
Proposal of a Methodology for the Optimisation of Inter-TSO Settlements related to redispatching and countertrading - Explanatory note

17 February 2022

Disclaimer

This explanatory document is submitted by ENTSO-E to the Agency for the Cooperation of Energy Regulators for information and clarification purposes only accompanying the “ENTSO-E’s proposal for methodology for the optimisation of inter-TSO settlements related to redispatching and countertrading in accordance with Article 37(5) of Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity”.




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I. INTRODUCTION

This document is an explanatory note developed by ENTSO-E in order to provide additional information about the draft Methodology for the Optimisation of Inter-Transmission System Operators Settlements related to cost sharing of redispatching and countertrading according to article 74 Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management (hereafter referred to as “CACM Regulation”).¹ This methodology shall only apply in case the relevant TSOs within one capacity calculation region (‘CCR’) jointly request support from Regional Coordination Centers (RCCs²) on the optimisation of inter-transmission system operators settlements.

This explanatory document is structured in the following way:

- Chapter II describes the legal background- as a motivation for this task.
- Chapter III presents the main essence of the inter-TSOs settlements proposal and introduces the process overview.
- Chapter IV provides a further description on the two major parts of the process. On the one hand, the “technical” part of cost sharing (meaning the calculation and assessment of costs) should be performed by RCCs. On the other hand, the “financial” part of cost sharing (meaning the invoicing and payment of costs) should be performed by a Central Settlement Entity (CSE).
- Finally in chapter V, the full process of cost sharing including the different subparts is described, to ease the understanding of the relevant tasks to be provided by each entity.

¹ Under CACM 2.0 it is possible that cost sharing requirements are to be moved from CACM 74 to SOGL 76 and eventually enhanced.

² As from July 1st 2022 according to the CEP regulation, Regional Security Coordinators (RSCs) will become Regional Coordination Centers (RCCs) in the EU. Outside of the EU, the definition of RSC (as defined in CACM) will still prevail.

II. MOTIVATION: LEGAL BACKGROUND

Article 37(1)(l) of Regulation (EU) 2019/943 of the European Parliament and of the Council of 5 June 2019 on the internal market for electricity (hereafter referred to as “Electricity Regulation”) lists a task for the RCCs to support TSOs, at their request, in optimization of inter-TSOs settlements.

- Article 37(5) requires ENTSO-E to develop proposals for ACER approval for the tasks outlined in Article 37(1)(l), in this case, in clear relationship to redispatching and countertrading (RDCT) cost sharing settlements.

Regulation on the internal market for electricity 943/2019, Article 37(1)

Each regional coordination center shall carry out at least all the following tasks of regional relevance in the entire system operation region where it is established: [...] (l) supporting transmission system operators, at their request, in the optimization of inter-transmission system operators' settlements; [...]

Therefore, the related methodology establishing the management of the settlement process and managing the related financial flows must be developed until July 1st, 2022.

Inter-CCR cost sharing

According to the “Methodology for Coordinating Operational Security Analysis” (CSAm), a cross-regional cost sharing process exists as well, called inter-CCR cost sharing. However, it is not the scope of this explanatory note and methodology to define this process into details. This process is described briefly on the following paragraph and in Figure 5 as interdependencies exist with the regional cost sharing process according to article 74 of the CACM Regulation.

The inter-CCR cost sharing is defined as the settlement of cost sharing of redispatching and countertrading of overlapping cross-border relevant remedial actions (XRAs) for TSOs, according to CSAm Art. 27.13-17. An overlapping XRA which is activated to solve residual violations and is fully or partially eligible for cost sharing must first undergo a cross-regional cost sharing process to assign its costs to any of the impacted CCRs or impacting CCRs of the overlapping zone through regional cost sharing keys. Once the regional cost sharing keys are determined, the corresponding costs are shared at the level of each region with a positive sharing key. This process must be performed according to the regional methodologies.

The settlement for the inter-CCR cost sharing is proposed to be done by the CSE within the regional cost sharing processes, if requested by TSOs.

III. PROCESS OVERVIEW

In line with the regional work currently done on the CCR Core level, ENTSO-E considers the process for cost sharing of redispatching and countertrading to be split into two major parts:

1. **Calculation of costs:** "technical" part of cost sharing (=assessment/calculation)
2. **Financial settlement and clearing:** "financial" part of cost sharing (=invoicing/payment)

The first part is dedicated to cost sharing calculations and is considered as purely technical. The second one is more formal and covers the financial part of the cost sharing process. To identify the best approach for putting this concept into practice, different options were assessed.

Assessment of feasible options for inter-TSO settlements

For the inter-TSO settlements several options are existing. Two dominating concepts are identified, a centralised and a decentralised approach, both for the technical and for the financial part. The assessment was performed with the boundary condition, that TSOs request support for their regional cost sharing process.

If TSOs request the support of RCCs, the centralised approach would be a "RCC-distributed" model, the decentralised approach a "TSO-TSO and RCC-distributed" model. The two models are illustrated in the figure below.

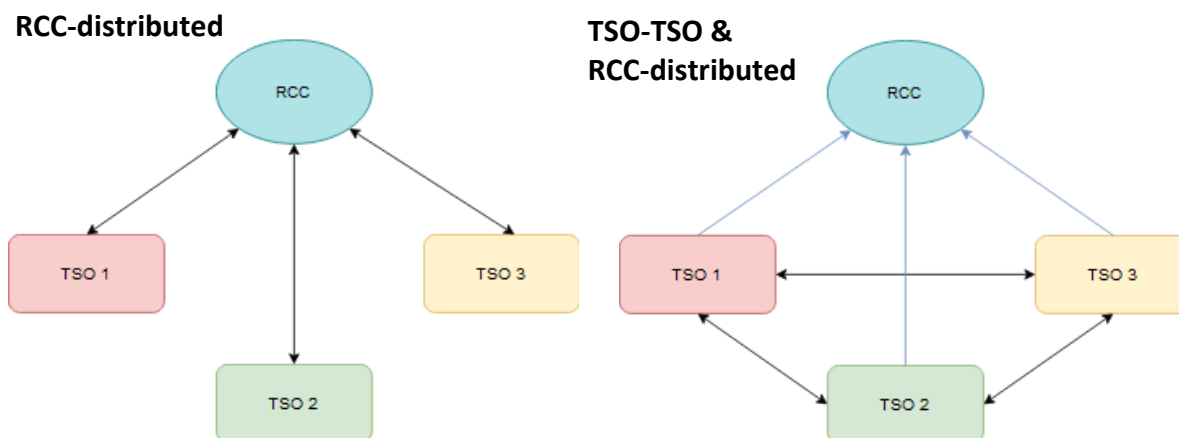


Figure 1 Comparison of RCC-distributed versus TSO-TSO & RCC-distributed model for the cost sharing calculation

At the RCC-distributed model, all affected TSOs must interact with the relevant RCC(s), but not with each other. This has the clear advantage, that the communication is facilitated and that all calculations can be performed in a bundled way. In addition, regulatory requirements can be met easier. The obligation for monitoring the cost sharing process is significantly more efficient if it is centralised. The support of RCC(s) is an added value.

At the TSO-TSO & RCC-distributed model, the TSOs are interacting both with the RCC(s) and with each other. This is much more complex and requires a higher level of coordination and increased

efforts for tooling and process controlling. This leads to higher costs and a lower level of process stability.

Considering efficiency and economic benefits, the centralised RCC-distributed model is preferable. Especially for CCRs with a complex structure the RCC-distributed model offers significant advantages in the fields of operation, regulation and effectiveness.

For the financial part of the inter-TSO settlement similar models were evaluated. The figure below shows a centralised model, where each TSO is interacting with a CSE only and a decentralised model, where the TSOs are interacting with several other TSOs.

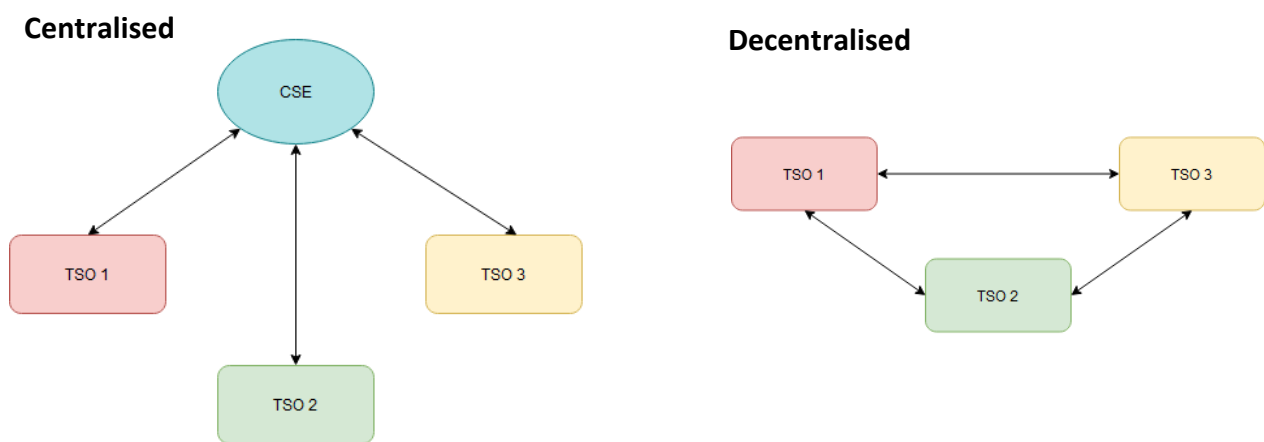


Figure 2 Comparison centralised versus decentralised approaches for the financial part of the cost sharing

Using the decentralised approach, TSOs would have to oversee the entire financial part and no central entity would be available to support this extraordinarily complex procedure. Supervising the financial settlement and the payments requires a profound expertise to be able to meet all requirements. Legal and tax obligations may differ on national level. Overseeing the full landscape of (national) regulations could be too challenging for entities not specialised in these field. Requesting the support of a CSE helps the TSOs to cover all obligations and is a much more efficient and economic approach.

For these reasons, centralised models were chosen both for the technical and the financial part of the inter-TSO settlement.

Detailed process overview

This section provides further explanation on the two main parts of the cost sharing process.

On the following graphic, the process steps and the distinction between the two parts (technical and financial) are illustrated. The sub process steps will be explained in a detailed manner in the section Detailed Process Description.

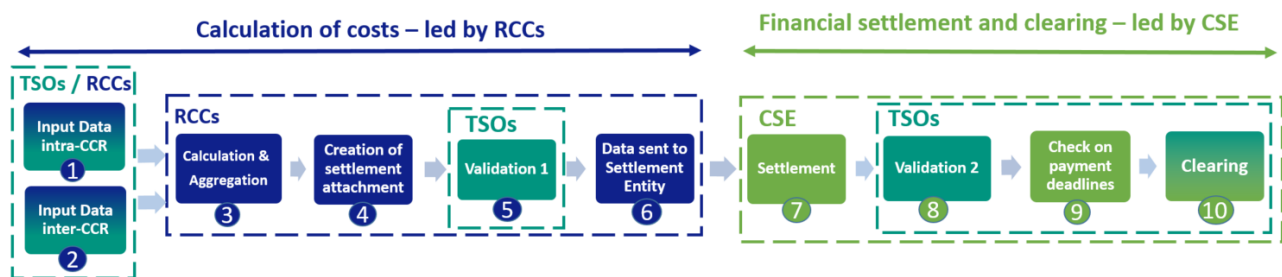


Figure 3 Full process of inter-TSOs Settlements

1. Calculation of costs: "technical" part of cost sharing (=assessment/calculation)

With "assessment/calculation" the process is meant, where the costs and revenues resulting from redispatching and countertrading are calculated per bidding zone and/or TSO. If jointly requested by the TSOs of a CCR, this process can be led by the regional RCC(s). This process consists of the following sub-parts:

- input data gathering,
- calculation of the cost sharing key and
- aggregation of the monthly total costs per bidding zone and/or TSO.

2. Financial settlement and clearing: "financial" part of cost sharing (=invoicing/payment)

With "invoicing/payment" the process is meant, where the costs and revenues assigned to a bidding zone and/or a TSO are invoiced and paid. After the costs and revenues resulting from redispatching and countertrading are aggregated and validated for each bidding zone and/or TSO, the financial part starts with the two main aspects being:

- invoicing and
- payment execution.

If jointly requested by the TSOs of a CCR, this process should be led by the CSE.

In this explanatory note the inter-TSOs settlements proposal is demonstrated for the cost sharing of redispatching and countertrading, based on what the draft methodology was developed.

IV. DETAILED PROCESS DESCRIPTION

Referring to the approach agreed at Core CCR, the methodology proposes to divide the inter-TSO settlement into a technical and a financial part. For both parts a centralised model was agreed. With this approach it can be ensured that the process steps are assigned to entities having valuable experience and expertise.

1. Technical part of cost sharing, calculation of costs assigned to BZs/TSOs

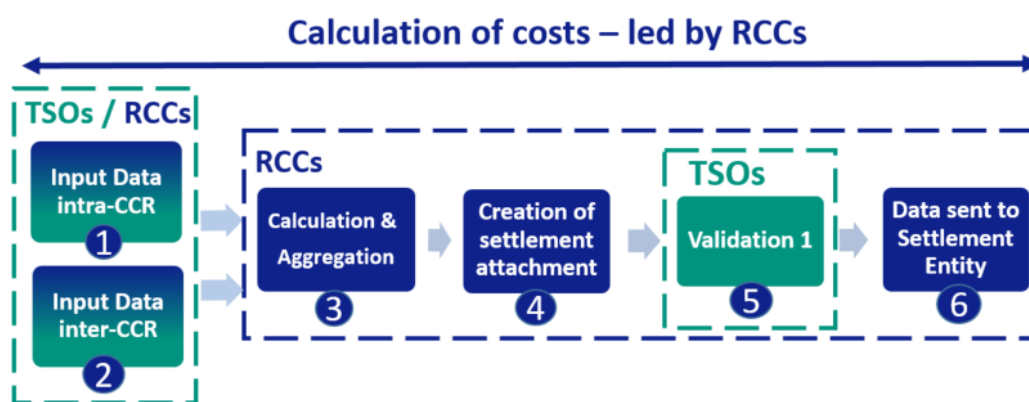


Figure 4 Technical part of the inter-TSOs settlements

Title 2 sets the calculation of the costs assigned to the BZs/TSOs resulting from redispatching and countertrading, which is strongly linked to the network characteristics of the CCRs. Nevertheless, the basic scheme is the same. TSOs define costs eligible for the regional cost sharing processes. These costs are aggregated and shared among the relevant parties. Performing this task can be quite easy, if the cost sharing key calculation is based on simple principles, for example the requester pays principle (RPP). CCRs applying the polluter pays principle (PPP) face a significantly higher effort for the cost sharing key calculation. RCCs can support these calculations by taking over central tasks, if requested by the TSOs.

Article 3 defines the input data gathering as the starting point of the redispatching and countertrading cost sharing process.

1.1. Input Data-intra CCR

Currently, the amount and type of input data is strongly dependent on the cost sharing calculation methodology applied in one CCR. Although a harmonisation process is ongoing, the scope of the calculation of the costs assigned to BZs/TSOs is strongly dependent on the network structure at the different CCRs. Therefore, complete harmonisation is not likely. Nevertheless, RCCs have a high potential to support TSOs performing this process step. On one side, the input data consists of information like network models and activated (costly) remedial actions. This input data can be provided from various sources:

- from other IT-Platforms (e.g. ROSC regional platform),
- from RCCs (e.g. grid models) or,
- from TSOs (e.g. provider costs).

On the other hand, the information regarding the costs and volumes of the activated costly remedial actions are (usually) provided by the TSOs within a certain deadline. The supervision of input data gathering and the subsequent input data validation can be done in a centralised way by RCCs, decreasing the workload and costs on TSO side. The data should be compliant with the format defined by ENTSO-E CIM³ expert group.

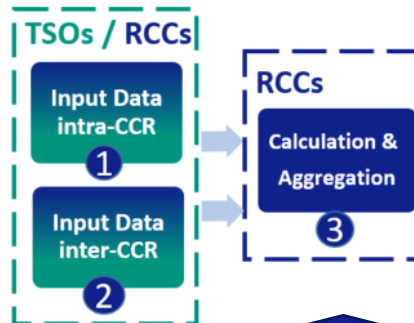
1.2. Input Data-inter CCR

Cross-regional cost sharing keys reflecting redispatching and countertrading costs of overlapping XRAs (according to CSAm Art. 27.13-17) for TSOs are passed on as an input for the regional cost sharing process of each CCR.

1.3. Calculation and Aggregation

After the input data gathering is finished, the cost sharing calculation chain starts. This hierarchical process, where the cross-regional costs are mapped to regions first is detailed in article 4. Then, together with regional costs, the cross-regional costs are mapped to TSOs according to regional methodologies (reference CSAm 27.13-17).

³ CIM stands for Common Information Model. This group at ENTSO-E level is in charge of harmonizing data exchanges formats between stakeholders of the TSO community.



Detailed process description

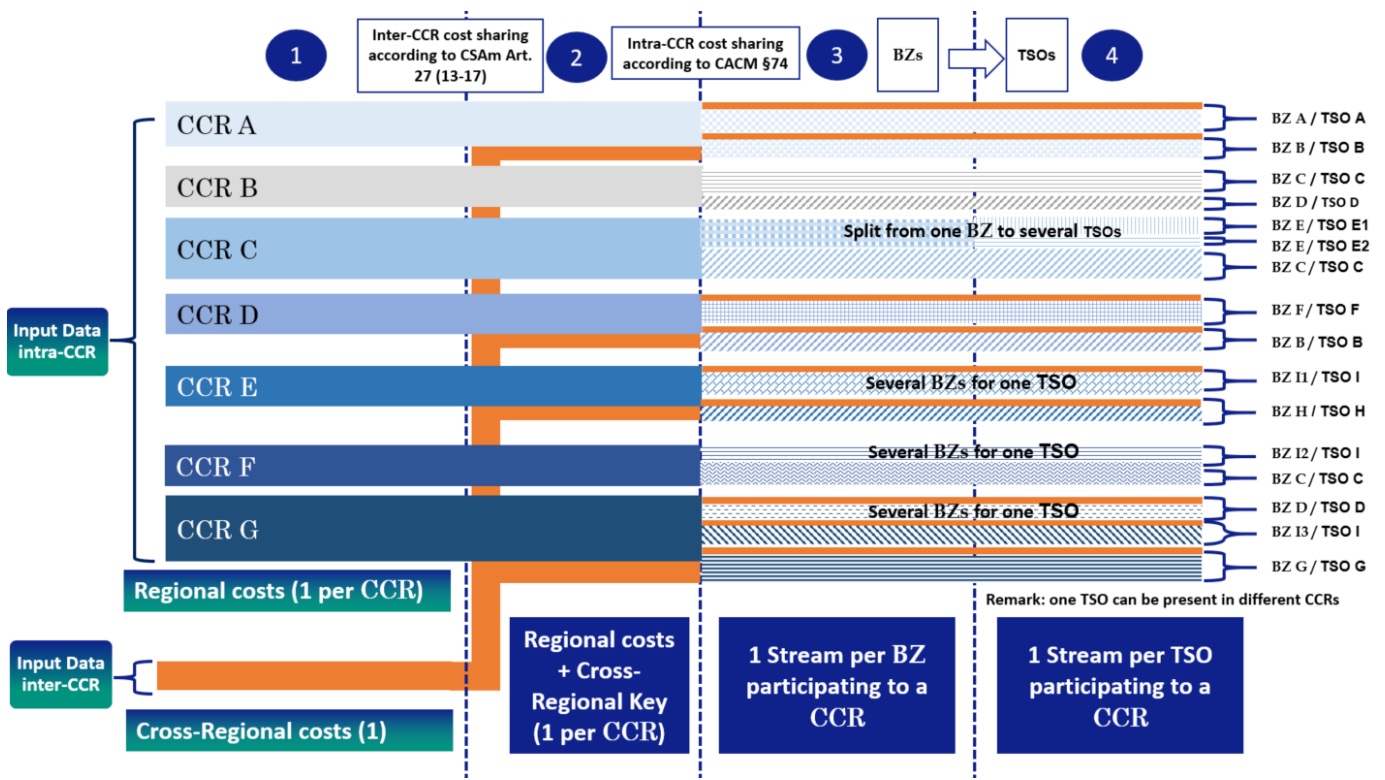


Figure 5 Illustration of differences between Intra and Inter-CCR cost sharing processes

1.3.1. Cross-regional costs: Inter-CCR cost sharing

Costs coming from redispatching and countertrading are used to address residual violations in the cross-regional part of the coordinated operational security analysis (CSA) must be first attributed to regions according to their regional keys.

1.3.2. Regional costs: Intra-CCR cost sharing

After the regional keys from the cross-regional process are determined, they must be shared with the TSOs - together with the costs of remedial actions used for solving regional violations. Pending on the cost sharing principle applied, this can be a simple calculation or a challenging chain of several sub-calculations, e.g. for PPP. Especially in this case, a high-quality supervision is necessary. At this task, RCCs can support TSOs in an effective and efficient way. RCCs are acting as operators of a centralised regional platform to support TSOs with their unique experience in this field. This approach has several advantages:

- The cost sharing process can be operated 24/7, enabling to shorten the overall calculation time. Indeed, the process can be planned based on calendar days instead of working days, as (national) holidays and weekends do not have to be considered.
- The group of experts operating the process is smaller. With the approach of TSOs operating the cost sharing calculation (e.g. in a rotating way), the number of involved experts would be much higher and the frequency to execute the process smaller for each expert. Maintaining knowledge and performing periodic training is easier for a smaller number of experts. In this way, the risk of errors/failures caused by a human factor can be reduced significantly.
- To decrease the costs for development and maintenance of the regional cost sharing solution for each TSO, the technical calculation can be performed on a regional platform together with other regional services that are a prerequisite to perform the cost sharing calculation (e.g. CSAm and SOGL §76). Upcoming issues, starting from IT problems to erroneous calculated costs, can be managed by RCC experts in a centralised way.
- RCCs are already experienced in these kinds of services (e.g. Flow Based Common System at CCR, operated by Coreso and TSCNET).

1.4. Creation of the “Settlement Attachment”

The cost sharing calculation tool of each CCR used by RCCs will create the necessary input data for the further steps of the cost sharing process, as the TSO-validation and the financial part of the cost sharing process. The Settlement Attachment is the result of the cost sharing calculation between BZs/TSOs, where costs and revenues per TSOs/BZs are specified. The Settlement Attachment – once validated by TSOs, see next section – is the basis for the financial settlement and clearing.

1.5. Validation 1 – Validation of the calculation results

Although RCCs are performing the calculations, the final validation of the results remains the responsibility of TSOs. To be able to meet the process deadlines, TSOs must validate the costs and revenues assigned to them within a predefined timeframe. Otherwise “deemed acceptance” is applied if no other solution was agreed at the specific CCR. The validation period can be individual for CCRs, corresponding to the complexity of the cost sharing calculation process. RCCs should

support TSOs during this validation phase by acting as a moderator if issues are detected. So, the problem identification and solution can be managed in a fast and effective way, coordinated by RCCs. This is defined in article 5.

1.6. Data sent to Central Settlement Entity

Article 6 defines the last step of the technical part. The validated results are submitted via the Settlement Attachment to the CSE responsible for the financial part. This task should be executed by RCCs to be able to provide the data bundled and on time. When the results of the cost sharing calculations are sent to the CSE, the technical part of the cost sharing process is finalized.

1.7. Monitoring of activated redispatching and countertrading measured

In addition to the above-mentioned tasks, RCCs may support TSOs on their request in the monitoring of the information related to activated costly remedial actions, in accordance with the provisions of 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. This is defined in article 10.

2. Financial part of cost sharing, invoicing and payment execution

Complex financial processes are not the key business of RCCs. Considering the requested experience in handling large amounts of money and executing a high number of transactions, this purely financial part of the cost sharing process is proposed to be assigned to a specialised entity: the Central Settlement Entity. The CSE acts as a centralised, single counterparty for the financial flows of TSOs related to the cost sharing of redispatching and countertrading, illustrated on the following graphic:

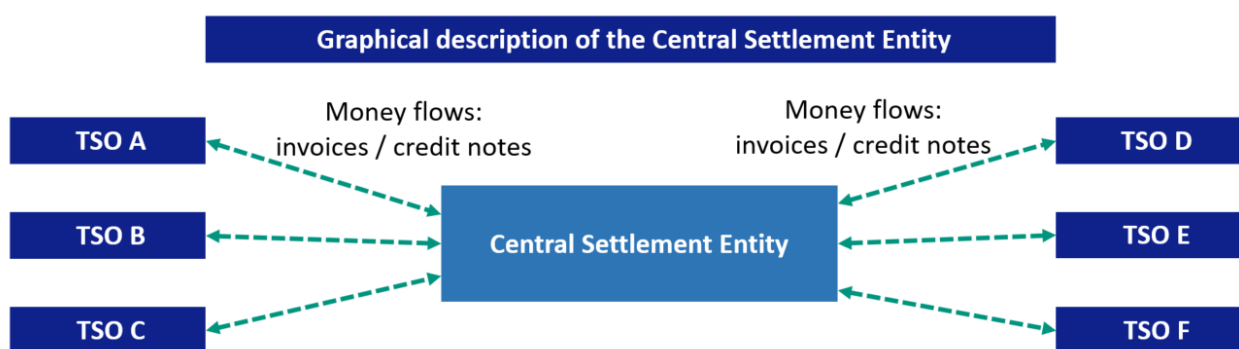


Figure 3 Illustration of the Central Settlement Entity

The largest benefit of this approach is the reduction of costs and efforts for TSOs. With the support of a CSE especially TSOs present in different CCRs will have significant advantages, by using a standardised process. Additionally, it would guarantee efficiency and effectiveness for involved

parties by avoiding parallel developments for tooling and processes and therefore limiting the costs for all.

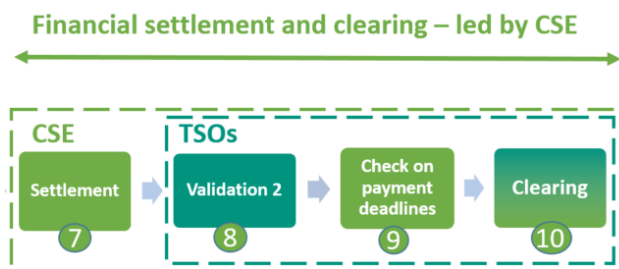


Figure 4 Financial part of the Inter-TSO Settlement process

Title 3 describes the sub-steps of the financial settlement and clearing, as described in Figure 4.

2.1. Financial Settlement

“Financial Settlement” describes the process, where the costs and revenues assigned to a BZ or TSO are invoiced (article 7). This process is performed by the CSE. The required input for this step is the Settlement Attachment, sent from the RCCs and validated by the TSOs beforehand. There can be several invoicing documents issued during one invoicing process: invoices, self-billings and credit statements.

Credit statements are not fiscal but only information documents and can be requested by the TSOs not accepting self-billings. All invoicing documents are prepared in line with the general accounting and fiscal principles of the CSE. Financial Settlement is performed on the agreed Working Day of each month.

2.2. Validation process 2

Article 8 defines the TSOs’ validation of the invoicing document. This step is only a formal validation by the TSOs of the received invoicing documents sent by the Central Settlement Entity. This validation refers to the quality of data outputs (content of the invoice such as address, bank account or delivery period). The amounts to be invoiced were already validated in the calculation of the costs lead by RCCs during the step number 5 “Validation 1” (article 5).

2.3. Check payment deadlines

The CSE is monitoring and supervising that debit payments (incoming payments from the TSOs) and credit payments (outgoing payments to the TSOs) are happening according to the agreed schedule. As a part of the monitoring there is a dunning process available upon the TSOs’ request. The dunning process is linked to the single invoicing process and provides the option of 3-level reminders that can be sent before and after the due date to ensure the collection of debit payments.

2.4. Financial Clearing

Article 9 defines how the money flows (debit payments/credit payments or netted amounts) are settled according to the Settlement Attachment values. The amounts received by the CSE (debit

payments) are equal to the amounts paid out by the CSE (credit payments) unless there are missing payments (one or more TSO(s) pay(s) late). In this case, partial payment can be applied. The CSE will communicate which TSO paid late and its share of credit payments based on the financial volume. Each TSO that paid on time receives a share of the amount based on the financial volume. Once all missing payments are received, the CSE performs the rest of the credit payments. Partial payment is a request to avoid the complete blocking of financial flows if one (or more) TSO(s) cannot meet the payment deadline.

V. INTER-TSO SETTLEMENTS PROPOSAL

Central Settlement Entity

The preferred candidate for the function of the CSE is the Joint Allocation Office, JAO.

JAO is a joint service company that has extensive expertise in dealing with financial settlement and clearing processes, leading thousands of transactions related to explicit and implicit auctions and managing around 4.5 billion euros of turnover per year. JAO offers central financial settlement and invoicing services for several cross-border TSOs initiatives. As part of its role as CSE in TSOs related initiatives on annual basis, JAO:

- Issues 25,000 documents;
- Manages around 40,000 financial transactions, representing an average working capital of around 65 million euros;
- Operates a turnover of 4.5 billion euros per year.

Due to its extremely specific and complex financial nature, JAO also has a strong focus on Risk Management and Compliance related best practices (such as Know Your Customer (KYC), Anti-Money Laundering (AML) and Counter Terrorist Financing (CTF)). JAO also has wide expertise in fiscal and taxation matters, connected to cross-border transactions, which are key when operating central financial settlement activities throughout Europe.

For the financial part, JAO as the proposed CSE offers the following services:

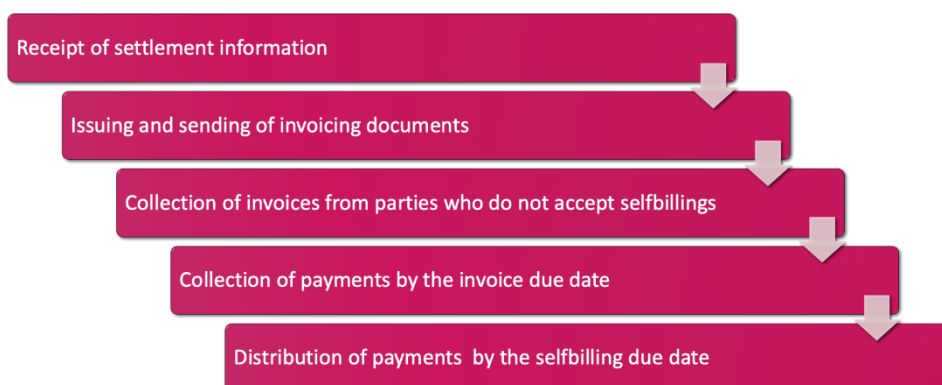


Figure 6 Services proposed for the role CSE

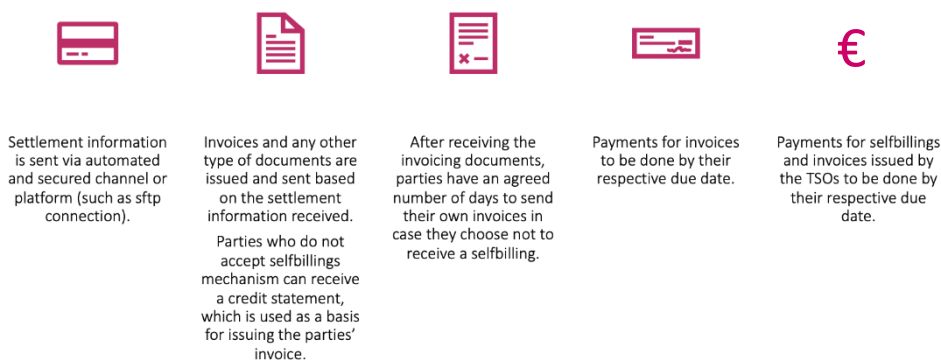


Figure 7 Process overview for the role of CSE

After receiving the data from the RCCs, JAO is performing additional data validations, to ensure that the assigned costs are equal to the expenses resulting from costly remedial action.

Resulting from different national obligations (such as taxes, self-billing etc.), TSOs have unique needs for the clearing process. Some TSOs are not allowing self-billing or the netting of the costs and revenues. Resulting on JAO's experience, TSOs can configure the requested services to receive the optimal solution to meet all national obligations.

After sending the configurable invoices, JAO will monitor the payment deadlines. At this stage, TSOs can ask for further services, for example to be reminded a certain number of days before end of the deadline.

To avoid a complete blocking of payments if at least one TSO's payment is delayed, partial payment is applied. The collected amount is distributed among the receiving parties. This is an important procedure to avoid large payment defaults.

Implementation of inter-TSO cost sharing methodology

TSOs shall implement this methodology at latest 12 months after the last regional cost sharing process has entered into operation (article 11).

For the implementation of the inter-TSO cost sharing methodology TSOs can request RCCs' support. During this process, RCCs should:

- Supervise the drafting of the high-level business process
- Supervise the drafting of the requirements related to the IT-Tooling, with focus on the regional platform
- Support TSOs during the tendering
- Support TSOs during the IT-development acting as a SPoC for the selected IT-provider
- Support TSOs during the testing phases
- Supervise the parallel run/experimentation phase
- Coordinate the implementation with the CSE

The services provided by RCCs - if TSOs are requesting their support - are not limited to the above-mentioned list. This list shall be a guideline and can be adapted in case of further regional needs.

LIST OF ACRONYMS/ABBREVIATIONS

Abbreviation	Definition
AC	Alternating current
ACER	European Agency for the Cooperation of Energy Regulators
BZ	bidding zone
CACM Regulation	Commission Regulation (EU) 2015/1222 of 24 July 2015
CC	Capacity calculation
CCR	Capacity calculation region
CCRS Methodology	Common Methodology for Redispatching and Countertrading Cost Sharing
CRC Methodology	Common Methodology for Coordinated Redispatching and Countertrading
CROSA	Coordinated Regional Operational Security Assessment
CSAm	Methodology for Coordinating Operational Security Analysis
CSE	Central settlement entity
CT	Countertrading
DA	Day-ahead
ENTSO-E	European Network of Transmission System Operators for Electricity
GRIT	Greece-Italy
HVDC	High Voltage Direct Current
LRG	Legal & Regulatory Group
ID	Intraday
PC	Public Consultation
RA	Remedial action
RCCs	Regional Coordination Centers
RD	Redispatching
ROSC	Regional operational Security Calculation
SEE	South East Europe
SPoC	Single Point of Contact
SWE	South West Europe
TSO	Transmission System Operator
XRA	Cross border relevant remedial action