

Review Report of All asynchronously connected TSOs' proposal for Common settlement rules for intended exchanges of energy between synchronous areas as a result of the frequency containment process and of ramping restrictions in accordance with the Article 50(4) of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing and Review Report of All asynchronously connected TSOs' proposal for Common settlement rules for all unintended exchanges of energy in accordance with the Article 51(2) of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing

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From: ALL Asynchronously connected TSOs

ENTSO-E Mission Statement

ENTSO-E, the European Network of Transmission System Operators for Electricity, **is the association of the European transmission system operators** (TSOs). The **40 member TSOs, representing 36 countries**, are responsible for the secure and coordinated operation of Europe's electricity system, the **largest interconnected electrical grid in the world**.

Before ENTSO-E was established in 2009, there was a long history of cooperation among European transmission operators, dating back to the creation of the electrical synchronous areas and interconnections which were established in the 1950s.

In its present form, ENTSO-E was founded to fulfil the common mission of the European TSO community: to power our society. At its core, European consumers rely upon a secure and efficient electricity system. Our electricity transmission grid, and its secure operation, is the backbone of the power system, thereby supporting the vitality of our society. ENTSO-E was created **to ensure the efficiency and security of the pan-European interconnected power system** across all time frames within the internal energy market and its extension to the interconnected countries.

ENTSO-E is working to secure a carbon-neutral future. The transition is a shared political objective throughout the continent and necessitates a much more electrified economy where sustainable, efficient and secure electricity becomes even more important. **Our Vision: “a power system for a carbon-neutral Europe”*** shows that this is within our reach, but additional work is necessary to make it a reality.

In its Strategic Roadmap presented in 2024, ENTSO-E has organised its activities around two interlinked pillars, reflecting this dual role:

- “Prepare for the future” to organise a power system for a carbon-neutral Europe; and
- “Manage the present” to ensure a secure and efficient power system for Europe.

ENTSO-E is ready to meet the ambitions of Net Zero, the challenges of today and those of the future for the benefit of consumers, by working together with all stakeholders and policymakers.

* <https://vision.entsoe.eu/>

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EXECUTIVE SUMMARY

This review Report is conducted based on the review mechanism described in article 3(4) of the 50(4) and 51(2) methodologies, relating to the common settlement rules for exchanges of energy between All asynchronously connected TSOs, in accordance with Article 50(4) and 51(2) of EB Regulation. The review mechanism specifically tasks All asynchronously TSOs to review the current methodologies with the aim of further harmonisation in relation to the price calculation method and the TSO-TSO settlement period of intended and unintended exchanges according to the methodologies. Additionally, necessary changes to the methodology annexes have been found which will also be suggested as part of the review round.

In the Report, a review of the settlement operation will be performed along with a review of the two methodologies. The review will mainly focus on the possibility for further harmonisation of the price calculation method and the TSO-TSO settlement period, as mentioned directly in the review mechanism. A more detailed quantitative analysis on the performance of the methodologies has not been considered valuable and therefore not been conducted. All asynchronously TSOs consider this a very complex task, due to the bilateral nature of the Interconnector agreements, and at the same time consider this to give a very limited output without much added value.

Further, it is worth mentioning that a similar review is required for Article 50(3), *Proposal for TSO-TSO settlement of intended exchanges of energy due to ramps and FCR within synchronous area continental Europe* and 51(1) *Proposal for TSO-TSO settlement of unintended exchanges within synchronous area continental Europe*. Therefore, cooperation and discussions with the Continental Fskar Group have also taken place to ensure that important learnings and considerations are shared between the workstreams.

In general, all asynchronously connected TSOs consider that methodologies covering Article 50(4) and Article 51(2) are still well-functioning and fit for purpose. Regarding the possibility for additional harmonisation as requested to be reviewed by the methodologies, it is concluded that a step towards further harmonisation can be taken regarding the TSO-TSO settlement process, but that time is still immature for harmonisation of the price calculation method. Such step should first be taken when all relevant TSOs are utilising the European Balancing Platforms to avoid an uneven playing field. Additionally, changes are suggested to the methodology due to other relating market developments. Specifically, this concerns the removal of Annex 7 due to the Baltic Region joining the Continental European Synchronous Area¹. The suggested changes are described further in Chapter 4 of the Review Report.

1. Introduction

Articles 50(4) and 51(2) of the Commission Regulation (EU) 2017/2195 (hereafter referred to as the “EB Regulation”), task all Asynchronously connected TSOs to develop common settlement rules for exchanges of energy between synchronous areas in accordance with the Guidelines. In 2020, the methodologies relating to Articles 50(4) and 51(2) were finalised and approved by the Asynchronously connected NRAs. In the two methodologies, a review mechanism was inserted, which requires a review of the methodologies with a three-year interval. The review was triggered first time by the end of 2022, in which all asynchronously connected TSOs reviewed these settlement rules. Considering the three-year review interval, it is again time for a review which will be carried out through this report.

The asynchronously connected TSOs, which should take part in the methodology review, currently include Elering AS, Fingrid, TenneT NL, Statnett, Svenska Kraftnät, 50Hertz, PSE S.A., Litgrid, Energinet, Baltic Cable and TenneT DE. The “relevant asynchronously connected” TSOs as defined by the methodology, include those mentioned in the Annexes, namely: Elering AS, Fingrid, TenneT NL, Statnett, Svenska Kraftnät, 50Hertz, PSE S.A., Litgrid, Energinet, and TenneT DE. The review will consist of a Review Report (this report) covering both Article 50(4) and 51(2) and the two amended methodologies.

In article 3(4) of the 50(4) and 51(2) methodologies, the review mechanism specifically clarifies what should be the main aim of the review: *“After implementation of these common settlement rules, a reviewal mechanism shall start by end of 2022, in which all asynchronously connected TSOs will review these settlement rules. A review shall take place at least every three years after the first review. In the reviewal mechanism, the possibility for evolving to a harmonised price calculation method for all asynchronously connected TSOs shall be evaluated. In addition, the reviewal mechanism could affect, for example, technical details such as data collection. Any changes to these settlement rules shall be submitted to the relevant regulatory authorities for approval”*. In this Report, the review and evaluation are conducted. Furthermore, Article 4(1) of 50(4) and 51(2) requires that *“The TSO-TSO settlement period shall be set at 15 minutes, unless the relevant asynchronously connected TSOs jointly decide otherwise. The review according to Article 3(4) shall harmonise the TSO-TSO settlement period.”*, which is therefore also covered in this review report.

According to article 44(4) of the EB Regulation, the methodologies, and thereby also Review Report, should not cover HVDC Interconnectors or links where a BRP is introduced as the entity settled for the injection and withdrawal of energy of the interconnector towards one or both connecting TSOs. For this reason, the report differentiates between “asynchronously connected TSOs” and “relevant asynchronously connected TSOs”. In cases where a BRP is introduced in one of both ends there can be no settlement of this same energy under TSO-TSO settlement. The Review Report will therefore not cover any such Interconnectors or links in more detail. The list of such Interconnectors or links can be found in the Explanatory document. The final Review Report and Methodology amendments shall be subject to the approval of all asynchronously connected National Regulatory Authorities (hereafter referred to as “asynchronously NRAs”). The asynchronously NRAs are the corresponding

NRAs to TSOs that host at least one HVDC interconnector or link connecting two synchronous areas, namely those of the asynchronously connected TSOs.

The Review Report has been conducted by the asynchronously connected TSOs mentioned in the report. In the process, the findings and considerations have been shared among all TSOs and all TSOs have been encouraged to participate and comment, if interested. Further, since a similar review is required for Article 50(3), *Proposal for TSO-TSO settlement of intended exchanges of energy due to ramps and FCR within synchronous area continental Europe* and 51(1) *Proposal for TSO-TSO settlement of unintended exchanges within synchronous area continental Europe*, cooperation and discussions with the Continental Europe FSkar group has also taken place. Finally, all decisions and approvals have been made solely by the asynchronously connected TSO.

2. Review of the settlement operations

The two FSkar methodologies, covering intended (article 50.4) and unintended (article 51.2) exchanges of energy between synchronous areas in accordance with the Guidelines, were both approved in May 2020 and have been active since. Both methodologies are structured around the bilateral TSO contractual agreements, including in all cases financial settlement and ramping requirements, negotiated during the development and implementation of each Interconnector or link. Therefore, the actual operation under these terms has been ongoing since the day each individual link went live. This implies that each TSO has a long experience with the terms of operation and that the “Between synchronous areas” methodologies cannot be considered comparable to the “Within synchronous areas” methodologies (Continental Europe synchronous area and the Nordic synchronous area).

As mentioned in the introduction, the “Within synchronous area CE” methodologies are currently also under review. These methodologies are based on existing operational and ramping rules² (RG CE SAOA), that are uniform for all TSO-TSO exchanges subject to that methodology, and therefore with a common baseline and existing information infrastructure to develop uniform accounting rules, and pricing rules. Moreover, the “Within synchronous area CE” proposal created a common accounting and settlement entity where all required data from the SA CE TSOs are stored and processed to perform actual settlement. This is a practical set-up due to the actual settlement rules in the SA CE, which requires common settlement between all parties. With this in mind, the review of the settlement operations in this Report will not be comparable to the one for the “Within synchronous areas CE”. Further, due to the different nature of the intended and unintended exchanges that happen in a meshed AC grid compared to an HVDC-link between SAs, both the processes and methodologies should not be compared. As a result of rules, terms and data access not being comparable between the two, a short walk through the settlement operations will be performed but no further data analysis will be carried out in this Report.

To clarify a bit further, each existing link in the “Between synchronous areas” methodologies operate under contractual agreements for that specific link and under approval of the relevant NRAs for the link. For each link, there are individual accounting rules and accounting, individual ramping rules and

ramping, individual pricing rules and pricing and individual settlement rules and settlement. For this reason, an analysis of the current methodologies in force would be nearly impossible to perform.

In case one or more asynchronously connected TSOs find it necessary to change the current methodology or annexes, they can initiate an amendment process. No amendments have been formally proposed since implementation. As this has not been the case since the introduction of the methodologies, it is concluded that all asynchronously connected TSOs and NRAs approve the current operation and methodologies.

3. Review of the methodologies 50(4) and 51(2)

As mentioned, the current methodologies have been operational since May 2020 without any major changes suggested by the relevant TSOs. During the latest review in 2022/2023, an additional Interconnector was added to the methodologies (Annex 10 (Nordlink)), while settlement terms were updated for several interconnectors, mainly due to Nordics moving to single position and single price used for imbalance settlement in accordance with the methodology developed according to Article 52(2) of EB Regulation. Additional harmonisation, according to the review mechanisms described in the methodologies, were deemed immature at that point in time. In this review process, needed changes to the current Annexes have again been identified, while a step towards further harmonisation of the methodologies will also be suggested.

Before reviewing the methodologies, it is important to understand the original nature of the current setup. The current methodologies are structured around the bilateral TSO contractual agreements, which have all been negotiated during the development and implementation of each Interconnector link. Each link and its accounting and settlement terms are defined in the bilateral agreement, while the pricing rules for unintended exchange and intended exchange as a result of ramping and FCR are summarized in the Annexes of the methodologies under Article 50(4) and Article 51(2). The accounting and settlement terms for each link under consideration, are presumed to already ensure a fair and equal distribution of costs and benefits between the TSOs involved. If not, it is believed that the TSOs involved would have suggested a change.

The exchanges of energy between asynchronously connected TSOs, subject to the two methodologies, are today settled by taking into consideration averages of balancing energy prices, imbalance prices or day-ahead prices on either side of the link. The choice of pricing reflects the fairest option considered between the two TSOs involved when introducing the interconnector to the market.

According to the review mechanism stated in article 3(4) of 50(4) *“Proposal of TSO-TSO settlement of intended exchange of energy due to ramp restrictions and FCR between synchronous areas”* and article 3(4) of 51(2) *“Proposal for TSO-TSO settlement of unintended exchanges between synchronous areas”* the possibility of evolving to a harmonised price calculation method for all asynchronously connected TSOs shall be evaluated. It is further stated in Article 4.6 of the explanatory document that *“both balancing energy pricing and imbalance pricing will be unharmonised until the proposals in accordance with Article 30(1) and 52(2) of the EBGL are*

implemented. Developing a common methodology for calculating the settlement prices in the two proposals now could therefore give unintended consequences which can be difficult to foresee. For this reason, the settlement rules are proposed to be kept separate per interconnector and included as separate annexes to the proposal, until such time that informed harmonised price calculation methods can be developed.”³

Since the review mechanism in article 3(4) of 50(4) and 3(4) of 51(2) do not specifically mention which harmonised price calculation that should be considered, both balancing energy prices and imbalance settlement prices are mentioned as options in the explanatory document. Comparing this to the “Within synchronous area CE” review mechanism defined in Article 50(3)(a) and 51(1)(a), it is here specifically defined that balancing energy prices should be reflected in the targeted model. In this review, it has therefore been discussed which targeted model makes most sense for Article 50(4) and 51(2) as the harmonised pricing model in the future. The two options mentioned from the explanatory document, so far, remain open as the potentially harmonised targeted model. For the imbalance prices, the Imbalance settlement harmonisation methodology allows for several degrees of freedom to the TSOs and their NRAs, meaning that the imbalance pricing can reflect the national balancing philosophy and needs (how to combine FRR product prices, usage of additional components and calculation of value of avoided activation). Choosing balancing energy prices as the targeted harmonised pricing model would require a method to address multiple products and balancing philosophies. Which of the two target models that represents the best option for the Between SA TSOs have yet to be decided. Such decision should first be taken when all TSOs have joined the balancing platforms to allow for further analysis to make the right decision. Such analysis and decision will be possible to make when All TSOs, or in this case it would be enough with all relevant TSOs, join the European Balancing Platforms.

Considering the group of relevant TSOs that are part of these two methodologies, all relevant TSOs have not yet joined MARI and PICASSO. Since some TSOs are still utilising local mFRR and aFRR balancing markets these prices may not be relevant to other TSOs. Only a fully harmonised balancing market can provide correct signals to all asynchronously connected TSOs and make sure that the prices for FSKar are formed with full transparency in both ends. Since this is not the case yet, the time to implement a harmonised pricing model is not deemed mature yet.

Finally, the review mechanism also dictates an analysis of the possibility to evolve to a harmonised TSO-TSO settlement period. With the evolution of other market timeframes towards 15 min MTU (ISP and SDAC), the transition to a 15-min harmonised TSO-TSO settlement period for the interconnectors have been discussed thoroughly. The relevant TSOs find that the 15-min settlement period should be the harmonised standard going forward and therefore suggest amending the methodology accordingly (see below chapter).

Considering the above, a step towards the intended harmonisation of Article 50(4) and 51(2) is taken by harmonising the TSO-TSO settlement period. The last step will then be to harmonise the pricing model, but additional harmonisation of balancing energy prices, with all relevant TSOs joining the European Balancing Platforms, must happen before this step can be considered possible. Therefore, such decision is considered immature in this review round.

4. Improvements to the Methodology and overview of the concerned Annexes

During the review process, a step towards further harmonisation has been taken by suggesting the harmonisation of the TSO-TSO settlement period. Further, changes to the current Annexes have been deemed necessary due to the Baltic Region joining the Continental European Synchronous Area. This means that Annex 7, the interconnector link between PSE and Litgrid, will have to be removed from the methodology since it no longer connects two different synchronous areas.

To give an overview of the changes made, the table below summarizes in which methodology and annex the change has been made together with describing the actual amendment.

Methodology/Annex	Change from	Change to
Methodology 50(4) Annex 7	Annex 7 – PSE/Litgrid Intended exchanges of energy as the result of ramping restrictions pursuant to Article 137(3) of the SO Regulation shall be settled at the average of the Polish imbalance price and the Lithuanian imbalance price per TSO-TSO settlement period.	REMOVED
Methodology 51(2), Annex 7	Annex 7 - PSE/Litgrid Unintended exchanges of energy shall be settled at the average of the Lithuanian imbalance price and the Polish imbalance price per TSO-TSO settlement period. accordance with EBGL Article 54(3)(a).	REMOVED
Methodology 50(4), article 4(1)	The TSO-TSO settlement period shall be set at 15 minutes, unless the relevant asynchronously connected TSOs jointly decide otherwise. The review according to Article 3(4) shall	The TSO-TSO settlement period shall be set at 15 minutes.

	harmonise the TSO-TSO settlement period.	
Methodology 51(2), article 4(1)	The TSO-TSO settlement period shall be set at 15 minutes, unless the relevant asynchronously connected TSOs jointly decide otherwise. The review according to Article 3(4) shall harmonise the TSO-TSO settlement period.	The TSO-TSO settlement period shall be set at 15 minutes.

5. Conclusion

In this Report, the current settlement rules for asynchronously connected TSOs have been reviewed. This is done by going through the current methodologies, describing the logic behind them and analysing the possibility for harmonising the price calculation method and TSO-TSO settlement period. Further, a change to the current methodology (Annexes) is suggested by removing Annex 7 due to the Baltic Region joining the Continental European Synchronous Area.

In the review Report it is argued and shown that the within synchronous area methodologies, here represented by the “Within SA CE”, and the “Between SA” methodologies imply large differences and that further analysis of the “Between SA” settlement operation would be a very complex task. Additionally, it is questionable what the analysis would lead to since the inputs are not 1:1 comparable between existing link or interconnectors and reasonable conclusions can be drawn based on existing knowledge. Therefore, the focus of the report has been to analyse the possibility for further harmonisation according to the review mechanisms and amend other needed parts of the current methodologies.

In the analysis of the potential for evolving to a harmonised price calculation method and harmonised TSO-TSO settlement period, it has been concluded that a harmonisation of the TSO-TSO settlement period makes sense. This is mainly due to the switch to 15 min MTU for both the imbalance settlement process and Single Day-ahead coupling. Due to this, settlement of intended and unintended exchanges should be able to follow a 15-min settlement period. This is therefore suggested to be changed in the methodologies and removed from the scope of future review processes.

Regarding the harmonisation of the price calculation method, it has been concluded that such change can first happen when all relevant TSOs are utilising the European Balancing Platforms. Since this is not the case yet for all TSOs that are part of this methodology, making such change at this point in time seems immature. Since the current methodologies, which are based on bilateral agreements, ensure a fair and equal treatment of all relevant TSOs, making any changes without

ensuring such principles continue to apply, does not make any sense. This decision is also aligned with the considerations from the “Within SA CE” review, coming to the same conclusions in the case of FSkar settlement in Continental Europe.

To summarize, it is concluded that a step towards further harmonisation can be taken regarding the TSO-TSO settlement process, but that time is still immature for harmonisation of the price calculation method. Such step should first be taken when all relevant TSOs are utilising the European Balancing Platforms to avoid an uneven playing field. Additionally, changes are suggested to the methodology due to other market developments. Specifically, this concerns the removal of Annex 7 due to the Baltic Region joining the Continental European Synchronous Area (see chapter 4). Further, it should be concluded that current methodologies are still fit for purpose and if anything changes in the future, amendments should be carried out accordingly without waiting for a further review period. In this respect, Between SA TSOs will also consider the current review mechanism obsolete when further harmonisation of the price calculation method has been concluded.