CNECs considered in the final flow-based domain used in capacity allocation and constraints modelling the maximum possible exchange of the HVDC interconnector."