European Network of
Transmission System Operators
for Electricity

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All continental European TSOs' proposal for Common settlement rules for all unintended exchanges of energy in accordance with the Article 51(1) of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing

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ALL CONTINENTAL EUROPEAN TSOS', TAKING INTO ACCOUNT THE FOLLOWING:

Whereas

(1) This document is a common proposal developed by all Transmission System Operators in the Synchronous Area Continental Europe (hereafter referred to as "**SA CE TSOs**") regarding the development of common settlement rules for all unintended exchanges of energy (hereafter referred to as "**unintended exchanges**") in accordance with Article 51(1) of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing (hereafter referred to as the "**EB Regulation**"). This proposal is hereafter referred to as the "**CCU**", which stands for 'common settlement rules for continental Europe for all unintended exchanges of energy'.

(2) This CCU takes into account the general principles and goals set in the EB Regulation as well as Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity (hereafter referred to as the "**Electricity Regulation**") as well as Regulation (EC) No 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (hereafter referred to as the "**SO Regulation**"). The goal of the EB Regulation is the integration of balancing energy markets. The integration of balancing energy markets should be facilitated with the establishment of common European platforms for operating the imbalance netting process and enabling the exchange of balancing energy from frequency restoration reserves and replacement reserves. Cooperation between TSOs should be strictly limited to what is necessary for the efficient and secure design, implementation and operation of those European platforms.

(3) Articles 51(1), 51(3) and 51(4) of the EB Regulation define the deadline for the submission of the CCU to the relevant regulatory authorities and several specific requirements to its content:

> *1. By eighteen months after the entry into force of this Regulation, all TSOs of a synchronous area shall develop a proposal for common settlement rules applicable to all unintended exchanges of energy. The proposal shall include the following requirements:*
>
> > *(a) the price for unintended exchanges of energy withdrawn from the synchronous area shall reflect the prices for activated upward balancing energy for frequency restoration process or reserve replacement process for this synchronous area;*
> >
> > *(b) the price for unintended exchanges of energy injected into the synchronous area shall reflect the prices for activated downward balancing energy for frequency restoration process or reserve replacement process for this synchronous area.*
>
> *3. The proposals of common settlement rules of unintended exchanges of energy between TSOs shall ensure a fair and equal distribution of costs and benefits between them.*
>
> *4. All TSOs shall establish a coordinated mechanism for adjustments to settlements between them.*

(4) The CCU contributes to the objective of non-discrimination and transparency in balancing markets pursuant to Articles 3(1)(a), 3(2)(a) and 3(2)(b) of the EB Regulation, since the same settlement rules will apply to the whole Synchronous Area Continental Europe and they will be publicly available.

(5) The CCU contributes to the objective of enhancing the efficiency of European and national balancing markets, pursuant to Article 3(1)(b) of the EB Regulation, since the compensation

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programme is replaced by the common settlement rules applicable to the whole Synchronous Area Continental Europe.

(6) The CCU serves the requirement of Article 3(2)(h) of the EB Regulation since the technical framework proposed is based on agreed European standards already in operation.

(7) The CCU was developed taking into account the consistency with settlement rules of intended exchanges of energy as a result of the frequency containment process and ramping period within the Synchronous Area Continental Europe in accordance with Article 50(3) of the EB Regulation. Due to the strong interdependency of the common settlement rules of intended exchanges as a result of the frequency containment process and the ramping periods (in the CCFR) and the unintended exchanges (in this CCU or the methodologies according to Article 51(1) of the EB Regulation), specifically regarding the price calculation, where both the exchanges as a result of the frequency containment process and the unintended exchanges are used, cross-references between the methodologies are unavoidable.

(8) The CCU was developed taking into account the consistency with the settlement rules of intended exchanges between synchronous areas in accordance with Article 50(4) of the EB Regulation and of unintended exchanges in accordance with Article 51(2) of the EB Regulation.

(9) In conclusion, the CCU contributes to the general objectives of the EB Regulation.

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Abbreviations

The list of abbreviations used in this CCU is the following:

- ACE: area control error
- ACER: Agency for the Cooperation of Energy Regulators
- ANES: aggregated netted external schedules
- CCFR: common settlement rules for continental Europe for intended exchanges of energy as a result of the frequency containment process and ramping period
- CCU: common settlement rules for continental Europe for all unintended exchanges of energy
- EB Regulation: Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing
- Electricity Regulation: Regulation (EC) No 714/2009 of the European Parliament and of the Council of 13 July 2009 on conditions for access to the network for cross-border exchanges in electricity
- LFC area: load-frequency control area
- LFC block: load-frequency control block
- SA CE: Synchronous Area Continental Europe
- SO Regulation: Regulation (EC) No 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation
- SAFA: Synchronous Area Framework Agreement, between all SA CE TSOs.
- TSO: Transmission System Operator

SUBMIT THE FOLLOWING CCU TO ALL RELEVANT REGULATORY AUTHORITIES:

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Article 1
Subject matter and scope

(1) The common settlement rules for all unintended exchange as determined in this CCU are the common proposal of all SA CE TSOs in accordance with Article 51(1) of the EB Regulation.

(2) The following settlement rules are out of scope of the CCU:

(a) the common settlement rules for intended exchanges of energy in accordance with Article 50(1) of the EB Regulation;

(b) the common settlement rules for intended exchanges of energy in accordance with Article 50(3) of the EB Regulation;

(c) the common settlement rules for intended exchanges of energy in accordance with Article 50(4) of the EB Regulation;

(d) the common settlement rules for unintended exchanges of energy in accordance with Article 51(2) of the EB Regulation.

(3) Governance, cost sharing and decision-making will be organised according to the requirements of the EB Regulation but are not within the scope of this CCU.

Article 2
Definitions and interpretation

(1) For the purposes of this CCU, the terms used shall have the definitions given to them in Article 2 of the EB Regulation and Article 3 of the SO Regulation.

(2) In addition, in this CCU the following terms shall apply:

(a) 'accounting data' is the result of an agreement between two TSOs concerning the physical energy exchanged over a physical line or considered via a virtual tie-line and is derived from validated metered data;

(b) 'CCFR' refers to the 'All continental European TSOs' proposal for common settlement rules for intended exchanges of energy as a result of the frequency containment process and ramping period in accordance with the Article 50(3) of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing';

(c) 'TSO-TSO settlement period' means, in the context of this CCU, the time unit for which unintended exchanges of energy and intended exchanges of energy as a result of the frequency containment process and ramping period is calculated;

(d) 'unintended exchanges of energy' equals the integral of the area control error (ACE) according to Article 3 of the SO Regulation over a TSO-TSO settlement period.

(3) In this CCU, unless the context requires otherwise:

(a) prices for unintended exchanges of energy are indicated in EUR/MWh;

(4) In addition, unless the context requires otherwise:

(a) the singular indicates the plural and vice versa;

(b) the table of contents and headings are inserted for convenience only and do not affect the interpretation of this CCU;

(c) any reference to legislation, regulations, directive, order, instrument, code or any other enactment shall include any modification, extension or re-enactment of it then in force.

(5) Settlement according to Article 3(9) of this CCU shall follow the sign convention in Table 1:

Table 1 Payment direction for TSO settlement pursuant to CCU

	TSO-TSO settlement price: positive	TSO-TSO settlement price: negative
TSO settlement volume: positive (TSO exports)	Payment to TSO	Payment from TSO
TSO settlement volume: negative (TSO imports)	Payment from TSO	Payment to TSO

Article 3
High-level design of the common settlement

(1) The common settlement performed by SA CE TSOs in accordance with this CCU shall consist of the CCU accounting function, the CCU settlement function and the invoicing task.

(2) The entity or entities entrusted with the CCU accounting function, the CCU settlement function and the invoicing tasks are designated by all SA CE TSOs in the framework of the SAFA.

(3) The entity or entities entrusted with the CCU accounting function shall collect all the data required to calculate the values of unintended exchange over each TSO-TSO settlement period.

(4) The input to the CCU accounting function shall be:

(a) the accounting data per TSO-TSO settlement period and per LFC area of SA CE, including exchanges of energy accounted through a virtual tie-line;

(b) all aggregated netted external schedules (ANES) within SA CE;

(c) the volumes of intended exchanges of energy as a result of the frequency containment process and ramping period pursuant Article 50(3) of the EB Regulation.

(5) The output of the CCU accounting function shall be the volume of unintended exchanges of energy for each TSO-TSO settlement period within SA CE. The unintended exchange of energy is determined per LFC area or LFC block with respect to the rest of the SA CE.

(6) The entity or entities entrusted with the CCU settlement function shall collect all the data required to calculate a price of unintended exchange over each TSO-TSO settlement period and calculate, for each LFC block or LFC area, the financial result and financial flows.

(7) The input to the CCU settlement function shall be:

(a) the volumes of intended exchange of energy as a result of the frequency containment process and ramping period in accordance with Article 7 of the CCFR

(b) The volume of unintended exchange of energy in accordance with Article 7 of this CCU;

(c) the day-ahead market price of each LFC block in SA CE, in accordance with Article 8(1)(a) of this CCU;

(d) the average frequency deviation over each TSO-TSO settlement period of SA CE which shall be determined by a designated TSO.

(8) The CCFR settlement function shall calculate or provide the following outputs:

(a) the price for the unintended exchanges of energy for each TSO-TSO settlement period.

(b) the financial flows between all LFC blocks or LFC areas in SA CE as a result of unintended exchanges of energy for each TSO-TSO settlement period.

(9) All volumes of unintended exchange calculated for each LFC block or LFC area for each TSO-TSO settlement period, in accordance with Article 7 of this CCU, shall be settled at the same price, calculated for that TSO-TSO settlement period in accordance with Articles 8(1) and 8(2) of this CCU.

(10) The settlement shall be done on LFC area level unless:

(a) all TSOs of a single LFC block agree on settlement on LFC block level; or

(b) some TSOs of a single LFC block agree on a common settlement of their LFC areas.

(11) The entity or entities entrusted with the invoicing task shall invoice the SA CE TSOs according to the results of the CCU settlement function.

(12) All SA CE TSOs shall accept the financial flows and are obliged to pay accordingly. Financial flows shall be reviewed by the entity or entities entrusted with the CCU settlement function in case an error is found in the calculations or in the data input to the calculations. The review can be requested by TSOs until five months after the completion of the settlement results. The exact business day until which such remarks are allowed shall be notified together with the settlement results.

Article 4
Implementation of the common settlement

(1) All SA CE TSOs shall implement the common settlement rules within 12 months after the approval of this CCU, in accordance with Article 5(5) of the EB Regulation.

(2) The following steps and timeline shall be used as the roadmap for the implementation of the common settlement rules:

(a) Adaption of all meters: All SA CE TSOs have changed their metering devices and are able to meter the exchanges of energy in the TSO-TSO settlement period.

(b) Appointment of the entities: The CCU accounting function, CCU settlement function and invoicing tasks have been appointed to an entity or entities according to Article 3 of this CCU.

(c) Implementation of the CCU accounting function: The entity or entities entrusted with the CCU accounting function shall implement the CCU accounting function. All SA CE TSOs shall implement their interfaces to the CCU accounting function if needed.

(d) Implementation of the CCU settlement function: The entity or entities entrusted with the CCU settlement function shall implement the CCU settlement function. All SA CE TSOs shall implement their interfaces to the CCU settlement function if needed.

(e) Implementation of the CCU invoicing tasks: The entity or entities entrusted with the CCU invoicing tasks shall implement the CCU invoicing tasks. All needed interfaces shall be setup.

(f) Testing: All SA CE TSOs shall test the interfaces to the CCU accounting function, the CCU settlement function and, if applicable, to the CCU invoicing task.

(g) Go-live: After all tests in accordance with Article 4(2)(f) of this CCU have been successful, the common settlement will go live.

(h) Reviewal mechanism: After implementation of these common settlement rules, a reviewal mechanism shall start no later than end of 2022, in which all SA CE TSOs shall review the CCU. A review shall take place at least every three years after the first review. The reviewal mechanism could affect, among others, the parameters of the pricing rules described in Article 8 of this CCU, the time resolution of the TSO-TSO settlement period described in Article 6 of this CCU or technical details such as data collection. Whenever changes to the CCU are agreed by all SA CE TSOs, these shall develop a proposal for amendments to the CCU and submit it to all relevant regulatory authorities for approval, no later than twelve months after the start of the corresponding period of the reviewal mechanism.

(i) Usage of balancing prices: All SA CE TSOs shall use the first review of the reviewal mechanism described in paragraph (h) of this Article to develop a proposal for amendments to this CCU where the methodology shall be reviewed to incorporate balancing energy prices, in accordance with Article 51(1)(a) and 51(1)(b) of the EB Regulation, instead of day-ahead market prices. The usage of balancing energy prices shall be implemented within one year of the approval of the corresponding request for amendments to this CCU.

Article 5
Functions of the common settlement

(1) The common settlement in accordance with this CCU shall consist of the CCU accounting function and the CCU settlement function.

(2) The purpose of the CCU accounting function shall be the calculation of the unintended exchanges of energy, for each TSO-TSO settlement period within SA CE, in accordance with Article 3 of this CCU.

(3) The purpose of the CCU settlement function shall be the calculation of the price for the unintended exchanges of energy for each TSO-TSO settlement period and of the financial flows between all LFC blocks or LFC areas in SA CE as a result of unintended exchanges of energy for each TSO-TSO settlement period, in accordance with Article 3 of this CCU.

Article 6
Settlement period

(1) The TSO-TSO settlement period shall be set at 15 minutes.

(2) The TSO-TSO settlement period of each day shall begin at 00:00 market time. The TSO-TSO settlement periods shall be consecutive and not overlapping.

Article 7
Volume determination per TSO-TSO settlement period

(1) The volumes of intended exchanges of energy pursuant to Articles 50(1) and 50(3) of the EB Regulation are determined as follows:

(a) The volume of intended exchanges of energy as a result of the reserve replacement process pursuant Article 50(1)(a) of the EB Regulation is contained in the aggregated netted external schedules.

(b) The volume of intended exchanges of energy as the result of the frequency restoration process with manual activation pursuant Article 50(1)(b) of the EB Regulation is equal to the volume as reported in the aggregated netted external schedules and/or the accounting data by the TSOs of the LFC areas.

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(c) The volume of intended exchanges of energy as the result of the frequency restoration process with automatic activation pursuant Article 50(1)(c) of the EB Regulation is equal to the volume as reported in the accounting data by the TSOs of the LFC areas.

(d) The volume of intended exchanges of energy as the result of the imbalance netting process pursuant Article 50(1)(d) of the EB Regulation is equal to the volume as reported in the accounting data by the TSOs of the LFC areas.

(e) The volume of intended exchanges of energy as the result of frequency containment process pursuant Article 50(3)(a) of the EB Regulation is calculated by the CCFR accounting function for each LFC block or LFC area per TSO-TSO settlement period as the product of the notified k-factor and the average frequency deviation for that TSO-TSO-settlement period, in accordance with the CCFR.

(f) The volume of intended exchanges of energy as the result of ramping period pursuant Article 50(3)(b) of the EB Regulation and Article 136 of the SO Regulation is calculated by the CCFR accounting function for each LFC block or LFC area and per TSO-TSO settlement period, in accordance with the CCFR.

(g) The volume of intended exchanges of energy as the result of bilateral or multilateral agreements via virtual tie-lines that are not covered by the previous points is equal to the volume as reported in the accounting data by the TSOs of the respective LFC areas.

(2) The volume of unintended exchanges of energy pursuant to Article 51(1) of the EB Regulation is calculated, for each LFC block or LFC area per TSO-TSO settlement period, as the difference between the exchanges of energy according to the accounting data and the sum of the ANES and all exchanges of energy as a result of Article 7(1) of this CCU.

Article 8
Pricing rules for TSO-TSO exchanges within SA CE

(1) The price for unintended exchange of energy in accordance with Article 51(1) of the EB Regulation shall be calculated by the entity entrusted with the CCU settlement function as the sum of the following components in EUR/MWh, per TSO-TSO settlement period:

(a) A reference price component calculated for any given TSO-TSO settlement period as the weighted average day-ahead market price of all LFC blocks within SA CE for that TSO-TSO settlement period, weighted by the absolute value of the sum of intended exchanges of energy pursuant to Article 50(3)(a) of the EB Regulation and unintended exchanges of energy pursuant to Article 51(1) of the EB Regulation, of each LFC block. The following rules shall apply:

i. In case there is more than one day-ahead market price per LFC block, when the LFC block consists of more than one LFC area, for that TSO-TSO settlement period, a weighted average price is calculated by the entity entrusted with the settlement function and used in 8(1)(a) for the respective LFC block. The weighted average price of an LFC block is calculated by weighting the day-ahead market prices of the LFC areas in that LFC block with the respective notified k-factor of each LFC area. If there is no day-ahead market price in an LFC area within the LFC block, this LFC area is not considered for the calculation of the weighted average price of the LFC block.

ii. In case there are more than one day-ahead market price in an LFC area for that TSO-TSO settlement period, the TSO operating in the LFC area may decide which price or prices to utilise for defining the day-ahead market price of the bidding zone, based on the border where the unintended exchange occurs.

iii. In case there is no day-ahead market price in an LFC block for that given TSO-TSO settlement period, the imbalance settlement price for that LFC block for that given TSO-

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TSO settlement period is used in Article 8(1)(a) instead of a day-ahead market price. In the case of dual pricing, an average price is calculated.

iv. In case of full decoupling of the single day-ahead coupling, the day-ahead market price referred to in this paragraph (a) shall be replaced by the weighted average of the prices of the NEMOs' hubs in the relevant bidding zone.

(b) A frequency-dependent component, applicable only if the absolute value of the average frequency deviation over the TSO-TSO settlement period exceeds the absolute value of the minimum threshold value (20 mHz). The frequency-dependent component is calculated as function of the average frequency deviation for each TSO-TSO settlement period, using a slope of between the minimum threshold and the maximum threshold (two (2) EUR/MWh/mHz). The following rules shall apply:

i. The absolute value of the minimum threshold value is 20 mHz.

ii. The absolute value of the maximum threshold value is 100 mHz.

iii. The slope is two (2) EUR/MWh/mHz.

iv. In case of a positive average frequency deviation exceeding the minimum threshold value in positive direction (+20 mHz), but not exceeding the maximum threshold value in positive direction (+100 mHz), this function is applied to the average frequency deviation decreased with the absolute value of the minimum threshold value (20 mHz).

v. In case of a negative average frequency deviation exceeding the minimum threshold value in negative direction (-20 mHz), but not exceeding the maximum threshold value in negative direction (-100 mHz), this function is applied to the frequency deviation increased with the absolute value of the minimum threshold value (20 mHz).

vi. In case of a positive average frequency deviation exceeding the maximum threshold in positive direction (+100 mHz), the frequency-dependent component is set as the frequency-dependent component calculated at a frequency deviation of the maximum threshold value in positive direction (+100 mHz).

vii. In case of a negative frequency deviation exceeding the maximum threshold in negative direction (-100 mHz), the frequency-dependent components set as the frequency-dependent component calculated at a frequency deviation of the maximum threshold value in negative direction (-100 mHz).

viii. In case of an HVDC system connecting two SA CE TSOs, the frequency-dependant component may be not applicable.

(2) According to Article 51(1)(a) of the EB Regulation, the price for unintended exchanges of energy shall reflect the price for balancing energy. According to Article 8(1)(a) of this CCU, day-ahead market prices, which reflect balancing prices, are used as one component to determine the price for unintended exchanges of energy, without prejudice to Article 4(2)(i) of this CCU.

(3) In the case of a network split with more than one LFC block disconnected, the frequency-dependant component is set for each TSO-TSO settlement period during that network split at zero (0) EUR/MWh/mHz per TSO-TSO settlement period.

Article 9
Publication and implementation of the CCU

(1) All SA CE TSOs shall publish the CCU without undue delay after all relevant regulatory authorities have approved the proposed CCU or a decision has been taken by ACER in accordance with Articles 5(7), 6(1) and 6(2) of the EB Regulation.

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(2) All SA CE TSOs shall implement the CCU in accordance to Article 4 of this CCU.

Article 10
Language

The reference language for this proposal shall be English. For the avoidance of doubt, where TSOs need to translate this proposal into their national language(s), in the event of inconsistencies between the English version published by TSOs in accordance with Article 7 of the EB Regulation and any version in another language, the relevant TSOs shall, in accordance with national legislation, provide the relevant regulatory authorities with an updated translation of the proposal.

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