# ENTSO-E Balancing Report 2026

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# Mission Statement

**ENTSO-E – the European Network of Transmission System Operators for Electricity – brings together 40 electricity Transmission System Operators (TSOs) from 36 countries.** ENTSO-E members are responsible for the secure and coordinated operation of Europe's electricity system. Together, they operate a system of around 500,000 km of power lines **– the largest interconnected electrical grid in the world –** and serve about 520 million citizens.

Electricity is not merely a market commodity, it is an essential service, and TSOs are fully regulated public service entities whose work is essential to powering Europe. The grid is the backbone of the electricity system and has extended over the whole Continent, beyond the borders of the EU. TSOs working together guarantee a functioning infrastructure that makes the trade of electricity possible, contributes to decarbonisation goals, and ensures a reliable and efficient power supply for all members of society.

These shared public service responsibilities need close cooperation beyond national borders, which led to the creation of ENTSO-E. Today, the association serves two main complementary purposes:

## 1. Cooperation of European TSOs

The foundations of this cooperation date back to the 1950s with the creation of electrical synchronous areas and interconnections, which laid the groundwork for today's interconnected European power system. TSOs established associations to work together on their own mandates and missions, that came together into what today is ENTSO-E. The European electricity system is one of the most stable and reliable grids in the world and is supported by the cooperation and coordination of TSOs both within the European Union and closely interconnected European countries. ENTSO-E strives to build consensus for decision-making amongst its member TSOs as this forms the strongest foundation for cooperation.

## 2. Fulfilling EU legal mandates

With the adoption of the Third Energy Package in 2009, ENTSO-E's role was formally recognised by European institutions. ENTSO-E was granted legally mandated tasks to further develop the European interconnected grid and to facilitate the integration of European electricity markets. These mandates cover a large spectrum of tasks, including system operation, system development, market integration, information technologies, R&D and innovation.

# ENTSO-E
# Balancing Report 2026

# Content

# Executive Summary

The European electricity system is undergoing major changes, both from a regulatory and technical perspective, driven by the implementation of the Electricity Balancing (EB) Regulation. A key part of this transformation has been the introduction of several balancing energy platforms across Europe:

- The **TERRE (Trans-European Replacement Reserves Exchange)** platform was launched in early 2020 to facilitate the activation of replacement reserves (RR).
- The **IGCC (International Grid Control Cooperation)** platform followed in mid-2021 within the legal framework of the EB Regulation, enabling the netting of automatic frequency restoration reserve (aFRR) needs. The IGCC platform, however, had already been launched in 2010 outside the scope of the EB Regulation as a regional project.
- The **PICASSO (Platform for the International Coordination of Automated Frequency Restoration and Stable System Operation)** platform became operational in mid-2022, providing a platform for aFRR activation and implicit netting of aFRR needs.
- The **MARI (Manually Activated Reserves Initiative)** platform launched in late 2022, supporting the activation of manual frequency restoration reserves (mFRR).

These platforms play a crucial role in the European balancing market. They improve cooperation among transmission system operators (TSOs), increase market liquidity and competition, enhance system security, enable synergies between TSOs by netting balancing needs over consecutive time frames, reducing activation costs, and ultimately contribute to a more efficient and reliable electricity system.

The main developments in the period from June 2025 to May 2026 with respect to the balancing market are:

- Many additional TSOs have been connecting to both the MARI and PICASSO platforms in 2025–2026. Thorough planning of testing activities is being performed to ensure smooth integration and prevent bottlenecks.
- The TERRE project shut down on 1 January 2026, as the RR process was incompatible with the new 30-minute cross-zonal intraday gate closure time (ID GCT). This change comes from the Electricity Market Design Reform (EMDR), which was adopted on 21 May 2024 and went into effect on 1 January 2026. Some TSOs have asked and obtained derogation for the implementation of this new ID GCT.
- On 3 September 2025, the balancing capacity cooperation ALPACA (Allocation of Cross-zonal Capacity and Procurement of aFRR Cooperation Agreement) went live. Since then, the TSOs from Germany, Austria, and Czechia are jointly procuring balancing capacity for aFRR in a harmonised market. On the Germany–Czechia and Austria–Czechia borders, the probabilistic method pursuant to Article 33(6) of the EB Regulation is applied for the exchange of balancing capacity.

- COBRA (Common Optimisation of Balancing Reserves and Cross-Zonal Capacity (CZC) Allocation) project TSOs have noted that the deadline for the development of the harmonised cross-zonal capacity allocation optimisation function (HCZCAOF) of 30 June 2026, and the application of the market-based portion of the harmonised allocation process of cross-zonal capacity methodology (HCZCAM) via such software will be delayed. At the time of publication of this report, no detailed implementation timeline can be provided, though the COBRA project is currently finishing the procurement phase for the algorithm development.
- TSOs jointly delivered a Common Harmonisation Proposal (CHP), focused on national Terms and Conditions (T&Cs), that tackles six key harmonisation needs while also proposing a more efficient process for future harmonisation work. ENTSO-E submitted the amended aFRR implementation framework (aFRRIF) and mFRR implementation framework (mFRRIF) to the Agency for the Cooperation of Energy Regulators (ACER) in December 2025. These included the mentioned CHP as an annex, marking a coordinated TSO achievement ahead of ACER's expected decision in July 2026.
- On co-optimisation, nominated electricity market operators (NEMOs) and TSOs completed the public consultation on the R0 report and incorporated market feedback into an enhanced R1 Report with significant design refinements. They also launched co-optimisation simulations – first in the Baltic region and then expanding to wider single day-ahead coupling (SDAC) areas – forming the core analytical work feeding into the upcoming R2 phase.
- Regarding the Imbalance Settlement Harmonisation Methodology (ISHM), TSOs assessed the need for further harmonisation of imbalance settlement between January and May 2026. A public consultation on the assessment is planned for July–August 2026.

Despite challenges, advancements in European electric power systems reflect the industry's commitment to regulatory compliance, system efficiency, and collaboration among stakeholders. This document provides an in-depth analysis of the dynamics of the balancing markets, complemented with corresponding performance indicators for the year 2025. ENTSO-E would like to highlight that the Market Report 2026 complements the Balancing Report 2026 in all other time frames and invites readers to consult it.

# 1 Introduction

The Commission Regulation (EU) 2017/2195 of 23 November 2017 (hereinafter referred to as the "EB Regulation") lays down the guidelines for creating balancing markets to enable countries to share resources and balance electricity generation and demand in real time.

Balancing markets are designed to facilitate access for new market participants, including demand response, storage technologies, and integrated renewables. Enhanced efficiency and competition are key drivers of market evolution. These markets play a crucial role in ensuring security of supply, promoting fairness and transparency, and generating social welfare benefits. Ultimately, the EB Regulation aims to integrate balancing markets and foster the exchange of balancing services while contributing to operational security.

The EB Regulation defines the principles for the exchange of balancing energy and the associated settlement processes between TSOs and between TSOs and balancing service providers (BSPs). These processes cover the following types of reserves: frequency restoration reserves (FRR) both automatic and manual, RR, and imbalance netting (IN). Additionally, the EB Regulation sets out a common methodology for the exchange and sharing of reserves.

In compliance with the EB Regulation, ENTSO-E publishes a biennial balancing report. The first edition was released in **2020**, followed by the second edition in **2022**, and the third edition in **2024**. The ENTSO-E Balancing Report 2026 will provide an update on recent developments in the European balancing markets since the publication of the **ENTSO-E Market Report 2025**, covering the period between June 2025 and May 2026. The performance indicators presented in Chapter 6 are calculated using data from January to December 2025, while the respective national executive summaries in Chapter 7 cover the period May 2024–May 2026.

The ENTSO-E Balancing Report 2026 examines the design and implementation of balancing markets at the pan-European, regional, and national levels. It highlights developments in cross-border balancing capacity procurement, the development and harmonisation of methodologies, as well as the advancements in balancing energy platforms (both regulatory and technical aspects) and in the balancing exchange/sharing capacity cooperations. In addition, this report provides executive summaries of the national balancing markets for each TSO, addressing respective regulatory and technical developments in each system related to respective T&Cs pursuant to the EB Regulation Article 60.

The report is divided into the following chapters:

- Chapter 2 outlines the key regulatory developments related to the EB Regulation roadmap, with a focus on cross-border balancing capacity sharing and exchange, the progress in the imbalance settlement harmonisation (ISH) process, and the measures implemented to mitigate high balancing energy prices (derived from pricing methodology amendment).
- Chapter 3 provides an update on the main achievements and new participants in the balancing energy platforms (TERRE, MARI, PICASSO, and IGCC), along with the latest developments in the Capacity Management IT Solution.
- Chapter 4 presents the advancements in balancing capacity cooperation at the European level, including the Nordic aFRR and mFRR market-based capacity markets, the market-based capacity market in the Baltics, the ALPACA cooperation, and the COBRA project, among others.
- Chapter 5 presents an analysis of standard and specific balancing products and their suitability in the current market.
- Chapter 6 presents an overview of EB performance indicators for the period from January to December 2025.
- Chapter 7 presents the respective executive summaries for the national balancing markets of each TSO, pursuant to EB Regulation Article 60.

In addition, a glossary is included at the end of this report for the readers' convenience, as well as the legal references and requirements on which this report is based.

# 2 Recent developments under the EB Regulation roadmap

The EB Regulation establishes a harmonised set of technical, operational, and market rules governing the functioning of electricity balancing markets across the European Union. Its primary objective is to facilitate the integration of balancing energy markets, thereby enhancing system efficiency, competition, and security of supply. To this end, the EB Regulation defines the framework for balancing capacity procurement, the exchange of balancing energy, the allocation of cross-zonal transmission capacity, as well as the activation, netting, and financial settlement arrangements applicable to balance responsible parties (BRPs) and BSPs.

This chapter presents the key milestones achieved under the EB Regulation roadmap between June 2025 and May 2026. In particular, it focuses on key regulatory advances in cross-border balancing capacity procurement, including both market-based approaches and co-optimisation in the ISH process and the implementation of regulatory measures focused on mitigating high balancing energy prices.

Several important regulatory developments were further achieved between June 2025 and May 2026 and warrant particular attention.

Of particular significance are the submitted amendments to the implementation frameworks (IFs), as well as the ongoing review of the regional and inter-synchronous area (SA) implementation of the FSkar processes.

Finally, it must be highlighted that TSOs have started to prepare for a discussion with ACER on future evolutions in balancing and in the electricity system. ACER is also developing a position paper on the "Future of Balancing", covering both the EB Regulation and the SO Regulation frameworks.

## Amendments to the PICASSO and MARI implementation frameworks

Article 18 of the EB Regulation assigns responsibility for the T&Cs applicable to BSPs to individual TSOs, while requiring compliance with the IFs governing PICASSO (the aFRRIF) and MARI (the mFRRIF). Both IFs establish a common process for the identification and implementation of harmonisation measures.

Applying this process, and following consultations (2023, 2024) with stakeholders to identify those harmonisation needs, TSOs jointly developed a Common Harmonisation Proposal (CHP) addressing six prioritised harmonisation needs (covering topics such as English publication of TSOs' respective T&Cs, English communication between TSOs and BSPs, FRR prequalification topics, and IT standards harmonisation), together with an amendment to the process aimed at improving its efficiency. ENTSO-E submitted both proposals (amended aFRRIF and mFRRIF) to ACER in December 2025. ACER is expected to adopt the decision in July 2026.

## Establishment of a new network code on demand response

ACER submitted its recommendation for the Network Code on Demand Response (NC DR) package to the European Commission in March 2025, after which the Commission launched a public consultation between July and September 2025. ENTSO-E and the DSO Entity have supported ACER and the European Commission throughout the process.

Adoption of the NC DR by the European Commission is expected in Q4 2026–Q1 2027 through the comitology process. Following the expected approval and entry into force, TSOs are anticipated to develop and amend relevant T&Cs or methodologies at both the Union-wide and national levels.

### Regional implementation of the FSkar process

In accordance with the three-year review cycle set out in the FSkar methodologies, as the previous review took place in 2022–2023, a new review of the settlement rules under Articles 50 (4) and 51 (2) of the EB Regulation is currently being carried out by all asynchronously connected TSOs. The review assesses the continued adequacy of the methodologies, including the potential for further harmonisation of price calculation and settlement periods, taking into account recent market and operational developments. The resulting review report and any proposed amendments are expected to be submitted to the concerned national regulatory authorities (NRAs) for approval during 2026.

In parallel, given that similar review obligations apply under Articles 50 (3) and 51 (1) of the EB Regulation for the Central Europe (CE) FSkar process, CE TSOs assess the adequacy of these methodologies. The review report and any proposed amendments are expected to be submitted together with the review report for Articles 50 (4) and 51 (2) to the concerned NRAs.

## 2.1 Regulatory developments regarding procurement of balancing capacity and allocation of cross-zonal capacity for the exchange of balancing capacity and/or sharing of reserves – market-based approach

In December 2022, All TSOs submitted the proposal for a HCZCAM in accordance with Article 38 (3) of the EB Regulation. This methodology integrates the co-optimised and market-based allocation processes, defining cross-border processes for balancing capacity procurement. While ACER approved the methodology in July 2023, it also requested that TSOs make amendments, particularly focused on the governance and maximum volume limits for the exchange of balancing capacity. In July 2024, TSOs submitted the amended documents to ACER, which approved the methodology on 29 January 2025.

As a part of the HCZCAM, All TSOs specified the main principles of the HCZCAOF for the market-based process in a document referred to as “Set of Requirements”. To further develop the HCZCAOF, the HCZCAM specifies that TSOs of an application pursuant to Article 38 (1)(b) of the EB Regulation and TSOs that intend to apply the market-based allocation process together shall develop the software for the market-based HCZCAOF. For this purpose, the **COBRA project** was initiated, consisting of the TSOs from the two regions already utilising the market-based method (Baltic and Nordic) and the TSOs from the ALPACA initiative, namely, Austria, Czechia, and Germany (see more in Chapter 4.4).

## 2.2 Regulatory developments regarding co-optimisation

The concept of co-optimisation, as outlined in Article 40 of the EB Regulation, aims to achieve the optimal allocation of cross-zonal capacity (CZC) through the joint procurement of energy and balancing capacity within the SDAC market.

On 23 September 2024, ACER issued Decision No 11/2024, introducing amendments to the price coupling algorithm and the continuous trading matching algorithm, including the common sets of requirements. The methodology sets the regulatory framework for the algorithms used for matching orders and allocating CZCs in the European day-ahead and intraday electricity markets. This decision serves as the legal basis for ongoing R&D activities on co-optimisation. The requirements for each R&D report are outlined in Articles 4(15) and 4(16) of the Annex I to ACER's Decision No 11/2024.

NEMOs, in collaboration with TSOs, are carrying out R&D activities to assess the technical feasibility, impacts, and implications of integrating co-optimisation into the price coupling algorithm. This work will be structured around several milestones:

- **November 2025:** Final delivery of R1 Report to ACER.
- **Q1 2027:** Following replanning by NEMOs and TSOs and subsequent confirmation by ACER, the second report (R2) is expected to be submitted to ACER in Q1 2027, covering areas listed in points (d) to (g) of Article 4(15) of Annex I, including initial simulation results. The R2 must determine the technical feasibility of the options selected in the R1 report, which was submitted to ACER on 28 November 2025.
- The R3 report will follow the R2 submission, and the detailed planning still must be clarified based on the exact scope in alignment with ACER.
- In May–June 2025, NEMOs, in cooperation with TSOs, conducted a public consultation on the first of the required reports, referred to as the "R0 report", which covered concepts of bidding products, bid design, and pricing, and received 23 responses. Among other things, the public consultation revealed serious concerns from market participants about bid construction and portfolio representation, challenges related to coupling to heat and hydrogen markets, hydro river system cascades, and cost burdens. They also pointed to a remaining need for price forecasts for certain types of assets. Several market participants expressed clear preferences for a sequential solution. NEMOs and TSOs share some of these concerns and will evaluate several of them in upcoming co-optimisation R&D phases.

Market participants' feedback collected via the public consultation has provided valuable insights into the challenges identified and the proposed approaches to bidding products, bid design, and pricing. NEMOs and TSOs updated the original R0 report with the provided feedback by adding separate sections with a summary of public consultation feedback. The final delivery of the updated R1 report to ACER at the end of November 2025 included the following main updates:

- A more detailed assessment of public consultation feedback by topic area and recommended design options for subsequent R&D phases
- Further elaboration on the rationale for implicit bidding and the identified challenges associated with explicit bidding
- Additional examples using block bids to be added, along with an explanation of usage challenges
- Bid design considerations for short-term storage and demand response reasoning and explanation of ongoing R&D
- Additional characteristics to be added/further specified for combined and linked bids

The R1 report conclusions were used as a direct input for co-optimisation simulations that are an essential part of R2. These simulations will aim to simulate co-optimisation in SDAC using a prototype based on the existing version of EUPHEMIA, incorporating the design options from the R1 report. The simulations will then assess the impact of this setup on performance, prices, flows, and other aspects. NEMOs and TSOs are carrying out these simulations in two phases:

- The first phase involves testing input data and models and verifying the simulation design within a limited geographical scope (initial focus on the Baltic bidding zones).
- The second phase will extend the analysis to a broader geographical area, such as the full SDAC area or the Core and Nordic regions, using comprehensive simulation testing.

Although the R&D work is performed in several steps, the various R&D areas are interdependent and cannot be viewed in isolation. Therefore, certain design choices may be reconsidered upon the provision of new insights in the next phases of the R&D work. After all R&D phases are complete, the outcomes will inform further discussions among NEMOs, TSOs, market parties, and ACER regarding the future direction of co-optimisation.

TSOs and NEMOS would like to highlight that the current cooptimisation studies deliver inconclusive and assumptiondependent welfare results, so any conclusions must be treated cautiously. NEMOs and TSOs support openminded, neutral R&D, but stress that any implementation should be voluntary and operationally robust.

## 2.3 European implementation of the Imbalance Settlement Harmonisation Methodology

ACER Decision 18/2020, in accordance with EB Regulation Article 52 (2), established the ISHM, which aims to further specify and harmonise the rules for imbalance settlement. By January 2022, this methodology was to be implemented by all TSOs as per the EB Regulation.

The EB Regulation introduced the obligation to implement a 15-minute imbalance settlement period (ISP). TSOs must determine BRP imbalances using the 15-minute ISP. The implementation of the ISP is carried out in accordance with EB Regulation Article 53. The 15-minute ISP was required to:

- Be implemented within three years of the EB Regulation's entry into force (i.e. by January 2021);
- Be subject to derogation, with implementation required no later than 1 January 2025; or
- Be subject to an exemption for an entire SA, in which case the ISP could remain at 30 minutes, with implementation of the 15-minute ISP required by January 2025 at the latest.

As of June 2026, 26 TSOs have successfully implemented the 15-minute ISP.

In addition, Article 9 of the ISHM still allows for the application of three individual components to ensure the necessary exceptions. The components can be the following:

- A scarcity component to be used in nationally defined scarcity situations
- An incentivising component to be used to fulfil nationally defined boundary conditions
- A component related to the financial neutrality of the TSO

The ISHM also describes the components to be used in the calculation of the imbalance price. Based on these components, each TSO may establish an appropriate calculation methodology at the national level. Pursuant to Article 9 (6) of the ISHM, 21 countries currently apply additional components in their imbalance price calculation, and seven countries do not.

| Additional components | | | No additional components |
|---|---|---|---|
| Austria | Germany | Poland | Denmark |
| Belgium | Hungary | Romania | Greece |
| Bulgaria | Ireland | Slovakia | Netherlands |
| Croatia | Italy | Slovenia | Portugal |
| Czech Republic | Latvia | Sweden | Spain |
| Estonia | Lithuania | Switzerland | |
| Finland | Northern Ireland | | |
| France | Norway | | |

Table 1: TSO overview on application of additional components in imbalance pricing.

In addition, TSOs are to apply single pricing, which means that both negative and positive deviations are assigned the same price. With the approval of the NRAs, TSOs are also allowed to apply dual pricing for individual ISPs under certain conditions. This regulation is outlined in Article 8 of the ISHM. Currently, two countries use dual pricing and the rest use single pricing.

| Single Pricing | | | Dual Pricing |
|---|---|---|---|
| Austria | France | Northern Ireland | Netherlands |
| Belgium | Germany | Norway | Spain |
| Bulgaria | Greece | Poland | Portugal |
| Croatia | Hungary | Romania | |
| Czech Republic | Ireland | Slovakia | |
| Denmark | Italy | Slovenia | |
| Estonia | Latvia | Sweden | |
| Finland | Lithuania | Switzerland | |

Table 2: TSO overview on application of single or dual pricing.

With regard to imbalance position calculation, TSOs applying a self-dispatching model are required to determine a single final position for each BRP, imbalance area, and ISP. This final position represents the sum of all external and internal commercial trading plans of all generation/demand scheduling units.

By contrast, TSOs operating under a central dispatching model are required to determine one final position for each scheduling unit of each BRP, each imbalance area, and each ISP. This position corresponds to the sum of this scheduling unit's external and internal commercial trade schedules of each specific scheduling unit, in accordance with EB Regulation Article 54(3)(c).

According to Article 12(3) of the ISHM (Article 52(2) of the EB Regulation), two years after the implementation deadline of the European platforms for the exchange of balancing energy pursuant to Articles 20(6) and 21(6) of the EB Regulation, TSOs shall assess the need for further harmonisation of imbalance settlement. From January to June 2026, TSOs have been conducting this assessment, focusing on the potential need for further harmonisation and/or amendments to the ISHM. The **public consultation** on this assessment report is planned for July–August 2026.

## 2.4 Recent developments regarding high price mitigation measures and maximum/minimum energy prices

Due to the developments and observations on balancing energy markets integrated via the European balancing energy platforms in 2024 (as outlined in the **Market Report 2025**), it was necessary to submit amendments to the regulatory framework to ensure efficient market functioning. Following All TSOs' submission of amendments on 5 July 2024, ACER issued:

- **Decision No 08/2024** on the second amendment to the IF for a European platform for the exchange of balancing energy from FRR with automatic activation (aFFR IF) pursuant to Articles 5(2)(b) and 5(6) of Regulation (EU) 2019/942, and Articles 5(1), 5(2)(a), 6(3), and 21(1) of Commission Regulation (EU) 2017/2195 (EB Regulation); and
- **Decision No 09/2024** on the second amendment to the methodology for pricing balancing energy and CZC used for the exchange of balancing energy or operating the IN process (Article 30(1) of the EB Regulation).

Concerning the price determination for aFRR and the possibility for TSOs to use elastic aFRR demand, ENTSO-E has seen an increasing number of TSOs using elastic aFRR demand in recent years. Elia started using elastic aFRR demand in November 2024, and currently, RTE, APG, Energinet, Terna, and PSE are also using elastic aFRR demand. The use of elastic aFRR demand is implemented as a measure to mitigate against excessive prices while guaranteeing an acceptable area control error (ACE) quality through the inelastic part of the aFRR demand, minimally up to the dimensioned aFRR volume.

With regards to harmonised maximum and minimum balancing energy prices (HMMBEP), Article 10 of the Pricing Methodology requires that the HMMBEP be adjusted based on certain conditions, as is described in the Market Report 2025. From 24 July 2026 onwards, the price adjustment conditions will be monitored.

# 3 Procurement and activation of balancing energy

The reporting period from 2025 to 2026 has been marked by significant developments in the integration of balancing energy platforms and alignment with the evolving regulatory framework. The key developments during this period are as follows:

- In 2025, all platforms together achieved an economic surplus of almost €1.9 billion.
- The Spanish TSO, REE, joined the aFRR platform (PICASSO) in June 2025. The Polish TSO, PSE, followed in July. The Italian TSO, Terna, reconnected to PICASSO in November 2025.
- The Dutch TSO, TenneT NL, joined the mFRR platform (MARI) in December 2025. The Bulgarian TSO, ESO, joined the platform in February 2026. The French TSO, RTE, joined MARI in April 2026.
- The TERRE project announced its termination in late 2025, in response to the cross-zonal ID GCT reduction to 30 minutes, scheduled for 1 January 2026. The Czech TSO, ČEPS, exited TERRE in July 2024, followed by the Italian TSO in January 2025. Afterwards, the Swiss and French TSOs, RTE and Swissgrid, exited on 17 December, followed by the Portuguese and Spanish TSOs, REN and REE, on 30 December. After the end of operations, the platform was decommissioned and the project came to an end in March 2026.

Additional TSO accessions to the **MARI** and **PICASSO** platforms are anticipated in the coming years, as described in the respective accession roadmaps.

## Implementation of the Electricity Market Design Reform and the phase-out of TERRE

The EMDR, adopted on 21 May 2024, sets the cross-zonal ID GCT at 30 minutes before real time, effective 1 January 2026. Given that the RR process is incompatible with this reduced time frame, the TERRE project ceased operations at the end of 2025.

With the ID GCT being equal to 30 minutes, BSPs will have only five minutes (i.e. 25 minutes before real time) to submit their mFRR/aFRR balancing energy bids to TSOs. However, market participants will benefit from increased trading flexibility and liquidity, allowing them to balance their positions closer to real time.

Additionally, the 30-minute cross-zonal ID GCT poses challenges for the cross-border mFRR direct activation process, as this activation affects two consecutive quarter-hours. The available cross-border capacity for the second quarter-hour will remain uncertain, given the shortened GCT.

Some mitigating measures are currently under assessment by TSOs, including:

- Shortening the delivery time of results for the following processes: cross-border intraday European market, future balancing time frame capacity calculation (BTCC), and Capacity Management Module (CMM) processes.
- Exploring the potential for local activation of mFRR direct activation during the second quarter-hour to prevent cross-border mFRR activation, where cross-border capacity remains uncertain.

In summary, TSOs have made substantial progress in integrating standard products and connecting to balancing energy platforms. Many have also proactively adapted their local market designs in preparation for future integrations, reaffirming their commitment to enhancing efficiency and market integration across European balancing markets.

## Launch of Nordic mFRR energy as an interim step before connection to the MARI platform

A key operational milestone occurred on 4 March 2025 with the Nordic go-live of the automated mFRR energy activation market (mFRR EAM). This introduced 15-minute activation resolution, transitioning Nordic balancing from 60-minute manual balancing to 15-minute automated balancing.

As a precautionary measure during the transition, Nordic TSOs temporarily increased aFRR procurement volumes, which were subsequently adjusted following initial operational experience.

# 3.1 RR platform (led by the TERRE Project)

The TSO initiative TERRE was the European implementation project established to facilitate the exchange of RR in accordance with Article 19 of the EB Regulation. It was created and implemented following this fundamental regulation, which provides the technical and operational framework and defines the market rules governing the functioning of balancing markets.

To fulfil these obligations, the TERRE platform was deployed in January 2020. The TSOs participating in TERRE benefited from the platform during its lifetime, until its end in December 2025. Platform operations were discontinued due to the new EMDR, which established a new cross-zonal ID GCT 30 minutes before real time, effective 1 January 2026. After the end of operations, the platform was decommissioned and the project came to an end in March 2026.

## Key operational results

From an operational point of view, the platform allowed important exchanges during the year despite a smaller number of connected TSOs and the planned closure of operations. The total surplus reached €316 million in 2025, compared to €458 million in 2024. The decrease is directly linked to significantly lower activated volumes, which fell from 7,806,269 MWh in 2024 to 6,943,006 MWh in 2025.

## Main events and achievements

As noted in the previous report,[1] TERRE TSOs shared their official decision to end the project on Monday, 9 December 2024, in a public letter published on the ENTSO-E website ("**Announcement from Replacement Reserve TSOs**") and during the 2024 **Balancing Platforms Stakeholders' Workshop**. These sources of information provide further details on the reasons that forced TERRE members to terminate the project at the end of 2025. It is important to note that the RR NRAs were continuously involved throughout the preparation of TERRE TSOs' statement and supported the process until the closure of the project.

In 2025, four TSOs were still connected to the platform. They all continued to benefit from the platform, with numerous exchanges until their disconnections, which were organised as follows:

- RTE and Swissgrid disconnected from the platform on 17 December. They participated in operations until the MTU from 9:00 to 10:00 and from 11:00 to 12:00, respectively.
- Red Eléctrica and REN disconnected from the platform on 30 December. They both participated in operations until MTU from 9:00 to 10:00.

Operations on the platform were terminated with the second wave of disconnections on 30 December at 10:00.

In 2025, TERRE TSOs collaborated with TERRE NRAs on a solution to maintain the ability to perform re-simulations for five years after the end of the project. This initiative aimed to facilitate the execution of any necessary analyses in the context of potential market investigations under REMIT regulation.

1 ENTSO-E Market Report 2025.

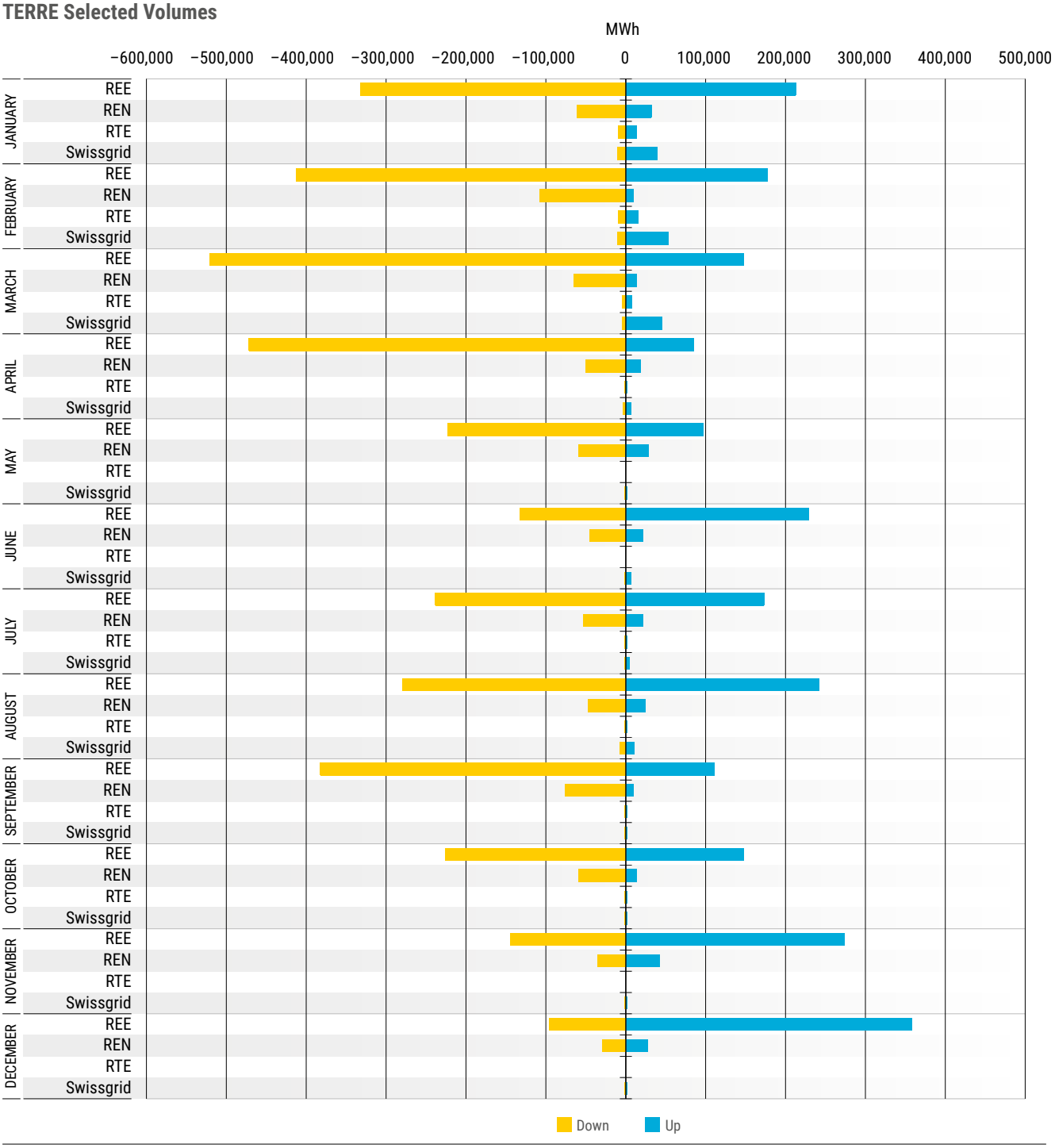



Figure 1: RR platform: monthly volume of selected bids in 2025 (MWh).

The platform was fully available throughout the year and experienced no outages.

## Governance of the RR platform

The TERRE project was terminated at the end of March 2026. Prior to its closure, governance was structured as follows.

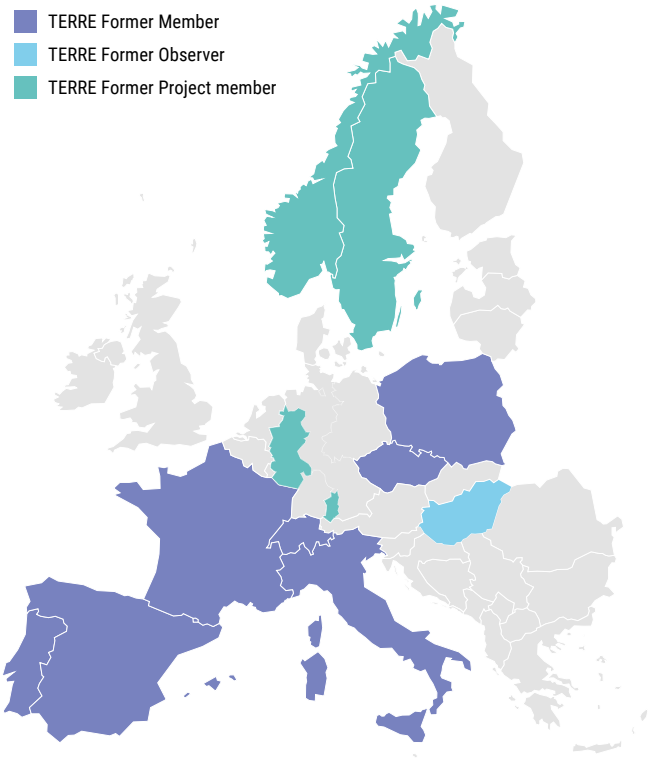
At the beginning of 2025, four TSOs remained connected to the platform and acted as TERRE members: REE (Spain), REN (Portugal), RTE (France), and Swissgrid (Switzerland). These TSOs governed the project through the TERRE Steering Committee (TSC), the project's decision-making body.

Three TSOs – ČEPS (Czech Republic), PSE (Poland), and Terna (Italy) – held the status of former members, allowing them to remain involved in the decommissioning phase as historical participants.

From January 2026, all TSOs held former member status and cooperated on the decommissioning and closure of the platform until March 2026.

In addition, Amprion, Statnett, and Svenska kraftnät participated as project members, supporting the development and management of the LIBRA IT solution and acquiring intellectual property rights for its further use, including in regional initiatives or within the MARI project.

Finally, MAVIR (Hungary) and ENTSO-E participated as observers, with access to documentation but without involvement in operational or decision-making activities.




| TERRE Former Members (7 TSOs) | |
|---|---|
| Czech Republic | ČEPS, a.s. |
| France | RTE Réseau de transport d'électricité |
| Italy | Terna |
| Poland | PSE |
| Portugal | REN |
| Spain | red eléctrica |
| Switzerland | swissgrid |
| **TERRE Former Observers (2 TSOs + ENTSO-E)** | |
| Hungary | MAVIR |
| ENTSO-E | entsoe |
| **TERRE Former Project Members (3 TSOs)** | |
| Germany | amprion |
| Norway | Statnett |
| Sweden | SVENSKA KRAFTNÄT |

Figure 2: RR platform: former TSOs part of the TERRE project (March 2026).

### Evolution: Implementation timeline and TSOs' accession roadmap

In the context of the planned end of the TERRE project, no major implementation was conducted on the platform. As a result, TERRE TSOs decided not to develop any new functionality on the platform and only approve the costs necessary to maintain stable operations and keep the project live. Thus, TERRE TSOs worked on the following topics:

- **Disconnections of RTE, Swissgrid, Red Eléctrica, and REN**
- **Planning for the end of the project:** Halting processes, decommissioning the platform, developing a solution for possible re-simulations, saving project data, closing the settlement, closing all project's costs.
- **KPIs reports:** Since Q1 2024, all performance indicators reports are published on the TERRE section of the ENTSO-E website.[2]
- **CMM implementation for TERRE:** The TERRE platform is connected to CMM, and TERRE TSOs ensured the stability of operation with each new CMM version or TSO connection.

### TERRE expenditures

Please consult expenditure information regarding TERRE in the EB Cost Report 2026.

## 3.2 mFRR platform (led by the MARI project)

MARI is the European implementation project for the creation of the European mFRR energy activation platform. The platform has been operational since October 2022, when the Czech and the four German TSOs successfully connected to the platform. Today, 16 TSOs are connected.

### Key operational result for 2025

The MARI platform reported an economic surplus exceeding €104 million in 2025, a massive increase over the €11.7 million recorded in 2024. This exceptional growth was driven primarily by a surge in platform accessions throughout the year.

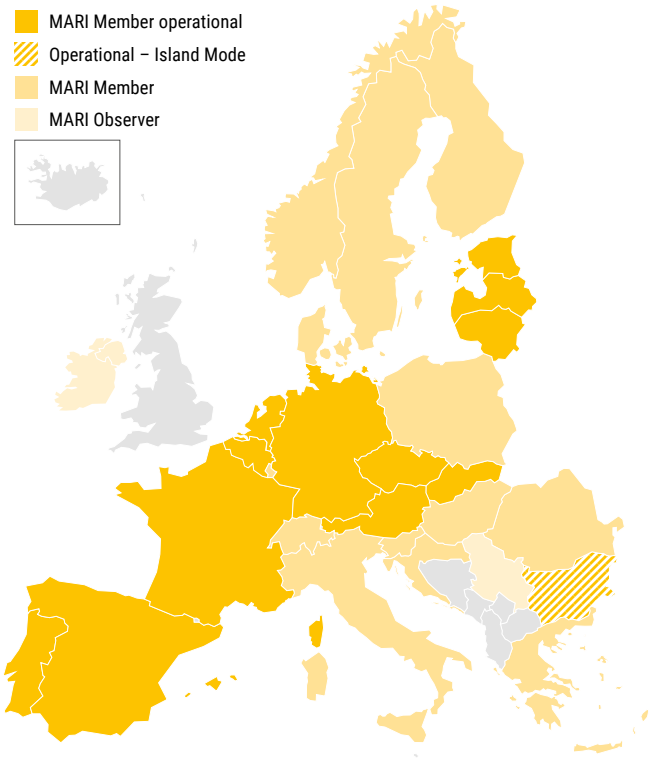
### Main events and achievements

- **May 2025:** Elia accessed the mFRR platform.
- **November 2025:** The balancing platforms stakeholders' workshop was held, informing stakeholders of the evolution of the platform and gathering feedback for future developments.
- **December 2025:** TenneT NL accessed the mFRR platform.
- **February 2026:** ESO accessed the mFRR platform.
- **April 2026:** RTE accessed the mFRR platform (only with scheduled activations).

2 https://www.entsoe.eu/network_codes/eb/terre/.

## Governance of the mFRR platform

MARI consists of 29 member TSOs, plus five observers, including ENTSO-E. There are currently 16 members connected to the mFRR platform: AT (APG), BE (Elia), BG (ESO), CZ (ČEPS), DE (50Hertz, Amprion, TenneT Germany, TransnetBW), EE (Elering), ES (RE), FR (RTE), LT (Litgrid), LV (AST), NL (TenneT Netherlands), PT (REN), and SK (SEPS).




All MARI member TSOs (countries) are:

| | | | |
|---|---|---|---|
| APG (AT) | Elia (BE) | Swissgrid (CH) | ČEPS (CZ) |
| 50Hertz, TenneT DE, Amprion, TransnetBW (DE) | Elering (EE) | RE (ES) | IRTE (FR) GR) |
| AST (LV) | REN (PT) | Litgrid (LT) | TenneT NL (NL) |
| SEPS (SK) | ESO (BG) | | |

In addition, the following TSOs (countries) are observers: Eirgrid (IE), SONI (NI), MEPSO (MKD) and EMS (SRB). ENTSO-E is also an observer.

Figure 3: Map with MARI members.[3]

The governance structure of the MARI project is specified in the mFRRIF, Article 14[4]. MARI has a two-level governance structure: the Steering Committee (SC) and working groups (WGs). The MARI SC has at least one representative from each TSO. For subjects that are common across MARI and PICASSO, there is a joint SC consisting of the members from the MARI and PICASSO SCs, respectively.

In addition to the WGs, there is also a MARI, IGCC, and PICASSO Joint Operational Committee (OPSCOM), which serves the main purpose of managing day-to-day operational decisions related to the platforms.

In the SC and WGs, all TSOs have the right to vote, while in the OPSCOM, the right to vote is reserved for TSOs participating in the platform.[5]

In addition to the WGs and the OPSCOM, there are joint task forces with PICASSO. Joint task forces also existed with TERRE until the decommissioning of the platform in March 2026.[6]

3 The technical readiness of Swissgrid has been acknowledged. The participation of Switzerland in the mFRR platform is regulated based on Articles 1.6 and 1.7 of the EB Regulation and is currently the subject of litigation by Swissgrid at the Court of Justice of the European Union.

4 220921_ACER Decision 14-2022 on the Amendment of the mFRRIF – Annex II.pdf (entsoe.eu).

5 Participating TSOs are TSOs connected to the MARI mFRR platform or expected to connect within the next six months.

6 Announcement_from_RR_TSOs.pdf.

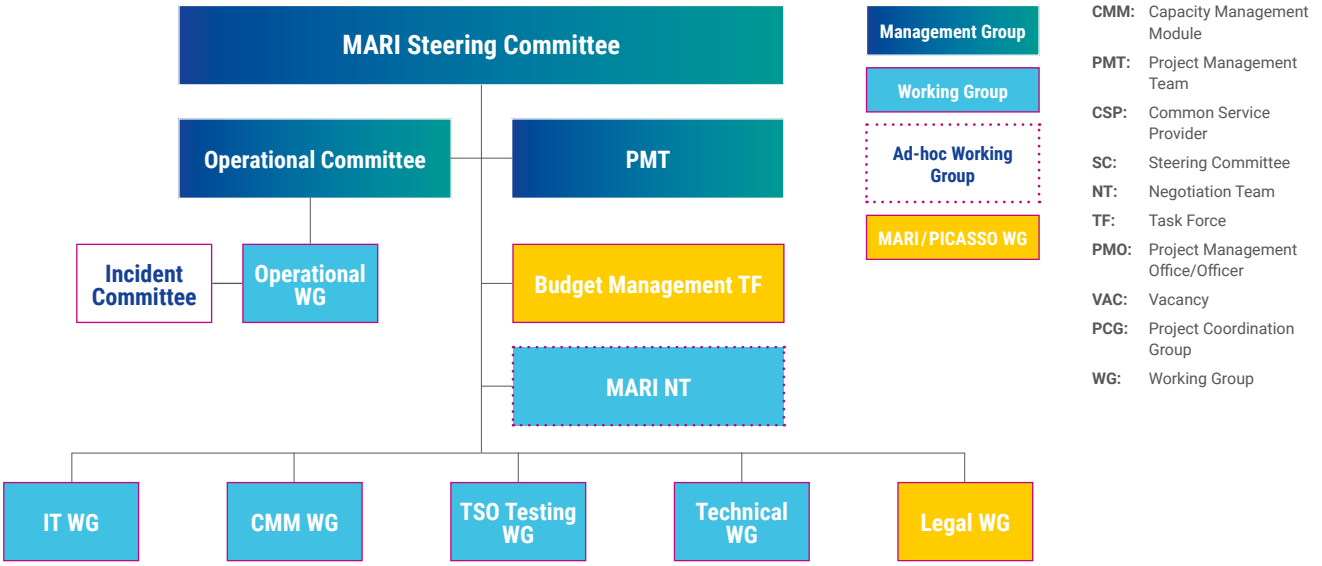



Figure 4: The organisational structure of MARI.

## Evolution: Implementation timeline and TSOs' accession roadmap

An accession roadmap is established as imposed by IF Article 5. The roadmap is updated at least twice per year, usually in April and October. The latest version of the accession roadmap can be found on the MARI webpage of the ENTSO-E website under Publications.

The main steps within the MARI project for the years 2025 to 2027 are described in Figure 5.

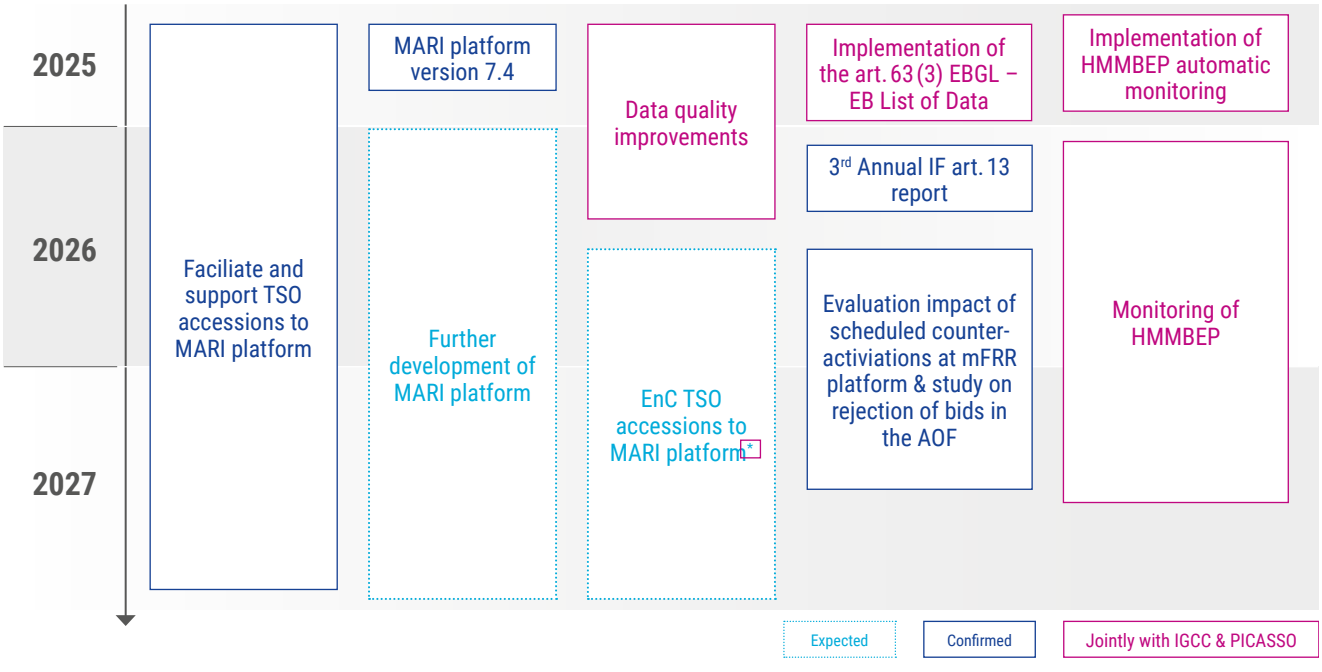



Figure 5: MARI milestones 2025 – 2027.

## Expenditures

Please consult expenditure information regarding MARI in the EB Cost Report 2026.

## 3.3 aFRR platform (led by the PICASSO project)

PICASSO is the implementation project endorsed by all TSOs through the ENTSO-E Market Committee to establish the European platform for the exchange of balancing energy from aFRR. The platform is developed pursuant to Article 21 of the EB Regulation.

### Key operational result for 2025

The PICASSO platform generated € 464 million in economic surplus in 2025. When accounting for additional demand satisfaction, the potential surplus could reach up to € 3.7 billion in 2025, depending on the assumed price levels.

### Main events and achievements

The PICASSO platform entered operation on 1 June 2022, ahead of the legal deadline of 24 July 2022, enabling TSOs to exchange and activate standard aFRR balancing energy bids through a common optimisation process to support the efficient balancing of the European electricity system.

The platform currently comprises 29 TSO members and one observer and operates with a market time unit (MTU) of four seconds. Once connected, TSOs submit all standard aFRR balancing energy bids through the platform and cover their balancing energy needs via the common optimisation.

The PICASSO IT solution is also used by the IGCC for the IN process, allowing the optimisation to maximise economic surplus while ensuring that the netting potential among IGCC TSOs is fully utilised.

Following **ACER Decision 8/2024** and **9/2024**, the PICASSO project introduced elastic demand and a revised determination of the cross-border marginal price (CBMP) in order to address situations of unnecessarily high balancing energy prices. Elastic demand allows a TSO to submit a price threshold, meaning that aFRR demand is satisfied only up to this level. In contrast, inelastic demand requires that at least the dimensioned aFRR demand is satisfied regardless of the price. The PICASSO KPI Report reflects the implementation of elastic demand.

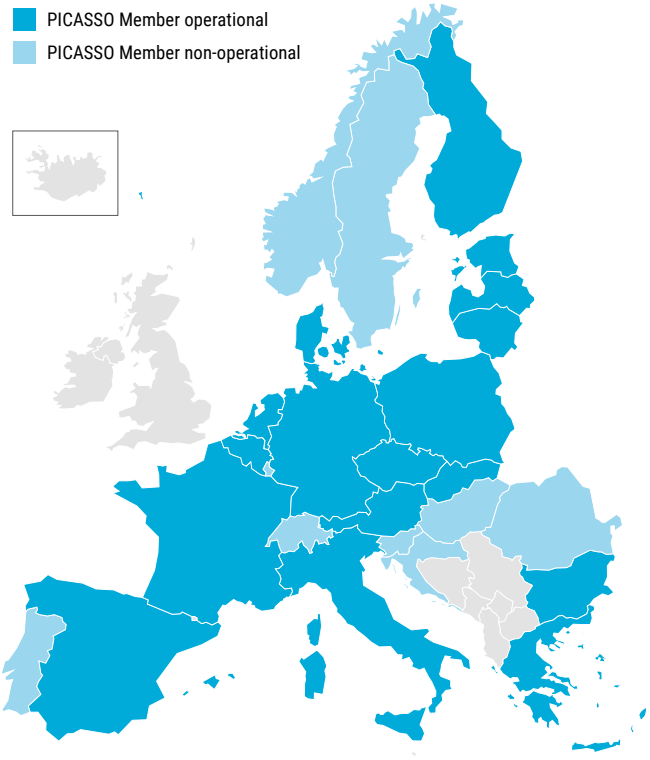
On 23 October 2025, an **erroneous** local merit order list (MOL) of aFRR bids was transferred to PICASSO, making it necessary to make ex post adjustments to the CBMPs to ensure that the CBMPs reflect the actual prices for balancing energy.

## Governance of the aFRR platform

As of May 2026, there are 29 members in the PICASSO project: APG (Austria), Elia (Belgium), ESO (Bulgaria), HOPS (Croatia), ČEPS (Czech Republic), Energinet (Denmark), Elering (Estonia), Fingrid (Finland), RTE (France), 50Hertz, TenneT DE, Amprion, TransnetBW (Germany), IPTO (Greece), MAVIR (Hungary), Terna (Italy), AST (Latvia), Litgrid (Lithuania), Creos Luxembourg (Luxembourg), TenneT NL (Netherlands), Statnett (Norway), PSE (Poland), REN (Portugal), Transelectrica (Romania), SvK (Sweden), ELES (Slovenia), SEPS (Slovakia), Red Eléctrica (Spain), and Swissgrid (Switzerland). In addition, MEPSO (North Macedonia) is an observer, as well as ENTSO-E. Observers have access to all project information but are not directly involved in it and cannot participate in any decisions.

The 29 members are part of the PICASSO SC, the decision-making body of the project. The chairmanship of the project is elected for a one-year period.

The PICASSO platform has a strong connection with the IGCC platform, as the IGCC TSOs use the same IT system as PICASSO for their IN process. Therefore, the PICASSO and IGCC parties share a common OPSCOM. This committee has been further extended with the MARI project to a Joint OPSCOM.




All PICASSO member TSOs (countries) are:

| | | | |
|---|---|---|---|
| APG (AT) | Elia (BE) | ESO (BG) | Swissgrid (CH) |
| ČEPS (CZ) | 50Hertz, TenneT DE, Amprion, TransnetBW (DE) | Energinet (DK) | Elering (EE) |
| RE (ES) | Fingrid (FI) | RTE (FR) | IPTO (GR) |
| MAVIR ZRt. (HU) | HOPS (HR) | Terna (IT) | Litgrid (LT) |
| Creos Luxembourg (LU) | AST (LV) | TenneT NL (NL) | Statnett (NO) |
| PSE S.A. (PL) | REN (PT) | Transelectrica (RO) | SvK (SE) |
| ELES (SI) | SEPS (SK) | | |

In addition, the following TSO (country) is an observer: MEPSO (MKD). ENTSO-E is also an observer.

Figure 6: Map of PICASSO members.

## Evolution: Implementation timeline and TSOs' accession roadmap

During the period from June 2025 to May 2026, three TSOs accessed the PICASSO platform. Red Eléctrica did so in June 2025, and PSE in July 2025. Additionally, Terna successfully reconnected on 25 November 2025 after its temporary suspension since 15 March 2024.

The evolution of PICASSO is outlined through the implementation timeline and TSOs' accession roadmap.

### Control model evaluation

An extensive report on analyses that have been conducted jointly by all TSOs to compare Control Demand Model (CDM), Control Target Model (CTM) and Control Request Model (CRM) was published as annex of the PICASSO KPI Report. The report fulfils the requirement under Article 13 (4) of the aFRR Implementation Framework. The report is included as an annex of the PICASSO KPI Report 2025. Pages 83 and 84 contain an Executive Summary of the report.

The detailed evaluation concludes that the existing model, CDM, remains the best choice for the PICASSO platform. A change to CTM/CRM would introduce additional complexity and risks without clear benefits, both with regards to efficiency and social welfare. In addition, a transition period would lead to a prolonged period of suboptimal system-wide efficiency, reduced social welfare, and additional implementation costs. For more detailed argumentation, analyses and simulation results, the reader is referred to the full report.

### Expenditure

Please consult expenditure information regarding PICASSO in the EB Cost Report 2025.

## 3.4 IN-Platform (led by the IGCC project)

The IGCC is the implementation project chosen by ENTSO-E in February 2016 to become the European Platform for the IN process (IN-Platform) as defined by EB Regulation Article 22 and established in the IN IF.

IGCC was launched in October 2010 as a regional project and has grown to cover 28 countries and all TSOs required to implement the IN-Platform according to the EB Regulation.

In 2025–2026, the operation of the IN-Platform was without any major incidents. As more TSOs joined PICASSO, the overall explicit netting volume decreased, as expected.

### IGCC governance

The design and implementation of the IN-Platform is led by the IGCC implementation project, which counts 31 TSO members and observers.


All IGCC member TSOs (countries) are:

| | | | |
|---|---|---|---|
| APG (AT) | Elia (BE) | ESO (BG) | Swissgrid (CH) |
| ČEPS (CZ) | 50Hertz, TenneT DE, Amprion, TransnetBW (DE) | Energinet (DK) | ADMIE (EL) |
| RE (ES) | RTE (FR) | HOPS (HR) | MAVIR ZRt. (HU) |
| Terna (IT) | Creos Luxembourg (LU) | TenneT NL (NL) | PSE (PL) |
| REN (PT) | Transelectrica (RO) | ELES (SI) | SEPS (SK) |
| EMS (SRB) | AST (LV) | Elering (EE) | Litgrid (LT) |

In addition, ENTSO-E is also an observer.

Figure 7: Map of IGCC members.

Since Q1 2022, the PICASSO and IGCC projects have had a common project management and meeting organisation to capitalise on the numerous similarities between them. Governance structures and decision-making processes remain separated. Further information on the high-level design of the IN-Platform can be found in the ENTSO-E Balancing Report 2020.

## IGCC evolution: Performance indicators on monetary savings due to imbalance netting

As more TSOs participate in PICASSO, both the netted volume and the associated monetary savings from IGCC are expected to decrease. This is because the PICASSO platform also performs IN in an implicit manner (netting aFRR demand is a very cost-effective way to coordinate aFRR activation). The result can be clearly seen when comparing the total netted volume in IGCC in 2024, which was 13.7 TWh, with the netted volume in 2025, which was 9.8 TWh.

In terms of monetary savings, the effect is even stronger: in 2024, the total savings amounted to €814 million, and in 2025, the total savings were €301 million. Apart from the reduced volume, changes in the settlement procedure also affect these results. Since the beginning of 2025, the settlement procedure for IGCC was adapted towards a four-second resolution to more accurately reflect the "value of the avoided aFRR activation" (VoAAA) for TSOs that participate in PICASSO. As a result, the new procedure for calculating the monetary benefits associated with IGCC uses a four-second basis and relies on the CBMP as it is calculated by PICASSO (for the VoAAA of PICASSO TSOs). The lower aFRR costs that are achieved thanks to PICASSO therefore also reduce the monetary benefits of IGCC. Both the netted volume and the associated monetary savings are expected to further decrease as more members join PICASSO. When all expected members have joined PICASSO, IGCC netted volume and monetary savings are expected to stabilise in stable market conditions.

IGCC will remain important, both for PICASSO and non-PICASSO members, as it enables netting between all IGCC members. In addition, when experiencing certain technical problems, PICASSO members that must disconnect from PICASSO can sometimes remain connected to IGCC, so that the netting potential through IGCC remains available.

Not only does IGCC enable more efficient energy usage, the additionally available aFRR capacity also increases the security of the European electricity transmission system.

The cumulative savings generated through international cooperation by the IGCC since the start of the project in October 2011 through December 2025 reached € 3.5 billion. The data related to the IN-Platform have been published on the Transparency Platform since June 2021. Reports on IN volumes are published on a dedicated page on the **ENTSO-E website**.

## IGCC evolution: TSOs' accession roadmap

Baltic TSOs (Litgrid, AST, and Elering) successfully joined the IN-Platform in 2025. With this, all EU TSOs of the Regional Group (RG) CE are connected to IGCC.

Due to the way the aFRR optimisation interacts with IN optimisation, the IN process will no longer be necessary once all participants in the IN optimisation also take part in aFRR optimisation. Nevertheless, if all IGCC TSOs were to join PICASSO, IGCC could still run as a backup solution in case of PICASSO platform unavailability. However, it is currently not possible to determine when this transition will occur, as some TSOs within the IGCC project have not yet planned their accession to the PICASSO platform.

## IGCC expenditures

Please consult expenditure information regarding IGCC in the EB Cost Report 2025.

# 3.5 Capacity management IT solution

All European balancing energy platforms must receive the available cross-zonal capacity limits (CZCLs) in real time in order to optimise the cross-border activation of balancing energy. The TSOs of each border are responsible for providing and managing these capacities while ensuring compliance with operational security limits. To streamline this process, TSOs have implemented a centralised capacity management approach through a dedicated IT tool, enabling them to provide, manage, and amend CZCLs across all balancing energy platforms.

The CMM was developed to provide this centralised solution and ensure that availability and performance requirements are met. The CMM went live in October 2023. Currently, 11 TSOs are connected to the CMM, as shown in Table 3. Additional TSOs are expected to connect in 2027, including ELES, ESO, Elia, TenneT NL, MAVIR, Transelectrica, HOPS, TernaAPG, REN, and Elering.

| TSO | Date of accession |
|---|---|
| ČEPS | October 2023 |
| Swissgrid | October 2023 |
| Litgrid | September 2024 |
| Red Eléctrica | February 2025 |
| RTE | June 2025 |
| DE TSOs (Amprion, 50 Hertz, TenneT DE, TransnetBW) | May 2025 |
| SEPS | October 2025 |
| ELES | March 2026 |

Table 3: TSO accession to the CMM.

## Main events and achievements

From May 2025 to May 2026, the following main developments were achieved in the scope of the CMM:

- Go-live of v3.2 of the CMM IT system was successfully implemented in 2025. Version 3.2 contained changes related to operational purposes, i. e. the affected TSO policy, timing discrepancy in the mFRR process, etc.
- Go-live of the CMM platform release version 3.5, with improvements to the user interface and one functional update to the rounding principle.
- The decommissioning of the TERRE platform required the CMM platform to adapt functionalities related to the TERRE process. A temporary solution has been implemented, while preparations are underway for the complete removal of TERRE processes, planned for Q1 2027.
- A new CMM version 4 has been designed and is currently under development. This version will accommodate the needs/requirements from HVDC interconnectors as well as the requirements introduced by the shortened intraday market cross-zonal GCT (30 minutes).

## Evolution: Project timeline

The main steps within the CMM project for the years 2026, 2027, and 2028 are described in Figure 8.

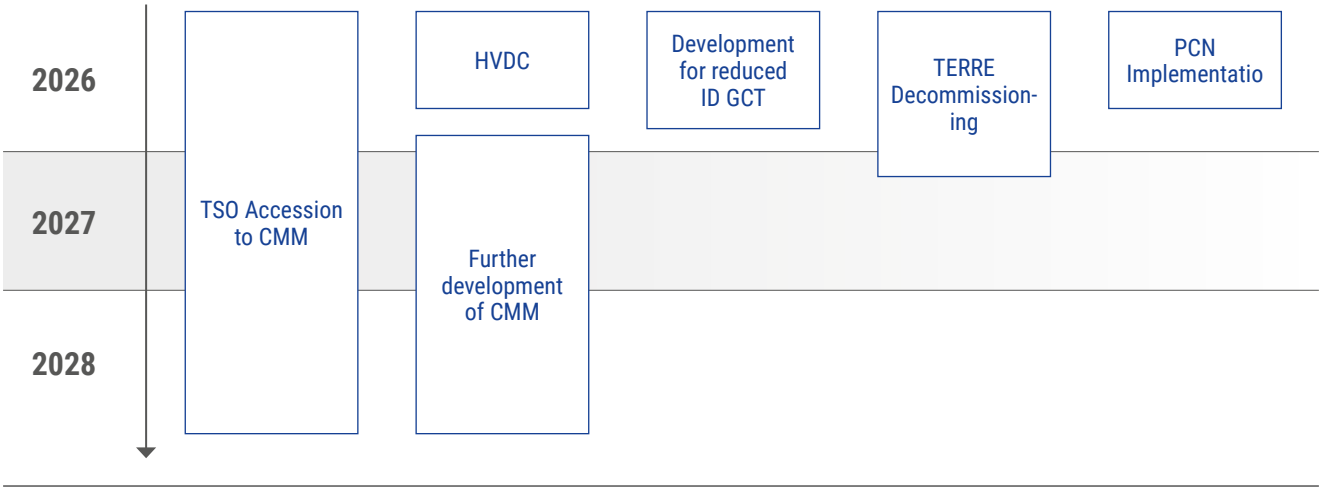



Figure 8: Project timeline of the CMM platform.

The main tasks are the accession of additional TSOs and the development, testing, and deployment of the capacity calculations for HVDC interconnectors.

## Expenditure

Please consult the EB Cost Report 2026 for CMM platform expenditure information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# 4 Balancing capacity cooperations

This section provides an overview of the existing sharing/exchange reserve platforms in Europe that are operating on a voluntary basis.

## 4.1 Nordic aFRR and mFRR capacity markets

The Nordic aFRR capacity market, launched in December 2022, continued operating as the regional mechanism for procuring aFRR capacity across bidding zones by Energinet, Fingrid, Statnett, and Svenska kraftnät, supported by the Nordic Market Management System (NMMS) platform. The market enables the market-based reservation of CZC, where this is assessed to be socioeconomically beneficial compared with allocating the same capacity to forecasted energy trading.

Regional integration of balancing markets progressed in 2024, with the launch of a trilateral mFRR capacity market between Energinet, Fingrid, and Svenska kraftnät, enabling joint procurement of mFRR capacity using allocated CZC.

Further time-resolution harmonisation took place in 2025. In March 2025, 15-minute cross-border intraday trading and 15-minute imbalance settlement were introduced in the Nordic region. Later in the year, the introduction of a 15-minute MTU in the SDAC on trading day 30 September 2025 enabled day-ahead trading and clearing of quarter-hour products across the coupled market. This development is particularly relevant for Nordic balancing capacity markets, as the market-based allocation of CZC for balancing capacity exchange depends on comparing its value for balancing purposes with its value in day-ahead energy trading.

Governance and methodology work also progressed during the period. The Nordic TSOs published an evaluation report on the Nordic aFRR capacity market for 2024, assessing CZC forecast accuracy, utilisation of reservation limits, and welfare impacts across SDAC and the aFRR capacity market.

### Evaluation of Nordic aFRR capacity market benefits and performance in 2025

These PIs are published below, as per PI 3.2 requirements.
Please note that due to delays on the Nordic Report, this data will become available on this **website**.

### Evaluation of Nordic mFRR capacity market benefits and performance in 2025

These PIs are published below, as per PI 3.2 requirements.
Please note that due to delays on the Nordic Report, this data will become available on this **website**.

## 4.2 Market-based application in the Baltics

In 2024, the Baltic TSOs did not jointly procure balancing capacity because their power systems were still synchronised with the Russian and Belarusian SA. During that year, Elering, AST, and Litgrid prepared the joint Baltic balancing capacity market (BBCM) as part of the transition towards synchronisation with the CE SA. Before synchronisation, the TSOs relied mainly on mFRR energy products, while the post-synchronisation framework expanded to include frequency containment reserves (FCR) and aFRR. The synchronisation itself took place on 9 February 2025, when the Lithuania–Poland alternating current (AC) interconnections were energised.

The joint BBCM was launched on 4 February 2025, introducing market-based CZC allocation and enabling joint procurement of FCR and mFRR capacity. Common procurement of aFRR capacity started later, in April 2025, due to delays in joining the PICASSO platform (Baltic TSOs were not using aFRR products before their connection to PICASSO).

On 30 September 2025 (first delivery day 1 October 2025), the BBCM transitioned to a 15-minute MTU, aligning with the introduction of the 15-minute MTU in the SDAC.

The BBCM incorporates several distinct design features, including:

- Automatic substitution of mFRR with aFRR in the optimisation algorithm, where this increases overall welfare
- Reserve sharing between the three Baltic TSOs[7]
- A relatively high limit for allocating CZC to reserves (up to 50 % under normal conditions)

In October 2025, the Baltic TSOs published the first **evaluation** report on the BBCM, assessing aspects such as the performance of the forecast methodology and the resulting market benefits.

As no common balancing capacity procurement mechanism had previously existed in the Baltic region, the market experienced significant price volatility during the first months of operation. However, by the end of 2025, the market had expanded considerably in terms of active market participants, available assets, and bid volumes, which contributed to a notable reduction in price volatility.

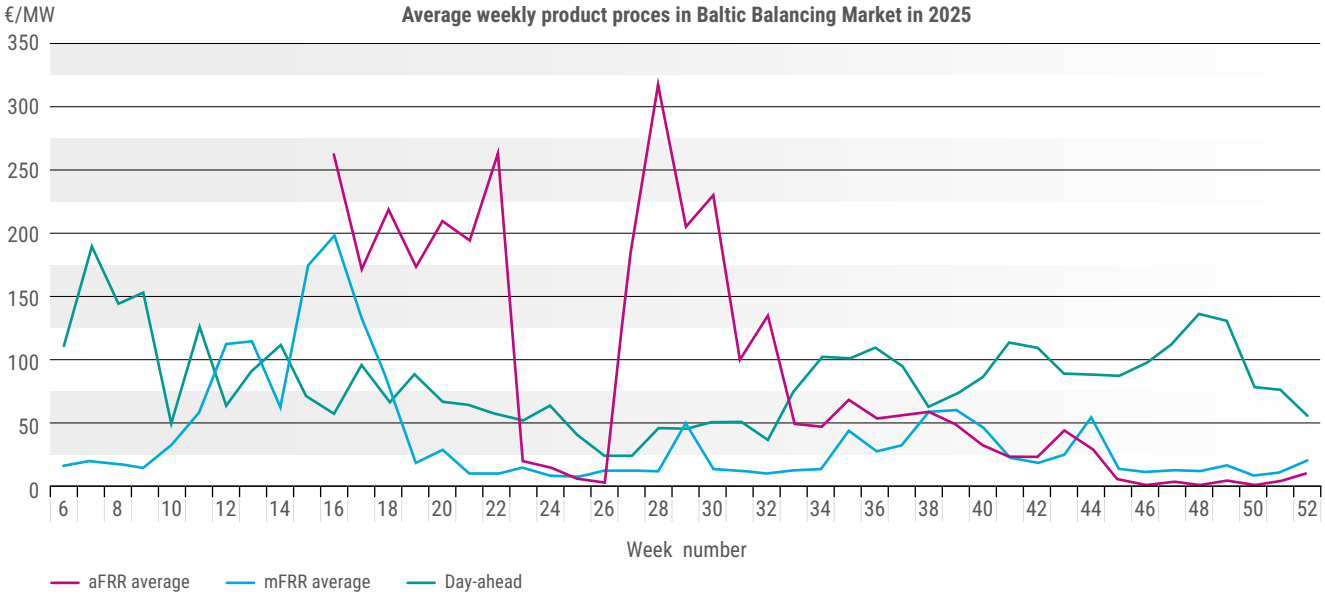



Figure 9: Average prices per week in the BBCM (€/MW/h).

During the first half of 2026, the Baltic TSOs focused on investigating potential improvements in the balancing capacity market, such as more efficient use of CZCs.

Furthermore, work has started on the 2026 evaluation report, which is to be concluded by 4 August 2026.

7 This reserve sharing is not in the sense of the SO Regulation (i. e. consideration in the dimensioning of an LFC block of the reserves of another LFC block).

# 4.3 ALPACA cooperation

On 3 September 2025, the go-live of ALPACA cooperation took place. This cooperation aims to enable TSOs from Austria (AT), Czechia (CZ), and Germany (DE) to jointly procure cross-zonal aFRR capacity and to harmonise markets.

While the joint procurement of aFRR between Austria and Germany is still based on the German–Austrian balancing capacity cooperation (DE-AT-BCC), the joint procurement on the Austria–Czechia and Germany–Czechia borders is based on a probabilistic methodology in accordance with Article 33 (6) of the EB Regulation.

The DE-AT-BCC was established at the end of 2017 to facilitate the exchange of up to 80 MW of CZC for aFRR between Germany and Austria. The CZC for the exchange of aFRR is allocated based on an optimisation process, which is conducted on both a monthly and a weekly basis:

- The monthly optimisation determines the allocation result, which is then considered in the monthly capacity auction conducted by the Joint Allocation Office (JAO) for the upcoming month.
- The weekly optimisation refines the monthly result using more recent data, but cannot exceed the previously allocated monthly CZC. If the weekly optimisation results in a lower allocation, the difference is returned to the energy market.
- The weekly result serves as a constraint for common procurement optimisation.

The joint aFRR procurement with Czechia is based on the approved methodologies according to Articles 33 (1), 33 (6), and 58 (3) of the EB Regulation by ALPACA NRAs.

The methodology under Article 33 (6) requires ALPACA TSOs to forecast the risk of unavailable CZC due to planned and unplanned outage or congestion and the risk of insufficient reserve capacity due to the unavailability of CZC. Therefore, the ALPACA TSOs implemented two forecasting tools. More detailed information can be found in the official **ALPACA Forecasting Tool Description**.

The application of the probabilistic methodology represents an intermediate step towards adopting the harmonised market-based allocation methodology under Article 38 (3) of the EB Regulation, which was approved by ACER on 29 January 2025. ALPACA TSOs intend to apply this approach.

## Evaluation of the benefits

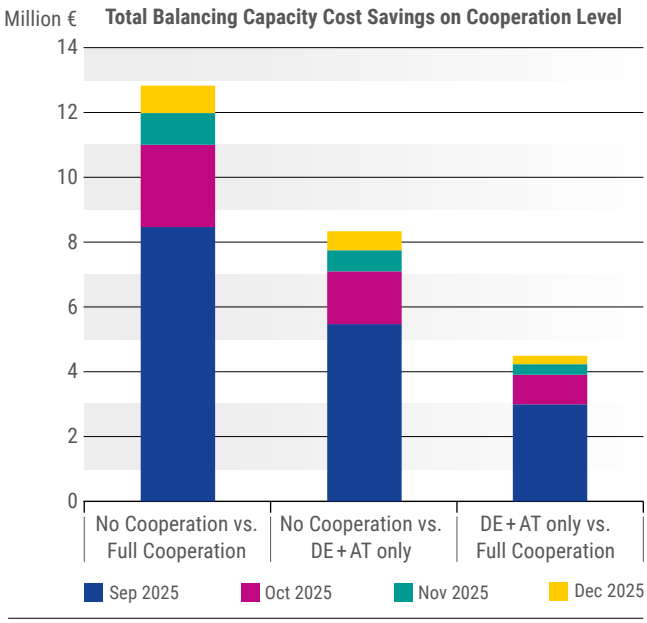



Figure 10: Total cost savings in ALPACA (mill. €).

The total balancing capacity cost savings at the cooperation level shows that the integration of Czechia into the existing DE + AT cooperation resulted in balancing capacity cost savings of € 4.50 million over four months (from September to December 2025). The initial DE–AT cooperation recorded balancing cost savings of € 8.36 million. Hence, the overall procurement costs within the cooperation could be reduced by € 12.86 million. The highest savings occurred in September, mirroring the high exchange volumes in this month.

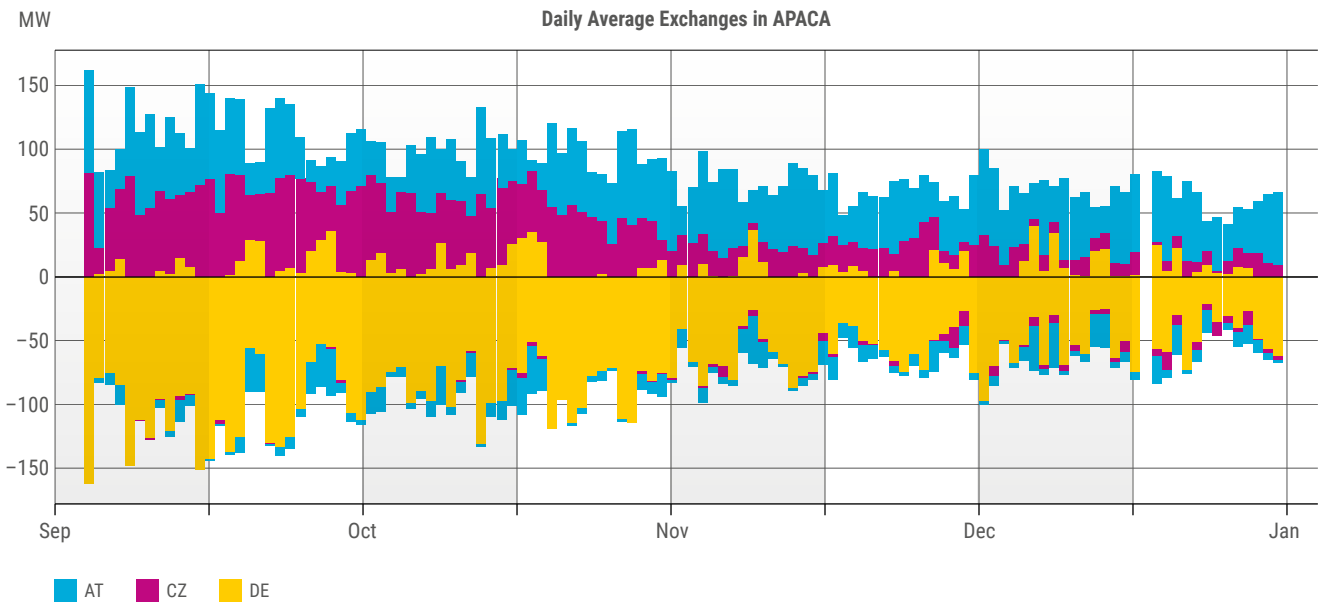



Figure 11: Daily average exchanges in ALPACA (MW).

The TSOs ELES, HOPS, MAVIR, RTE, Swissgrid, and TenneT NL are currently observing the cooperation.

## 4.4 COBRA project

The COBRA project was established as an implementation initiative to develop the common optimisation function for the harmonised market-based allocation of CZC. The project is based on the HCZCAM (see Chapter 2.1 of the Balancing Report).

As of May 2026, the project currently involves TSOs from Austria, Czechia, Denmark, Estonia, Finland, Germany, Latvia, Lithuania, the Netherlands, Norway, and Sweden.

The implementation of the COBRA project is structured into three main phases: (i) specification and design, (ii) procurement, and (iii) development and testing.

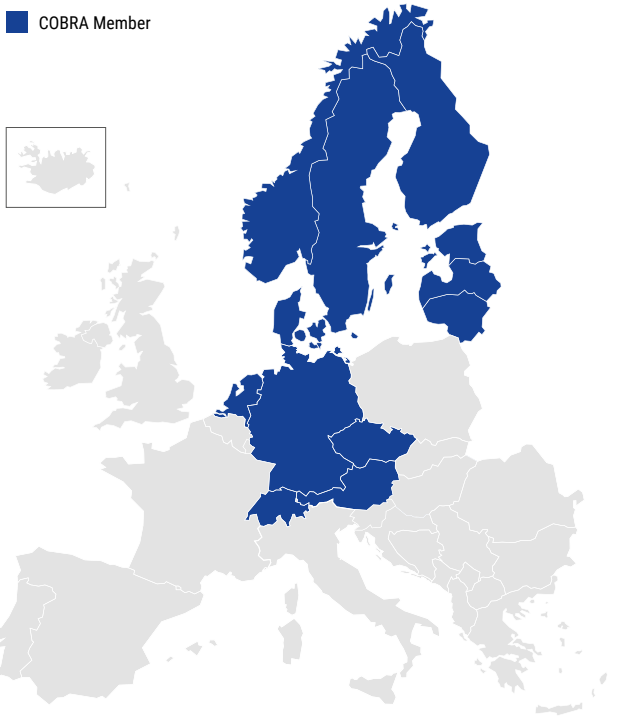



Figure 12: Map of COBRA project members.

### Phase 1 – Specification and Design

The first step of the project was to draft the business requirements of the CZCAOF algorithm. In this phase, COBRA TSOs further developed the "Set of Requirements" received from All TSOs into detailed IT specifications suitable for the tendering of the HCZCAOF software. The detailed IT specifications define both the necessary general and regional specifications from the COBRA TSOs.

### Phase 2 – Procurement

The second step of the project is the procurement of the HCZCAOF software, where an IT vendor will be selected to develop the software through a European tendering process. The procurement is ongoing at the time of writing. Once the IT vendor has been chosen, the development work will begin.

### Phase 3 – Development and Testing

In the third step, the IT vendor will develop the HCZCAOF software in close collaboration with the TSOs. This will be followed by a testing phase, in which TSOs will verify that all functionalities meet the specified requirements.

According to the HCZCA methodology, the deadline for the development of the CZCAOF is 30 June 2026.

TSOs applying the methodology pursuant to Article 38(1)(b) of the EB Regulation must implement the software by 30 June 2027.

At the time of publication of this report, no detailed implementation timeline can be provided. However, it should be noted that the aforementioned deadlines are not expected to be met.

## 4.5 FCR cooperation

In accordance with the objectives of the EB Regulation, the FCR cooperation provides a voluntary common market for procuring and exchanging FCR capacities. The FCR cooperation currently involves 12 TSOs from nine countries, as well as three observers.

The main principles, governance, and decision-making process underwent only minor changes in 2025. A detailed overview of the FCR cooperation can be found in the **ENTSO-E Balancing Report 2020** and **Market Report 2021**.

### Market development

FCR cooperation TSOs worked on the implementation of a new TSO–TSO settlement model. TSOs submitted an amendment to the TSOs' proposal for the establishment of common and harmonised rules and processes for the exchange and procurement of balancing capacity for FCR in accordance with Article 33 of Commission Regulation (EU) 2017/2195 establishing a guideline on electricity balancing to NRAs in February 2025, and NRAs approved the amendment in August 2025. The change in the TSO–TSO settlement does not affect BSP remuneration or the total TSO procurement cost; rather, the new settlement mechanism changes the distribution of costs among TSOs. The go-live of the new settlement took place on 1 January 2026.

### Evolution of FCR prices in 2025

In 2025, prices for FCR procurement were broadly similar to those in previous years, with the exception of 2022, when unusually high prices were seen following the rise of energy prices in Europe starting in 2021 (see Figure 13). The prices in Belgium decreased significantly after the previous increase in 2024.

Prices also decreased in the Czech Republic, where in 2025 they reached levels similar to those in other countries. Prices in France and the Netherlands increased by more than 100%; however, in France, the average price remains below the average in other countries. In the Netherlands, the increase in average prices was driven by several auctions at the end of October, during which the local marginal price (LMP) exceeded € 8,000/MW/h.

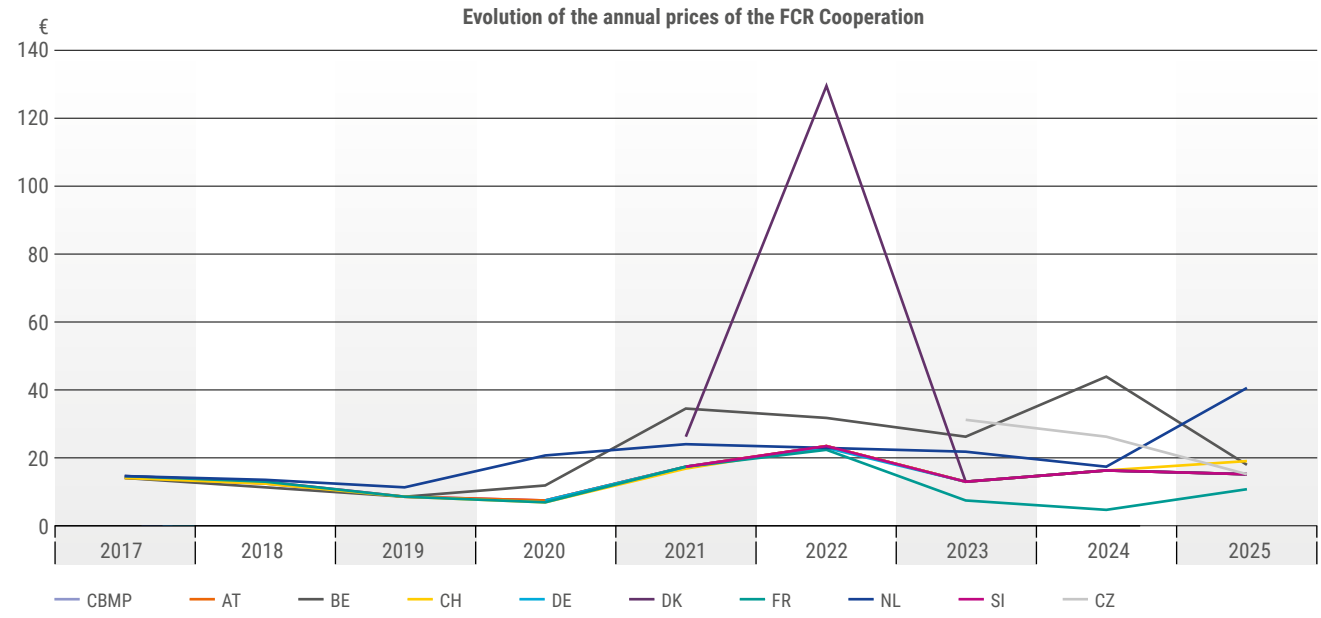



Figure 13: Evolution of the annual prices of the FCR cooperation (€).

Figure 14 shows the daily prices for each country in the FCR cooperation in 2025, as well as the level of price convergence. Price convergence occurs when the LMP is equal to the CBMP. This is usually the case when no constraints are hit (e. g. import or export limits) that could influence the LMP. Austria, the Czech Republic, Denmark, Germany, and Slovenia had a very high convergence of prices in 2025, which reached or were close to 100 %, with only a few situations with a higher or lower LMP. Belgium, the Netherlands, and Switzerland reached their core share limit in 20–35 % of cases, resulting in higher prices decoupled from the rest of the cooperation. On the other hand, France reached its export limit in almost 50 % of cases, resulting in a lower LMP. However, this share is significantly lower compared to 2024, when it exceeded 80 %. The level of price convergence per TSO for 2025 is shown in Figure 15.

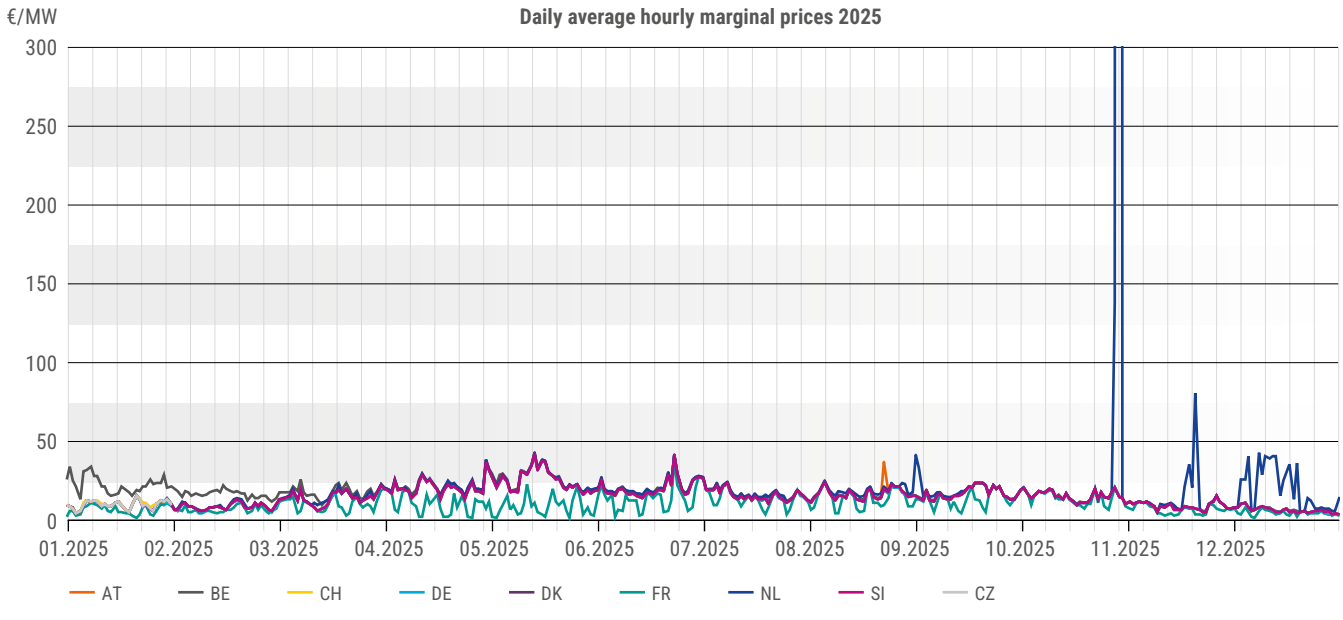



Figure 14: Daily average hourly marginal prices (€/MW).

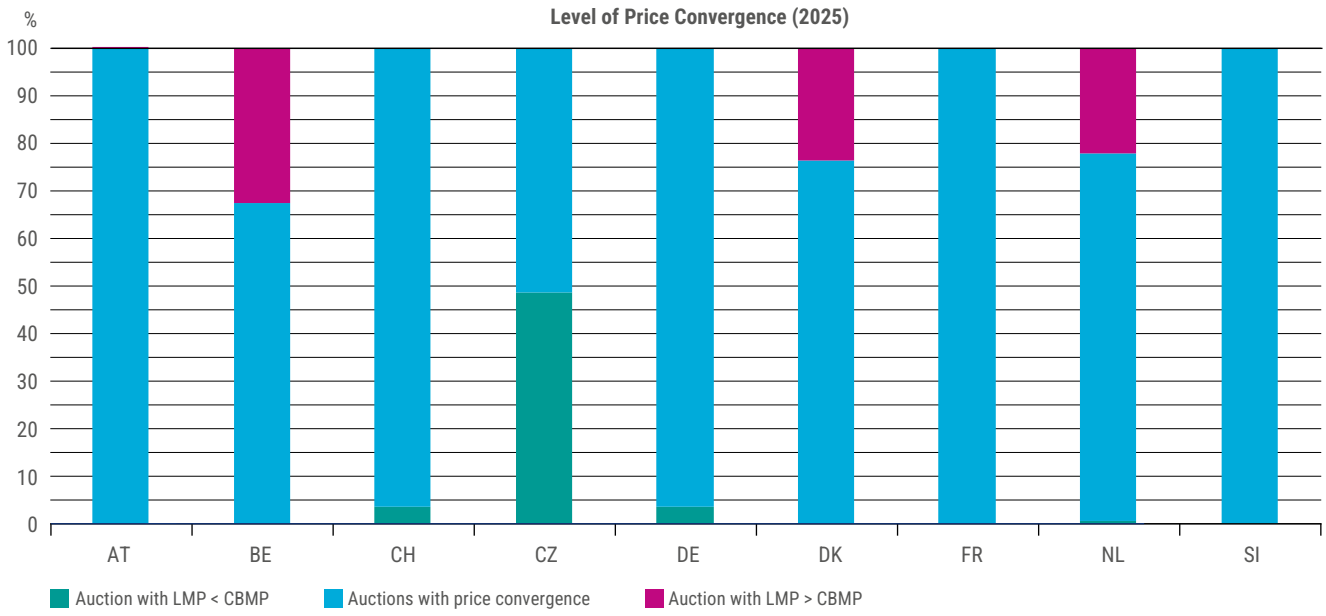



Figure 15: Level of price convergence.

Figure 16 shows the resulting mean position of imported (negative value) or exported (positive value) FCR, calculated as the mean across all 2,190[8] auctions in 2025. In addition, the mean import and export positions are shown as mean values for auctions with imported and exported FCR, respectively.

Table 4 shows the percentage share of export and import (or auctions with no exchange necessary). It is evident that the main exporting country in 2025, both in the total amount and as a percentage share, was France, which often reached its export limit, followed by Austria and Germany.

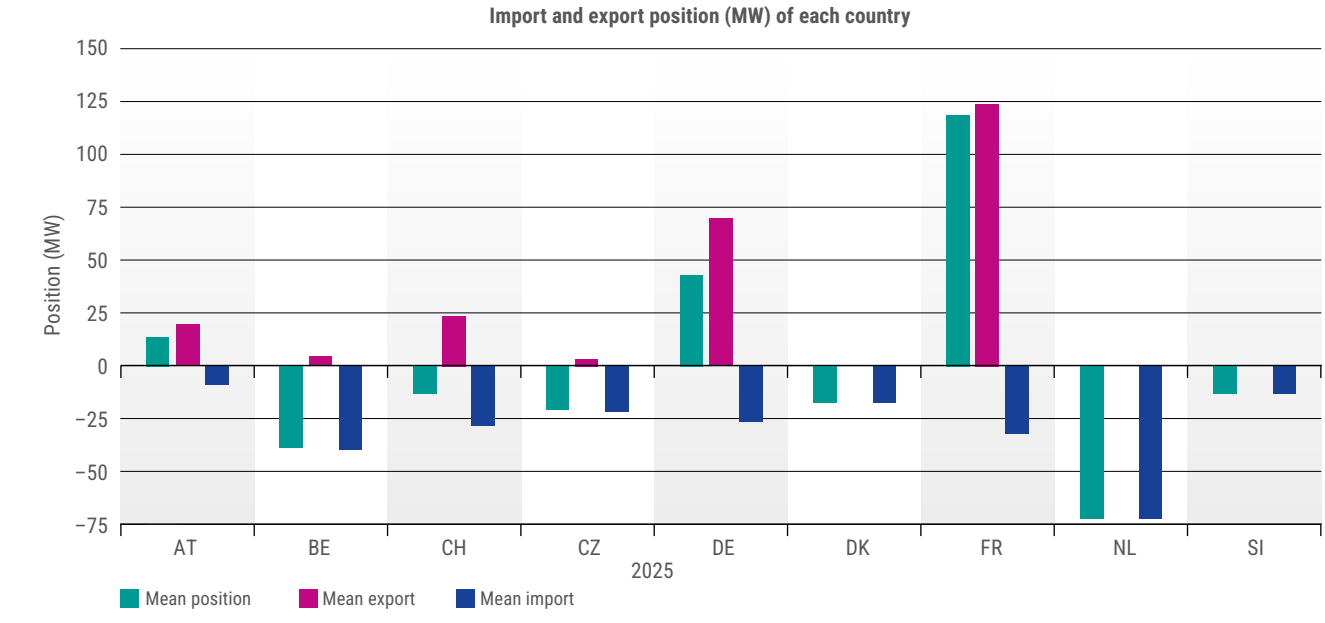



Figure 16: Import and export position of each country.

8 Six FCR auctions per day x 365 days.

France exports in 97 % of FCR auctions, followed by Austria with 79 % and Germany with 72 %. In contrast, Belgium, the Czech Republic, Denmark, the Netherlands, and Slovenia were *importing* FCR to fulfil their demand. Among the mean importers, Belgium, the Czech Republic, and Switzerland also exported in at least some cases, while the other countries were importing in 100 % of cases.

| | AT | BE | DK | FR | DE | NL | SI | CH | CZ |
|---|---|---|---|---|---|---|---|---|---|
| **Export** | 79 % | 3 % | 0 % | 97 % | 72 % | 0 % | 0 % | 28 % | 3 % |
| **No exchange** | 2 % | 0 % | 0 % | 0 % | 1 % | 0 % | 0 % | 2 % | 1 % |
| **Import** | 19 % | 97 % | 100 % | 3 % | 27 % | 100 % | 100 % | 70 % | 96 % |

Table 4: Share of FCR exports and imports.

## Evaluation of the benefits

The benefits of the FCR cooperation are evaluated based on a comparison between two situations:

- **Case A:** Each country procures its FCR demand separately.
- **Case B:** Joint procurement of FCR (while taking into account the core share and export limits of each country), which reflects the current situation.

These scenarios are analysed for a one-year period from January 2025 to December 2025, using the MOLs used in auctions in 2025. The starting assumption is that bids would be the same in both cases. In reality, different scenario conditions are likely to influence the bids. The FCR cooperation addresses this in two ways:

- Valuing the under-procured volumes using markups of up to 1.5 times the clearing price of the last accepted bid
- Removing extremely high-priced bids

For the two scenarios, the procurement costs and the BSP surplus (i. e. the difference between the marginal price and the bid price for the activated bids) are compared. The overall impact on procurement costs and BSP surplus provides an indication of the benefits linked to joint procurement in terms of social welfare.

## Under-procurement of FCR

Under-procurement occurs in a country when there are insufficient local bids to cover the demand for that country. In case B, this occurs only very rarely, if at all: with imports, the entire demand of each country can be covered by bids in the MOL. In simulation A, using the same bids, there is a significant volume of under-procurement.

It is likely that the prices observed in the cooperation discouraged some BSPs from bidding their entire FCR flexibility, as the expensive bids were unlikely to be selected, causing lower available volume in some countries. It can be concluded that without the FCR cooperation, more assets would have been offered in the market. Therefore, the FCR cooperation assumes that under-procurement in a country would be resolved with more bids at the respective LMP.

## Extreme high-priced bids

Sometimes, BSPs submit bids with extreme prices (sometimes over 1,000 times the LMP). If the FCR cooperation uses the existing MOL for the simulation of FCR procurement without exchanges, these bids cause extreme procurement costs that are considered unrealistic.

(If there is no regular exchange of BSPs, BSPs are expected to submit additional bids at a lower price.) Therefore, the simulation has been executed with a price cap, removing all unselected bids with a price at or above € 1,000/MW per four-hour procurement duration.

## Results

For 2024, the calculated benefit was € 101 million per year when simulating a specific scenario for the Netherlands to reduce unrealistic benefits caused by very high-priced bids.

In 2025, the calculation was performed for all FCR cooperation countries with no under-procurement markup. The benefit calculation result reached € 146.2 million.

The results of the simulations are summarised in Table 5.

| | Procurement costs (€ Million p. a.) | BSP surplus (€ Million p. a.) | Under-procurement | Impact on social welfare (€ Million p. a.) |
|---|---|---|---|---|
| **Simulation A** | 653.9 | 471.2 | 55.7 MW | – |
| **Simulation B** | 181.2 | 144.6 | ~ 0 | – |
| **B-A** | 472.7 | -326.6 | – | 146.2 |

Table 5: Evaluation of the benefits of the FCR cooperation.

To calculate the impact on social welfare, it is necessary to evaluate the effects on TSOs' procurement costs and BSPs' surplus. As shown in the table above, the simulation demonstrates a reduction in procurement costs, thereby increasing welfare for TSOs. Conversely, the BSPs' surplus decreased, reducing their welfare. Overall, the cooperation achieved a net increase in total social welfare.

# 5 The evolution of balancing products: analysis of suitability, harmonisation, and market integration

The integration of balancing markets is one of the key objectives of the EB Regulation. In accordance with Article 25(3) of the EB Regulation, TSOs must periodically review the standard products used for balancing energy and capacity.

This chapter addresses the specific legal requirements set out in Article 59(3)(f), (g), and (h) of the EB Regulation, which mandates an assessment of the suitability, evolution, and harmonisation of balancing products, as well as an analysis of the continued use of specific products.

This chapter supports the requirements under Article 25(3) of the EB Regulation, which requires a review of the list of standard products for balancing energy and balancing capacity. A detailed analysis of the subject addressed in this chapter has been documented in this review and will be further documented in a future review, based on the conclusions of the current review.

The analysis concluded that the current legislation is adequate. Criticality remains low, as the ongoing connection of additional TSOs to the platforms means that practical experience is still limited. The available experience so far indicates that the current definition and design of the products are appropriate, which can be demonstrated using the evaluation metrics mentioned. It is assumed that this trend will be reinforced as more TSOs are connected in the near future. As a result, no concrete modifications as part of an official update to the standard product definitions should be made.

## 1 // Suitability and Evolution of Standard Products (Article 59(3)(f))

An analysis of standard products for aFRR and mFRR confirms that the current harmonised definitions are fundamentally suitable for secure system operation and efficient market functioning.

- **Current Performance:** The performance indicators in Chapter 6 show that standard products are supported by substantial bid volumes and stable price formation across participating TSOs.
- **Technological Evolution:** There is no evidence that current product definitions act as a barrier to new technologies.
- **Proposed Improvements**: While the core definitions remain robust in TSOs' opinion, some TSOs have identified specific parameters for potential refinement, including reducing bid granularity from 1 MW to 0.1 MW to facilitate smaller providers. Nevertheless, this is merely a potential parameter change that should be analysed in more detail at a later stage.

## 2 // Harmonisation of Products and Market Integration (Article 59(3)(g))

The level of harmonisation achieved through standard products is a primary driver of European balancing market integration.

- **Integration Status:** Implementation is widespread and expanding, with 20 TSOs already connected to PICASSO (aFRR) and 16 to MARI (mFRR) as of May 2026. Further accessions are scheduled through 2028, which will further enhance liquidity. Further information can be found in Chapter .
- **Effects of Non-Harmonisation:** True "non-harmonisation" (the use of local products) is decreasing as TSOs join European platforms. However, divergent national requirements, such as different GCTs, can constrain the practicality of cross-border capacity procurement.
- **Welfare Impacts:** Positive social welfare contributions are observed at the cooperation level, specifically driven by the exchange of balancing energy and netting of needs at different time frames made possible by standard products.

## 3 // Specific Products: Justifications and Market Impact (Article 59(3)(h))

Specific products continue to play a limited, targeted, and complementary role in the balancing landscape.

- **Justifications for Use:** Some TSOs rely on specific products only when standard products cannot meet defined system needs, though it must be highlighted that their number of activations and corresponding volumes are quite low. These include:
  - **Emergency Tools:** Products activated only after the standard merit order is exhausted.
  - **Cost Efficiency:** Cases where specific national products demonstrably reduce total balancing costs compared to a full shift to standard products.
- **Effect on Integration:** This analysis finds that specific products do not undermine European market integration. Their activation volumes remain very low relative to standard products. They function as a safety net to preserve system security without distorting the primary harmonised markets.

# Conclusion

This analysis confirms that standard aFRR and mFRR products are effective pillars of European market integration, providing operational stability and significant social welfare gains through the PICASSO and MARI platforms. While experience is still limited at this stage, this development is expected to continue as more TSOs accede to the platforms. While specific products continue to serve a justified, niche role for localised technical needs, they do not seem to impede broader harmonisation or signal a need for regulatory change. Indeed, specific products play a complementary role, and their use neither undermines the use of standard products nor reduces the positive welfare effects generated by standard products.

# 6 Electricity balancing performance indicators

Electricity balancing performance indicators are a tool that allows the analysis and assessment of the results of the integration of balancing markets, following the EB Regulation. This section was created based on data available on the Transparency Platform, provisions from voluntary reserve exchange TSO cooperation, and the balancing energy platforms that are currently operational.

Please note that TSOs must have connected to balancing platforms by 30 September 2025 to be considered in this chapter. In this report, we make an exemption for Terna due to its reconnection to PICASSO in November 2025.

## 6.1 Indicator on the availability of balancing energy bids, including the bids from balancing capacity[9]

| | |
|---|---|
| **Definition** | Yearly average values of submitted available (MW) and unavailable (MW) bids **of balancing energy per process (aFRR, mFRR, and RR), direction (upward/downward), and type of product (standard/specific/local)**[10] as collected by TSOs. All balancing energy products (RR, mFRR, aFRR) will appear together in the same graph for each TSO.<br><br>The indicator includes, for each TSO, load frequency control (LFC) area, bidding zone (BZ), and LFC block:<br><br>**1 // Available upward** balancing energy bids for each type of process and product<br><br>**2 // Available downward** balancing energy bids for each type of process and product<br><br>**3 // Unavailable upward** balancing energy bids for each type of process<br><br>**4 // Unavailable downward** balancing energy bids for each type of process |
| **Legal reference** | Article 59 (4)(a) of the EB Regulation |
| **Time reference** | Yearly |
| **Clarifications on data from the Transparency Platform** | Transparency Platform data has been merged in terms of standard and local/specific products (aFRR, aFRR LS, and aFRR CS into aFRR and mFRR DA, mFRR SA, and mFRR into mFRR) to display the data below.<br>Furthermore, TransnetBW–TSO_Name data has been merged into different TSOs due to it being the PICASSO common service provider (CSP) and reporting such data for different TSOs.<br>The presented data for Greece combines both aFRR and mFRR energy bids. |

Table 6: Indicator on the availability of balancing energy bids, including the bids from balancing capacity

9 Figure 17 does not distinguish between standard, specific, and local products.

10 It is not distinguished between standard, specific and local products in the Figure 17.

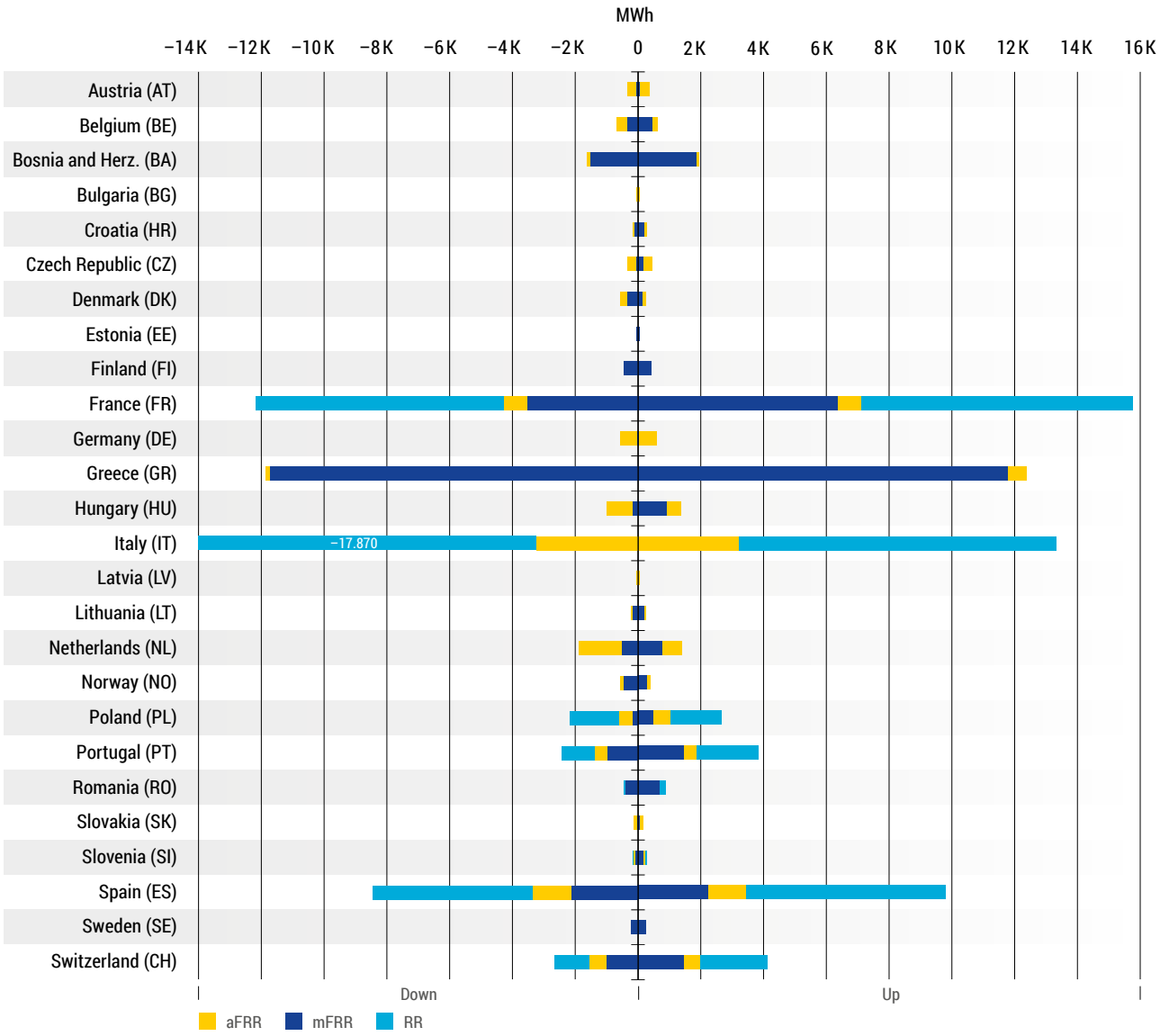



Figure 17: Available standard upward and downward aggregated balancing energy bids, including capacity bids in 2025 (MW).

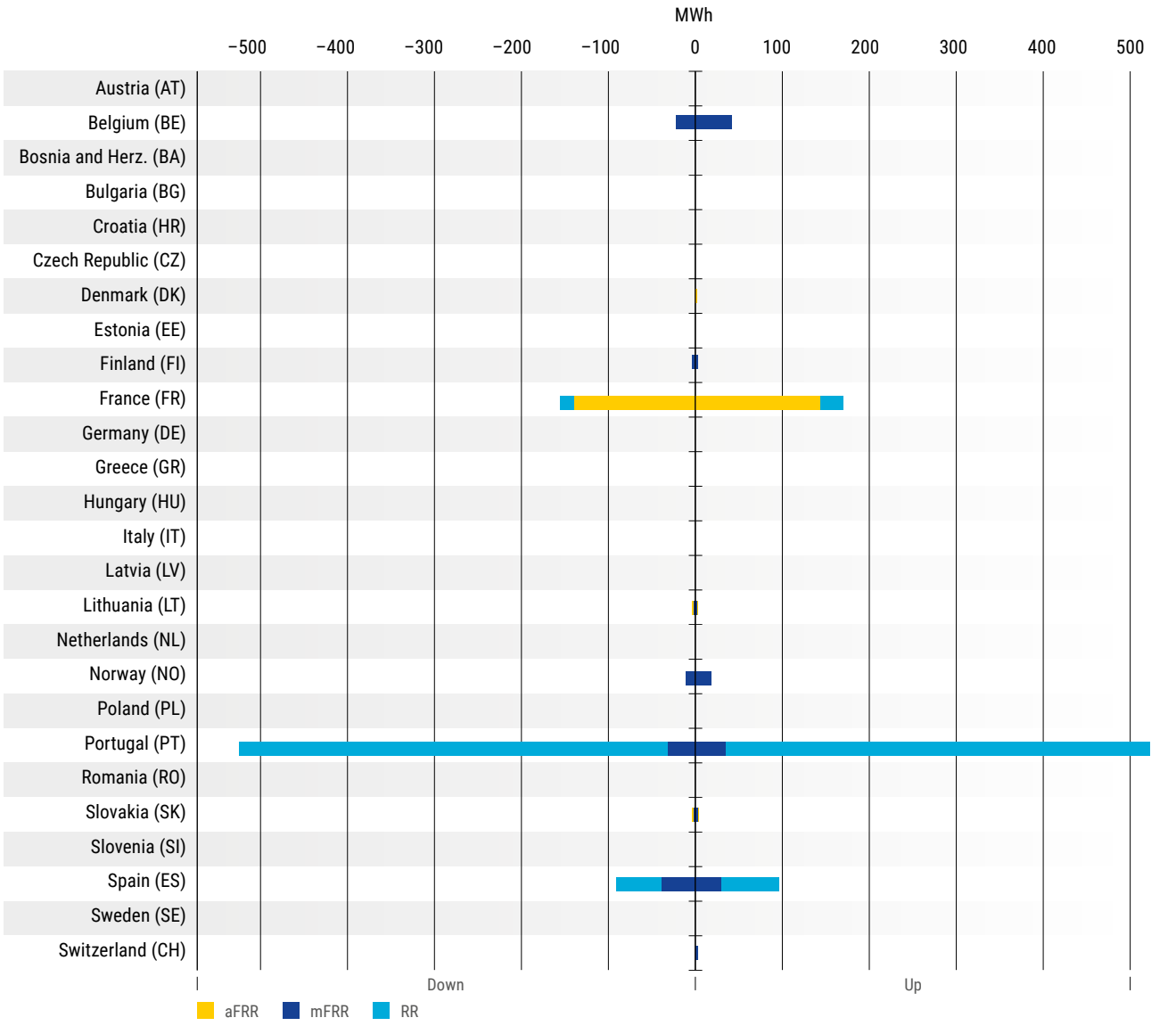



Figure 18: Unavailable average upward and downward aggregated balancing bids (MW)

# 6.2 Social welfare impact due to exchange and sharing of reserves and activation of balancing energy platforms using standard products and savings derived from IN

## 6.2.1 Balancing energy activation social welfare impact

| | |
|---|---|
| **Definition** | **Social welfare impact:** The social welfare increment for each exchange balancing energy market is calculated by comparing coupled/decoupled clearings. The social welfare positive increments for balancing energy activation are calculated by comparing coupled and decoupled market results. The social welfare in each market is understood as:<br>a) BSP's surplus, b) TSO's savings (inelastic needs)/ TSO's surplus (elastic needs), and c) TSO's congestion income.<br>TSOs will report the social welfare impact on a monthly basis per cooperation level, not at the TSO level. |
| **Legal reference** | Articles 59 (4)(b) and 59 (4)(c) of the EB Regulation |
| **Time reference** | Yearly |

Table 7: Indicator 5.2.1. on balancing energy activation social welfare impact.

## KPI 6.2.1: aFRR platform: social welfare impact: producer rent, consumer rent, aand congestion rent (M€)

The social welfare impact is incremental, meaning that the values are not absolute but rather represent the differential between the final social welfare and the social welfare in decoupled run mode. Please note that the values for TSOs are affected by their accession timelines.

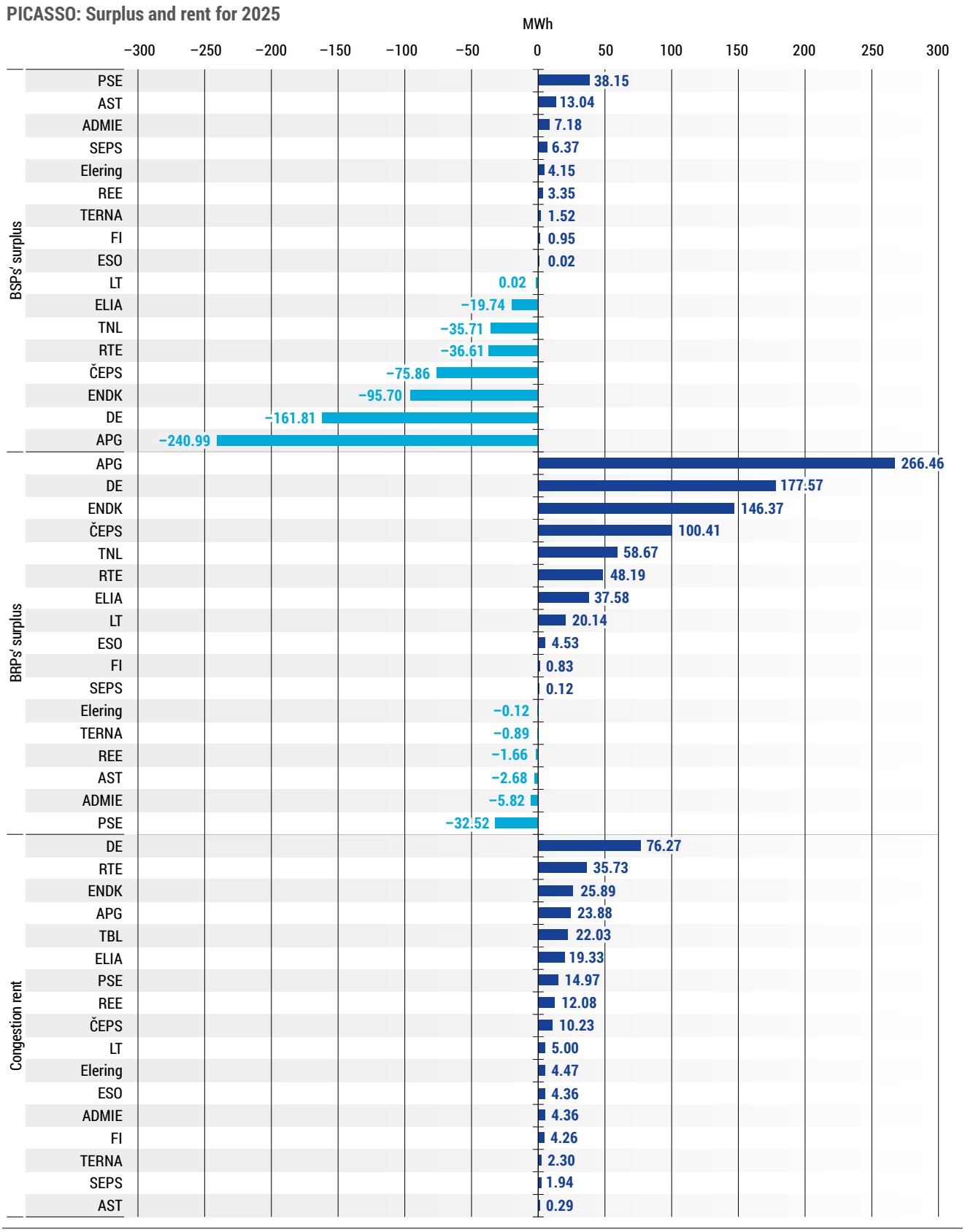



Figure 19: PICASSO-related incremental surpluses and rent for BSPs, BRPs, and TSOs in 2025 (M€).

## KPI 6.2.1: mFRR platform: social welfare impact: producer rent, consumer rent, and congestion rent (M€)[11]a

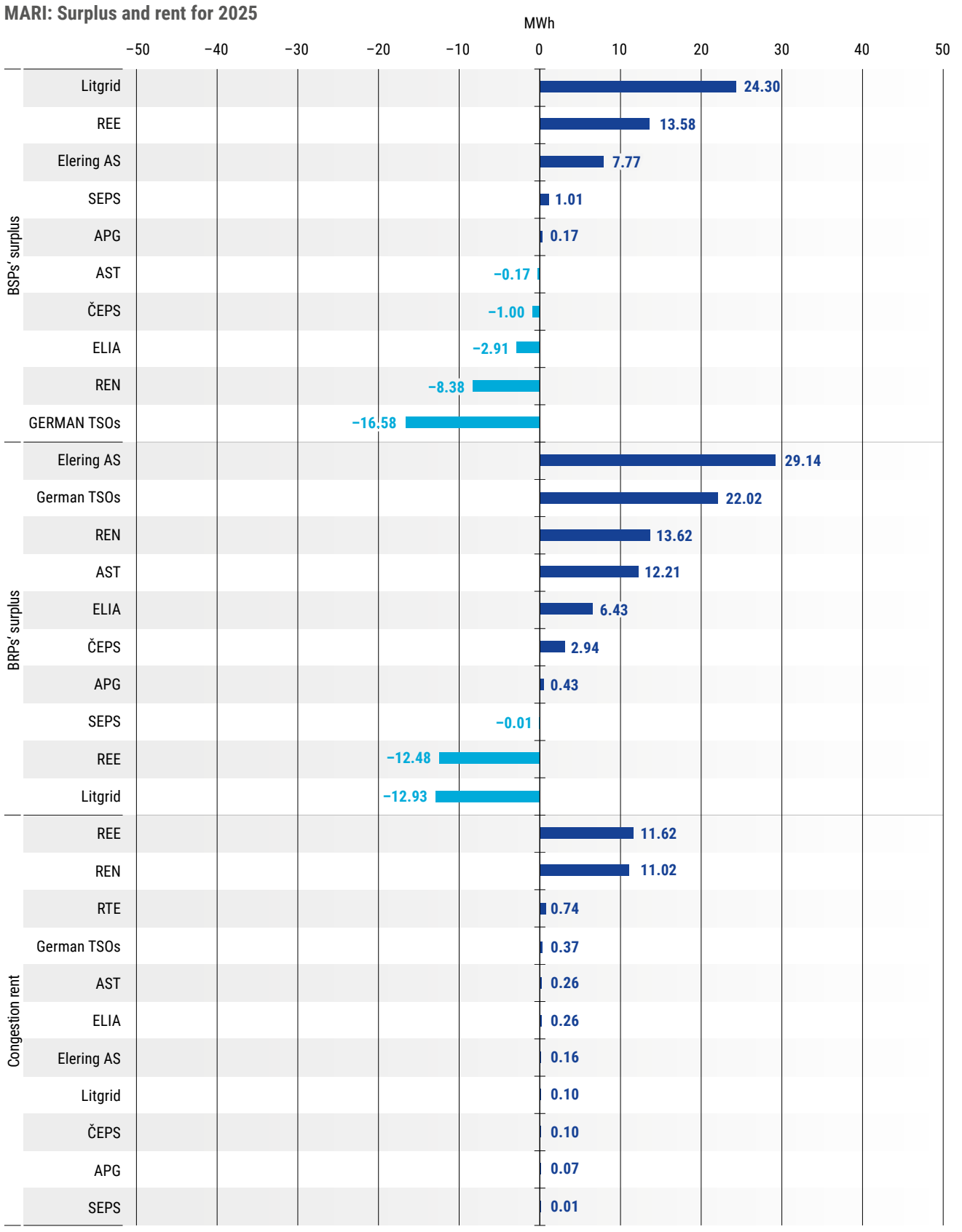



Figure 20: MARI-related surpluses and rent for BSPs, BRPs, and TSOs in 2025 (M€).

11 Please note that congestion rent data for REE and RTE are affected by their connection to MARI.

## KPI 6.2.1: aFRR: differential final vs dc (social welfare final – social welfare decoupled run)(M€)

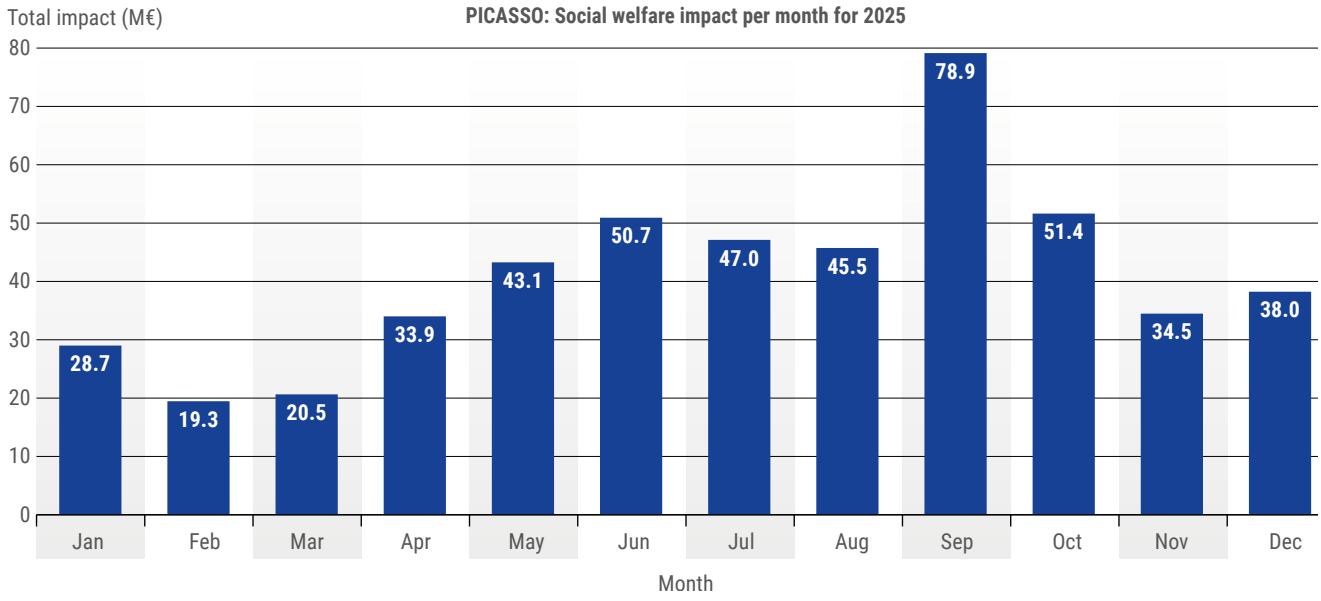



Figure 21: PICASSO social welfare compared to the decoupled run for 2025.

## KPI 6.2.1: mFRR: differential final vs dc (social welfare final – social welfare decoupled run)(M€)

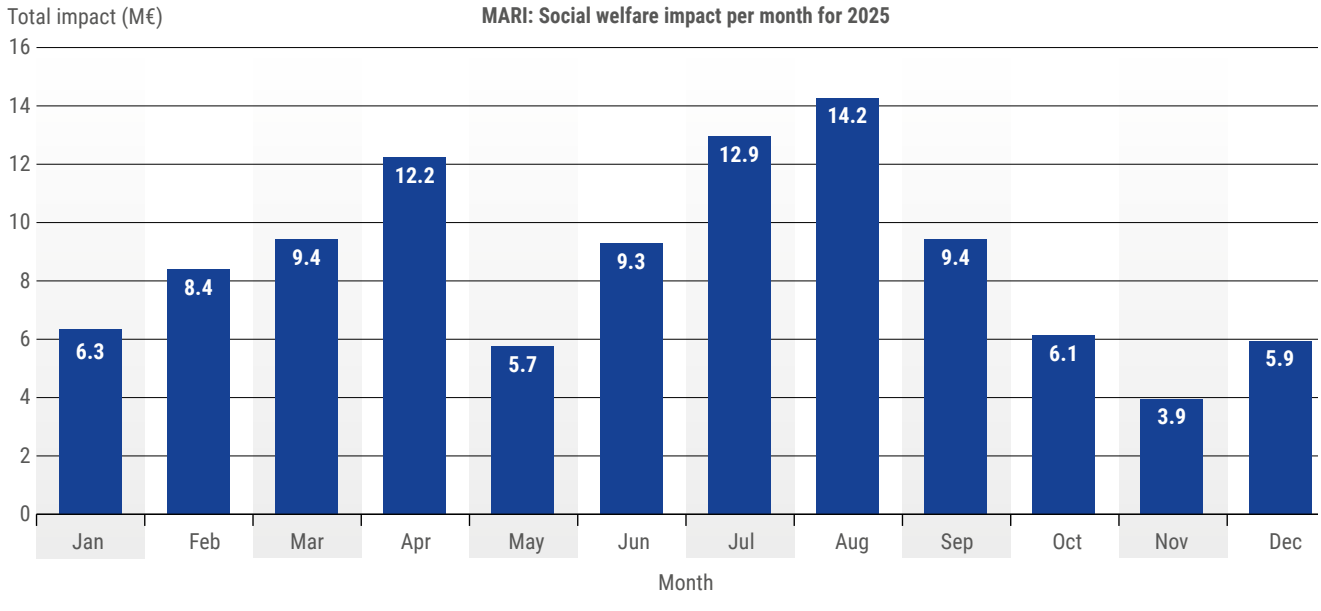



Figure 22: MARI social welfare compared to the decoupled run for 2025.

### KPI 6.2.1: RR: differential final vs dc (social welfare final – social welfare decoupled run)(M€)

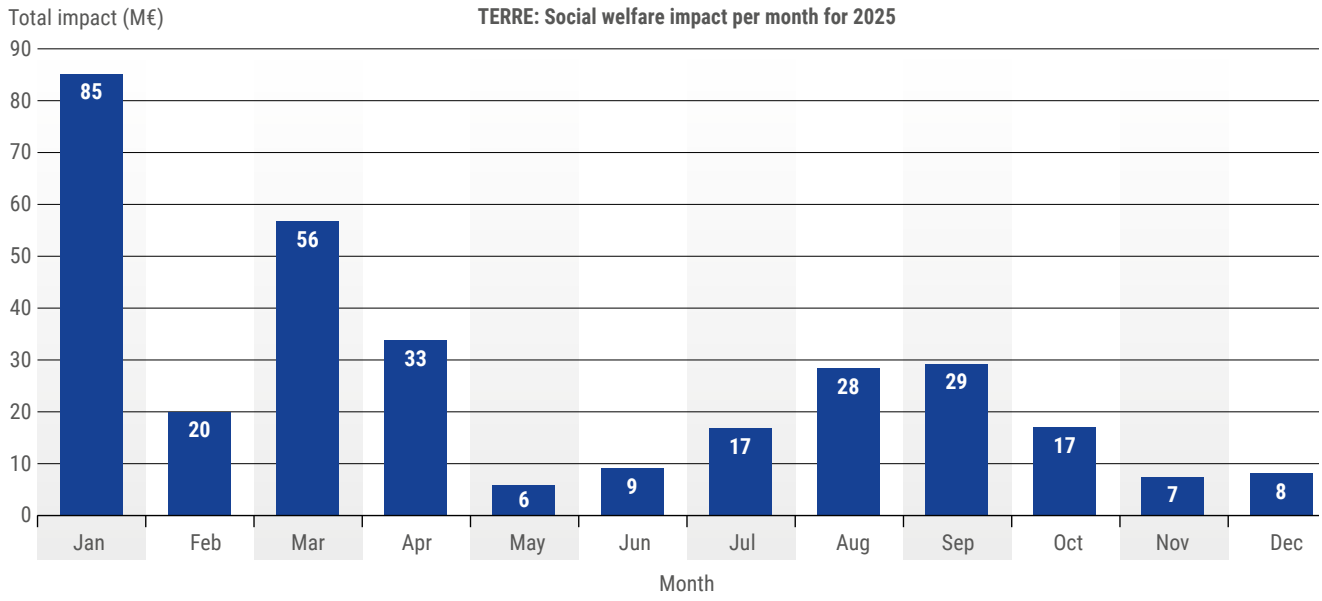



Figure 23: TERRE social welfare compared to the decoupled run for 2025.

## 6.2.2 Imbalance netting savings

| | |
|---|---|
| **Definition** | Monetary savings for IN are calculated based on the difference between the respective TSO's aFRR opportunity prices and IN settlement prices for imported or exported energy. |
| **Legal reference** | Articles 59 (4)(b) and 59 (4)(c) of the EB Regulation |
| **Time reference** | Yearly |

Table 8: Indicator 5.2.2. on savings from imbalance netting.

### KPI 6.2.2: Imbalance netting savings – IN-Platform: monetary annual savings per TSO (M€)

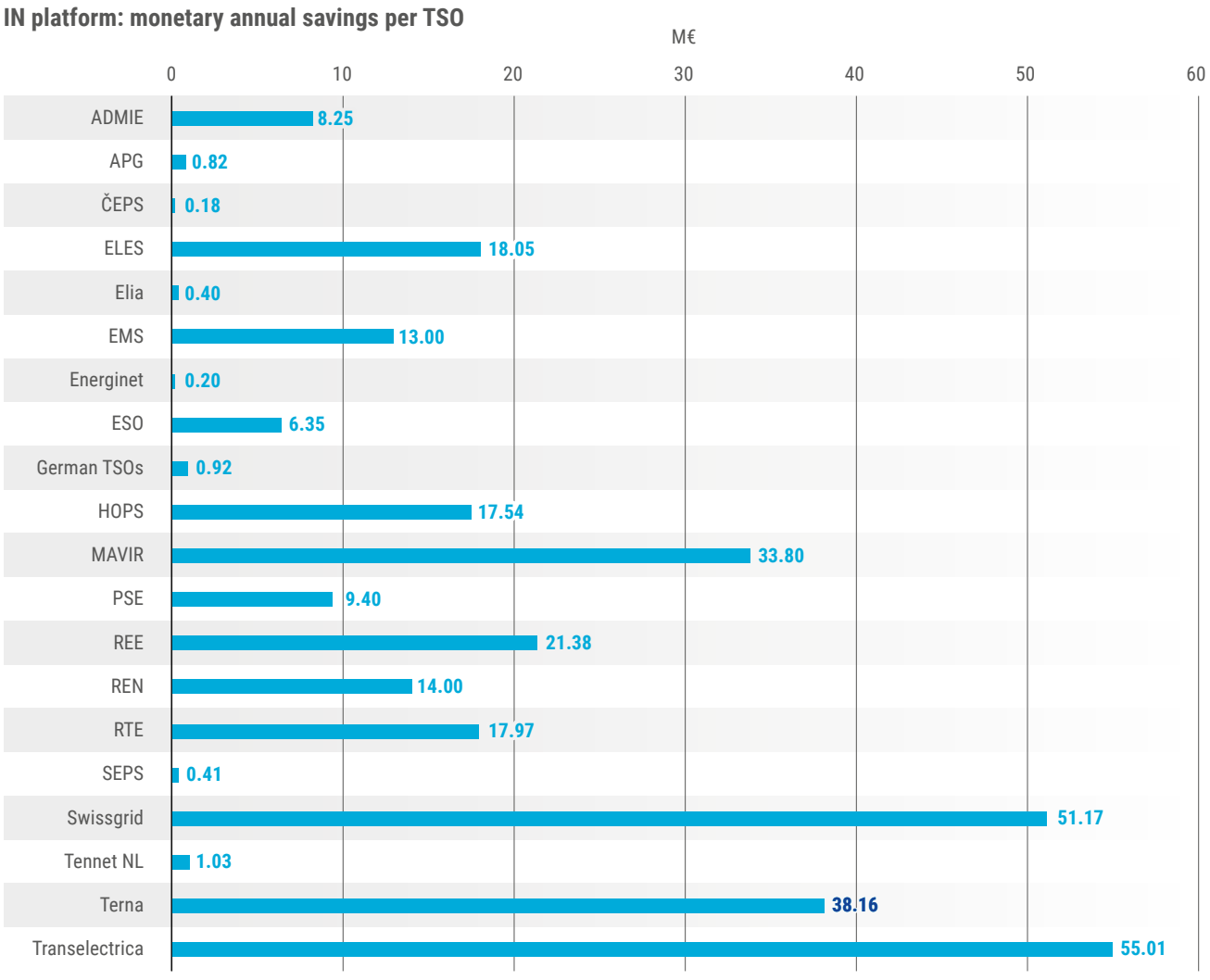



Figure 24: Monetary annual savings per TSO from imbalance netting in 2025.

## 6.2.3 Sharing and exchange of reserves

| | |
|---|---|
| **Definition** | The social welfare increment is calculated by comparing coupled and decoupled clearings for the balancing reserve market or the regional reserve market.<br><br>Social welfare in each market is understood as the sum of BSP surplus, TSO savings, and TSO congestion income. In the case of exchange/sharing of balancing capacity with CZC allocation, the potential negative impact on social welfare in the day-ahead market coupling will be considered. Under the market-based approach, forecasted energy market data will be used, while under the inverted market-based approach, forecasted capacity market data will be used. Consequently, the entire social welfare assessment process for computing PI 5.2.3 under the market-based/inverted market-based approaches is based on forecasted bid curves. |
| **Legal reference** | Articles 59 (4)(b) and 59 (4)(c) of the EB Regulation |
| **Time reference** | Yearly |

Table 9: Indicator 5.2.3 on social welfare from sharing and exchanges of reserves.

PIs on the sharing and exchange of reserves are included in Section 4.

# 6.3 Total cost of balancing

| | |
|---|---|
| **Definition** | This indicator calculates the annual costs (€/year) for each TSO for non-standard (local/specific) and standard products (both balancing energy activation and reserve procurement costs).<br>For each TSO or country (e. g. Germany), the total costs of balancing will be segmented by a) FCR, aFRR, mFRR, and RR procurement reserve costs from its connected BSPs, adjusted for the results of TSO–TSO settlements of FCR, aFRR, mFRR, and RR reserves (adjusted only when any sharing/exchange of reserve schemes applies); b) the costs for the activation of balancing energy (FCR, aFRR, mFRR, and RR) from its connected BSPs (payment to BSPs minus incomes from BSPs),[12] adjusted when applicable with the results of TSO–TSO settlements of balancing energy; and c) the net result (cost) of TSO–IGCC settlement of IN. Regarding TSO–TSO settlement in the case of balancing energy platforms, congestion rents of non-participating countries should not be considered.<br>Please note that the volume-weighted-average price (VWAP) of balancing energy activation and reserve prices will be reported under PI 5.9. |
| **Legal reference** | Article 59 (4)(d) of the EB Regulation |
| **Time reference** | Yearly |
| **Clarifications** | TSOs may use the intraday markets to balance the system and therefore the total cost of balancing |

Table 10: Indicator 5.3 on the annual cost for each TSO for non-standard and standard products in 2025.

## KPI 6.3 Total cost of balancing

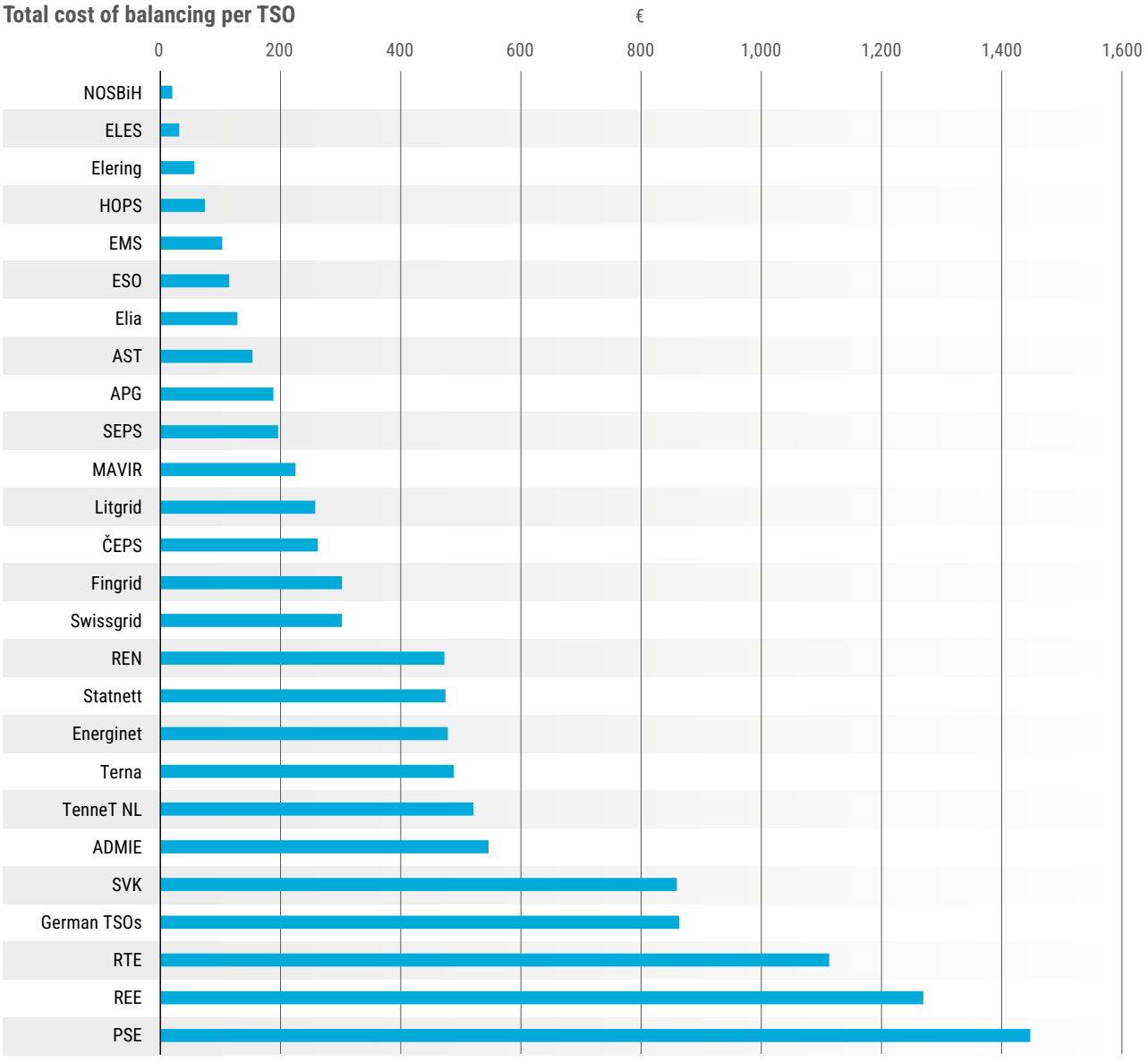



Figure 25: Performance indicator 5.3 on the total cost of balancing per TSO.

12 Payment to BSPs (comprised of upward activation in case of positive prices plus downward activation in case of negative prices) minus incomes from BSPs (comprised of downward activation in case of positive prices plus upward activation in case of negative prices).

# 6.4 The economic efficiency and reliability of the balancing markets

| | |
|---|---|
| **Definition** | This indicator assesses the efficiency and reliability of each balancing platform, focused exclusively on the balancing energy markets.<br><br>This PI includes the following for each balancing platform:<br><br>1 // Monthly volume (MWh) and volume weighted average prices (€/MWh) of submitted bids per direction and per TSO<br>2 // Monthly volume of demand per direction and per TSO (MWh)[13]<br>3 // Monthly volume of selected bids per direction and TSO (MWh)[14]<br>4 // Repartition of the use of inelastic and elastic need per TSO (% of share of total demand that is being covered by elastic and inelastic demand)<br>5 // Monthly average and standard deviation values and distribution of the CBMP per TSO (percentiles 1 %, 5 %, 10 %, 90 %, 95 %, and 99 %)<br>6 // Monthly average value of the available and used CZC per bidding zone border (BZB) and direction (MW)<br>7 // Monthly average value of the number of uncongested areas<br>8 // Number of occurrences (% of MTU) of unsatisfied inelastic need per TSO and its volume (MWh)<br>9 // Incident overview[15] |
| **Legal reference** | Article 59 (4)(e) of the EB Regulation |
| **Time reference** | Monthly |

Table 11: The economic efficiency and reliability of the balancing markets

13 For 3.4.2, TSOs will provide a single graph representing the total demand upward/downward of all products per TSO.

14 For 3.4.3, TSOs will provide a single graph representing the total selected bids for upward/downward of all products per TSO.

15 For 3.4.9, TSOs will include a reference to the platforms' operational reports instead of reporting it in Market/Balancing Reports.

## KPI 5.4.1: aFRR platform: monthly volume (MWh) of submitted bids per direction and TSO

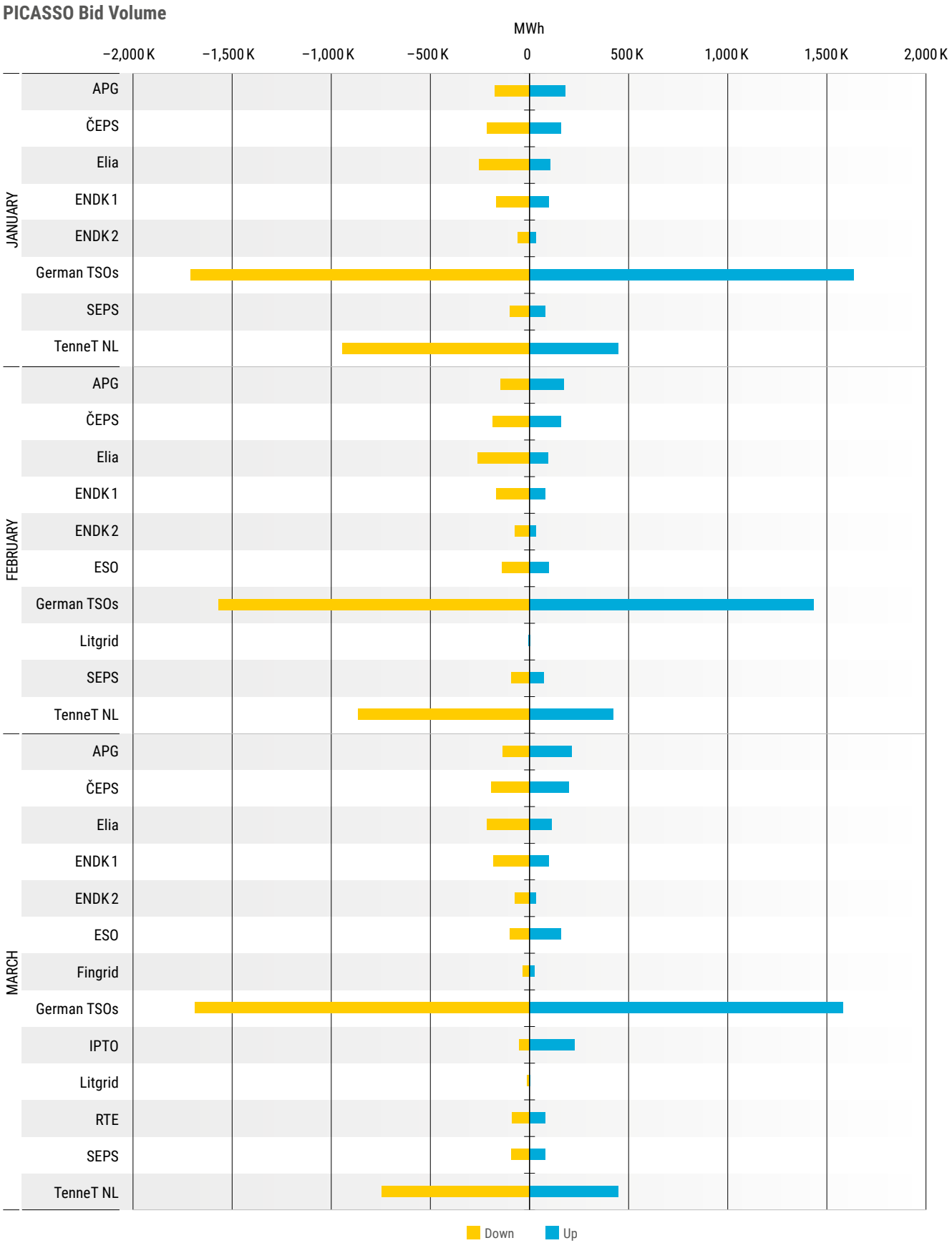



Figure 26: Monthly volume (MWh) of submitted bids in PICASSO per direction and TSO in Q1 2025.

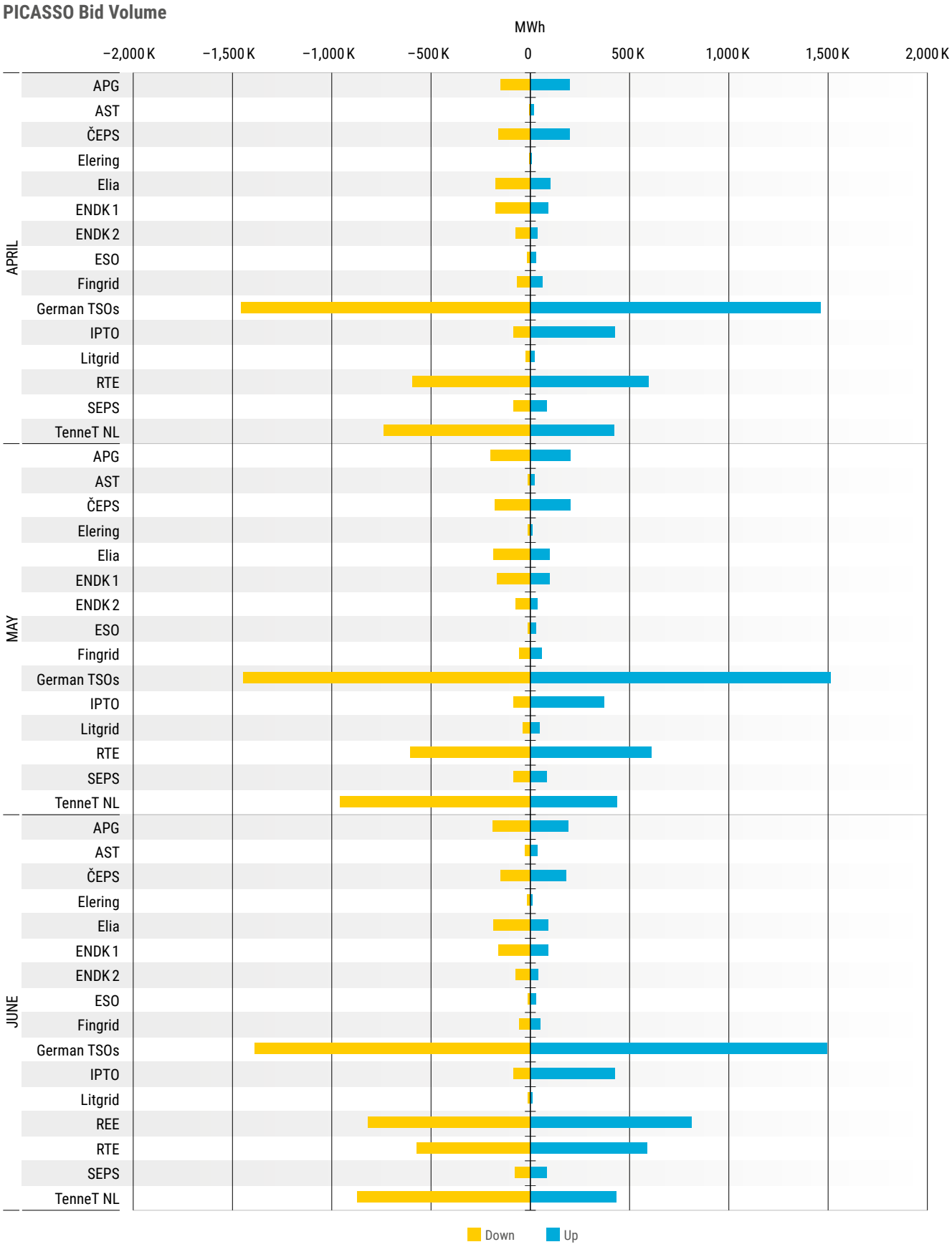



Figure 27: Monthly volume (MWh) of submitted bids in PICASSO per direction and TSO in Q2 2025.

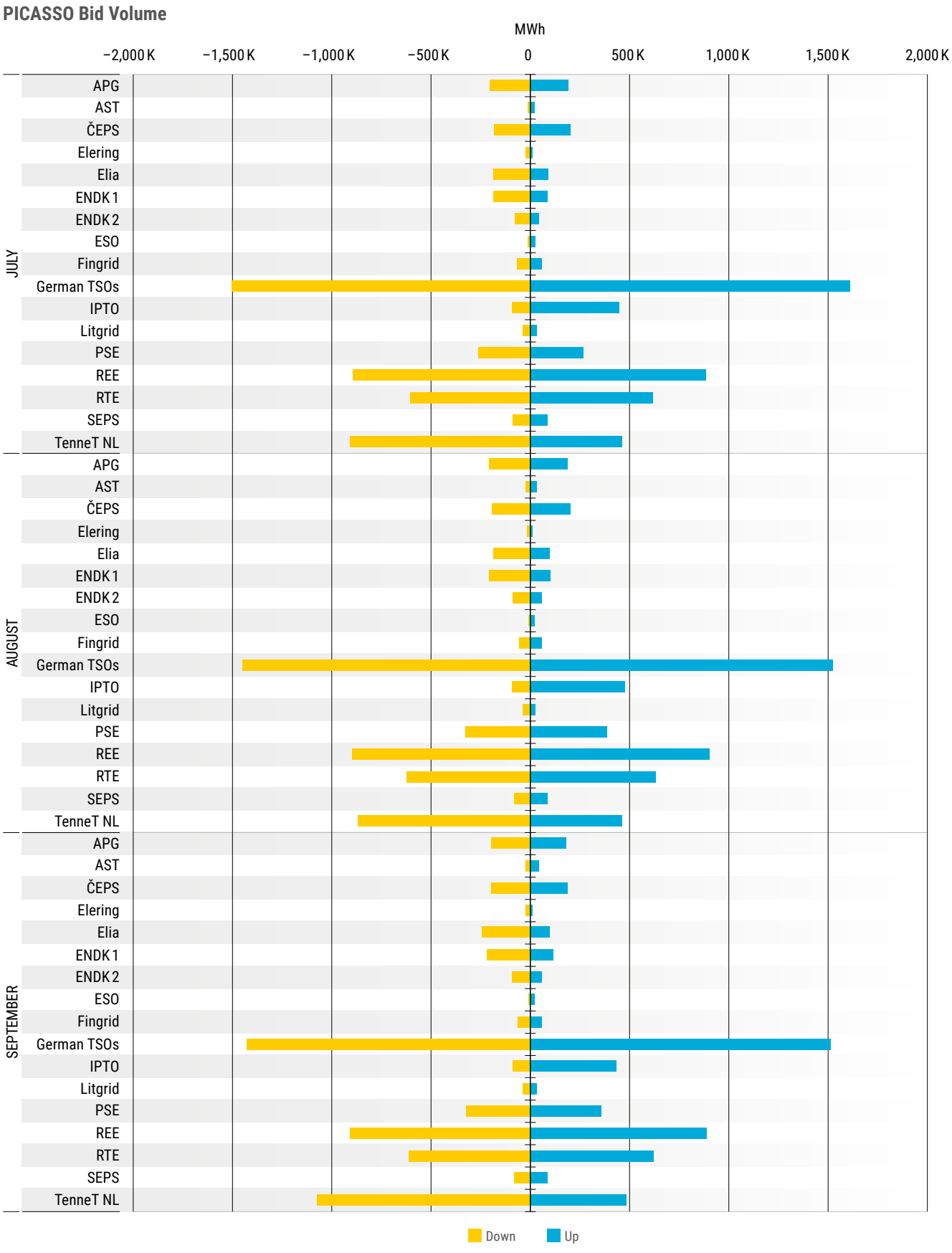



Figure 28: Monthly volume (MWh) of submitted bids in PICASSO per direction and TSO in Q3 2025.

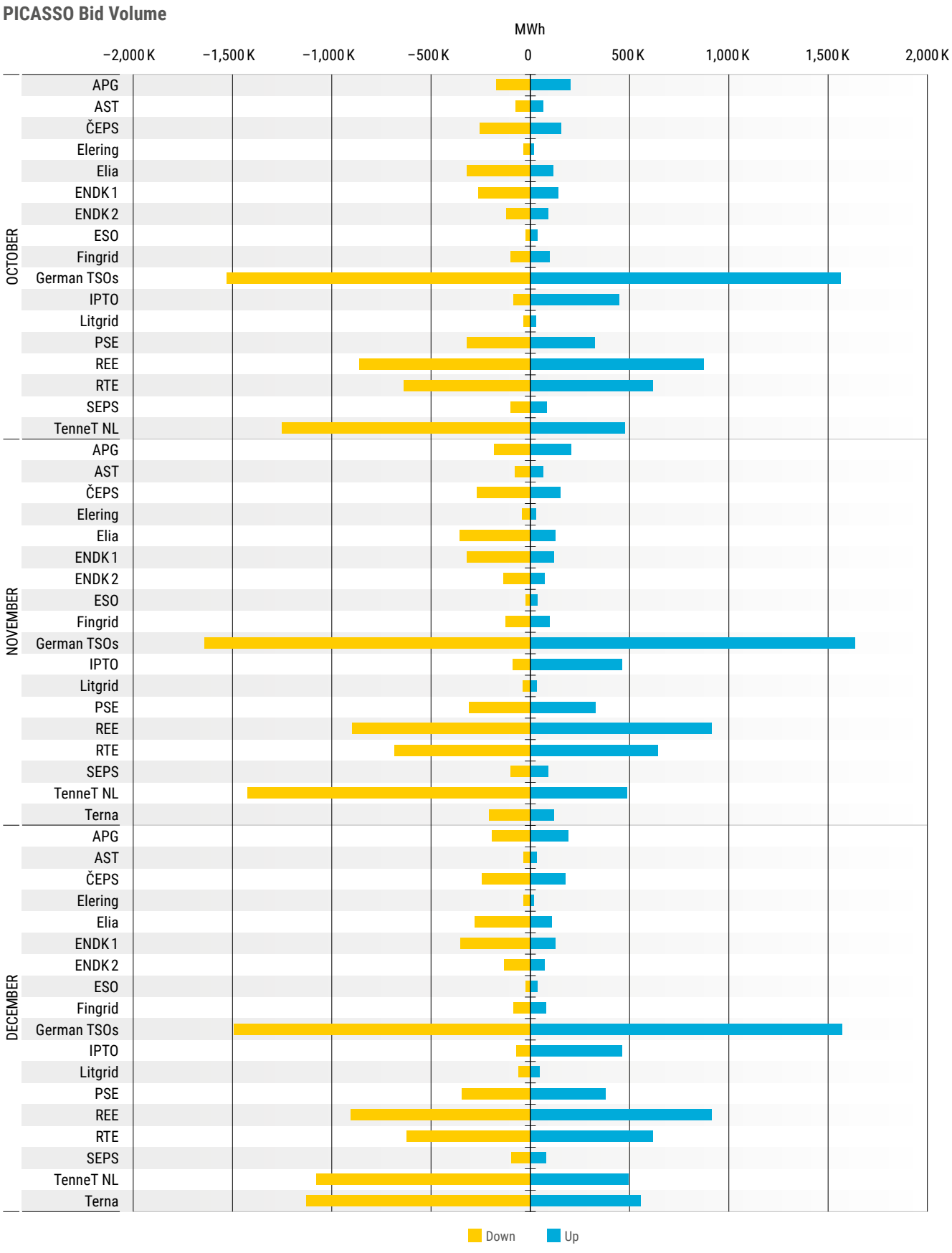



Figure 29: Monthly volume (MWh) of submitted bids in PICASSO per direction and TSO in Q4 2025.

## KPI 6.4.1: mFRR platform: monthly volume (MWh) of submitted bids per direction and TSO

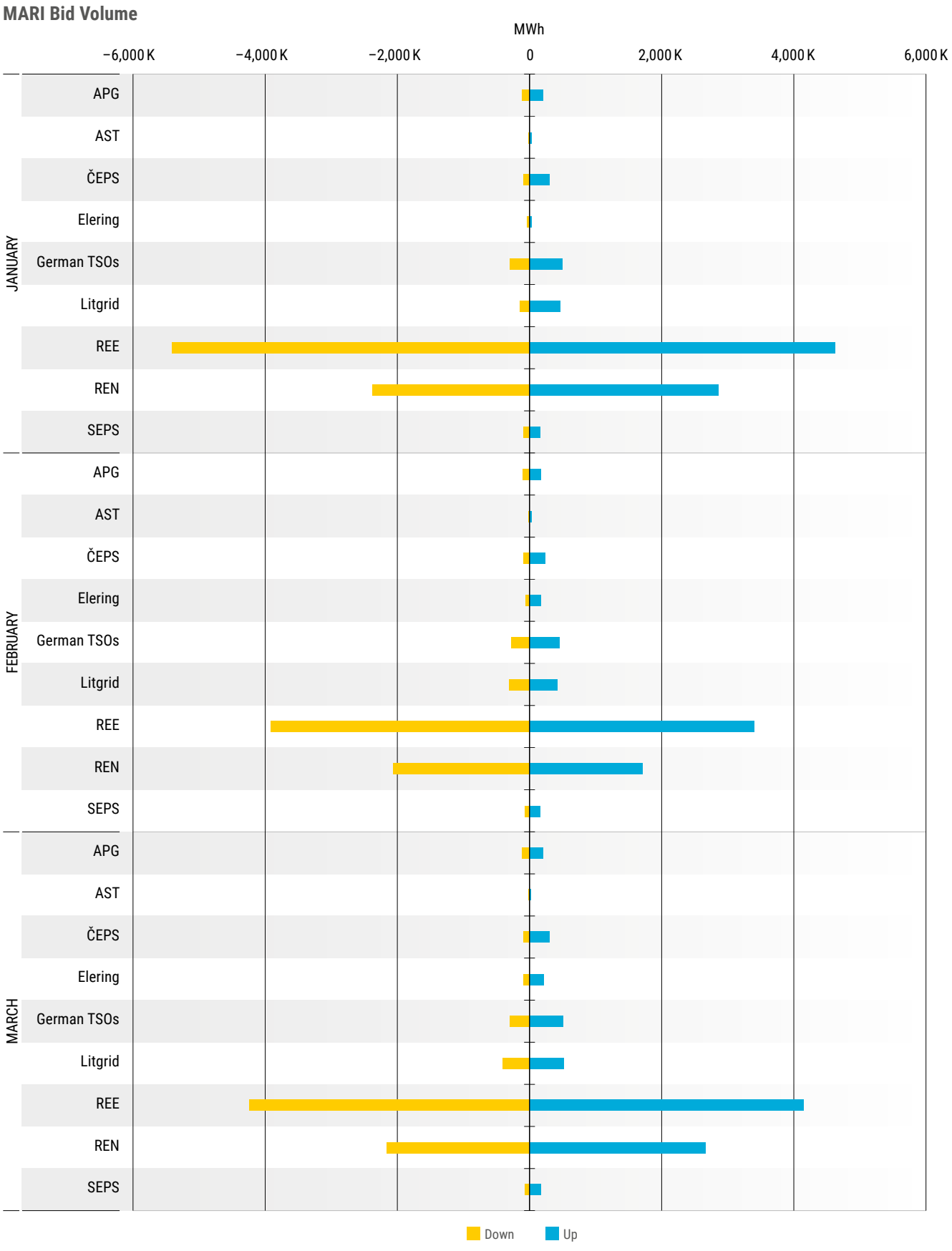



Figure 30: Monthly volume (MWh) of submitted bids in MARI per direction and TSO in Q1 2025.

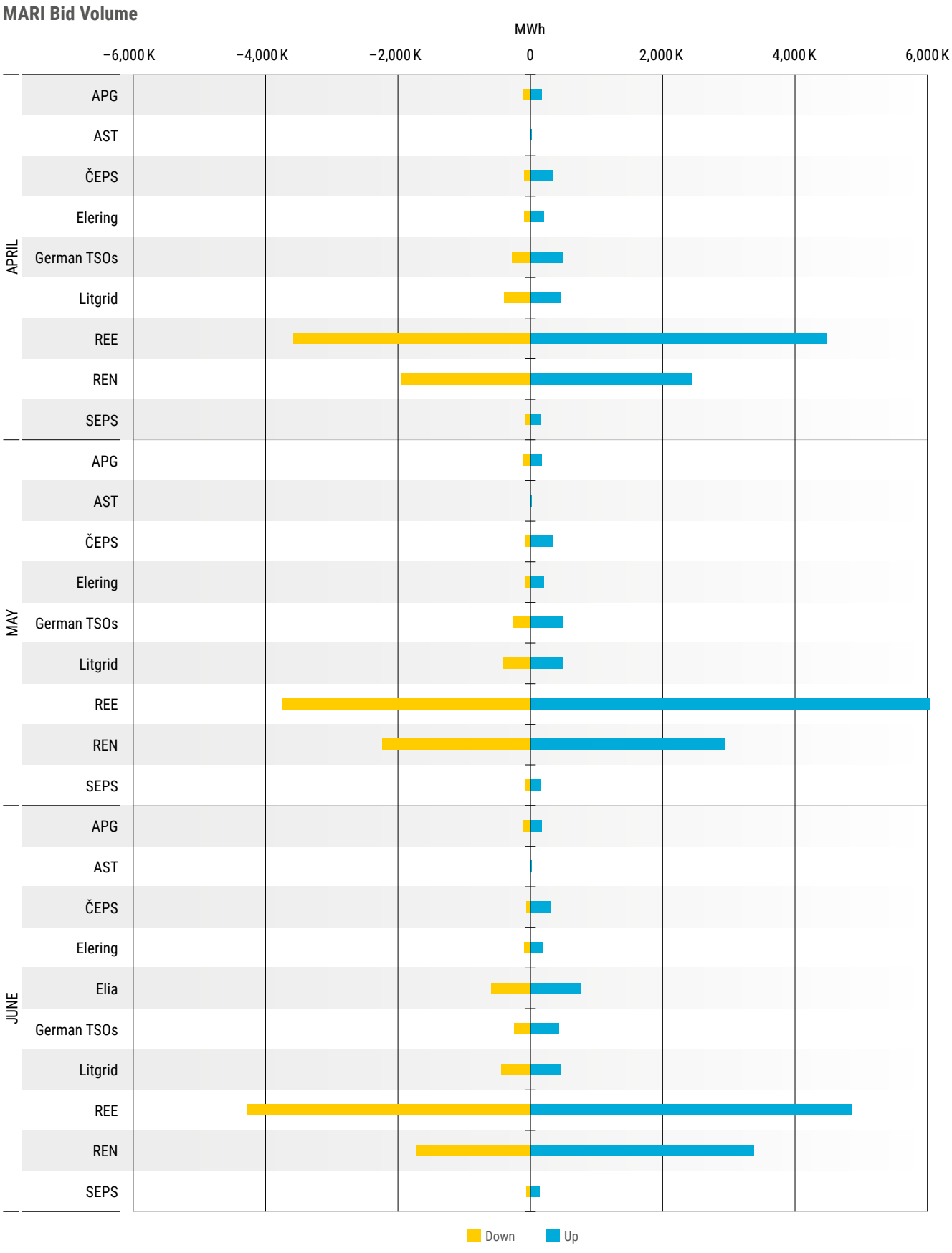



Figure 31: Monthly volume (MWh) of submitted bids in MARI per direction and TSO in Q2 2025.

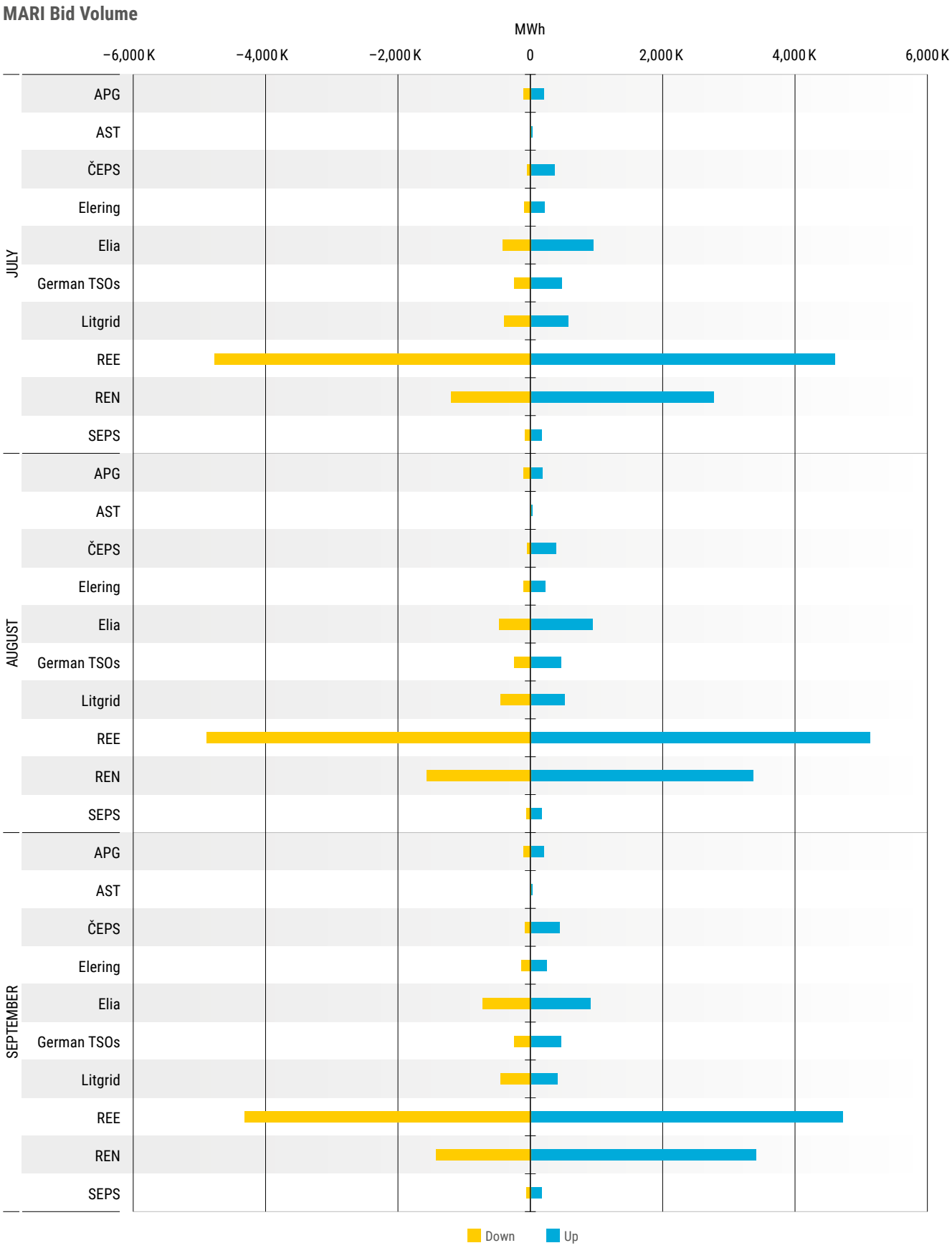



Figure 32: Monthly volume (MWh) of submitted bids in MARI per direction and TSO in Q3 2025.

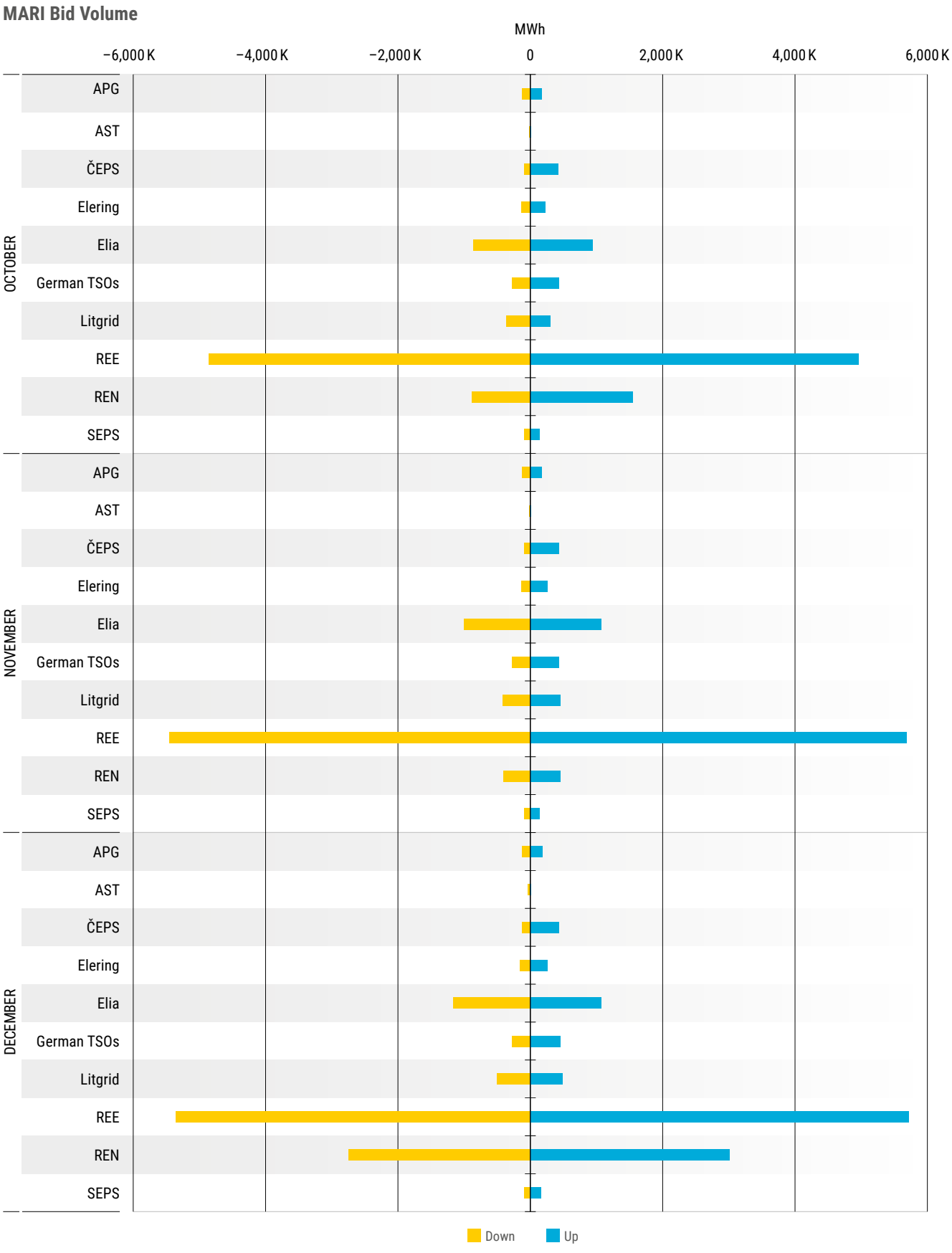



Figure 33: Monthly volume (MWh) of submitted bids in MARI per direction and TSO in Q4 2025.

## KPI 6.4.1: RR platform: monthly volume (MWh) of submitted bids per direction and TSO

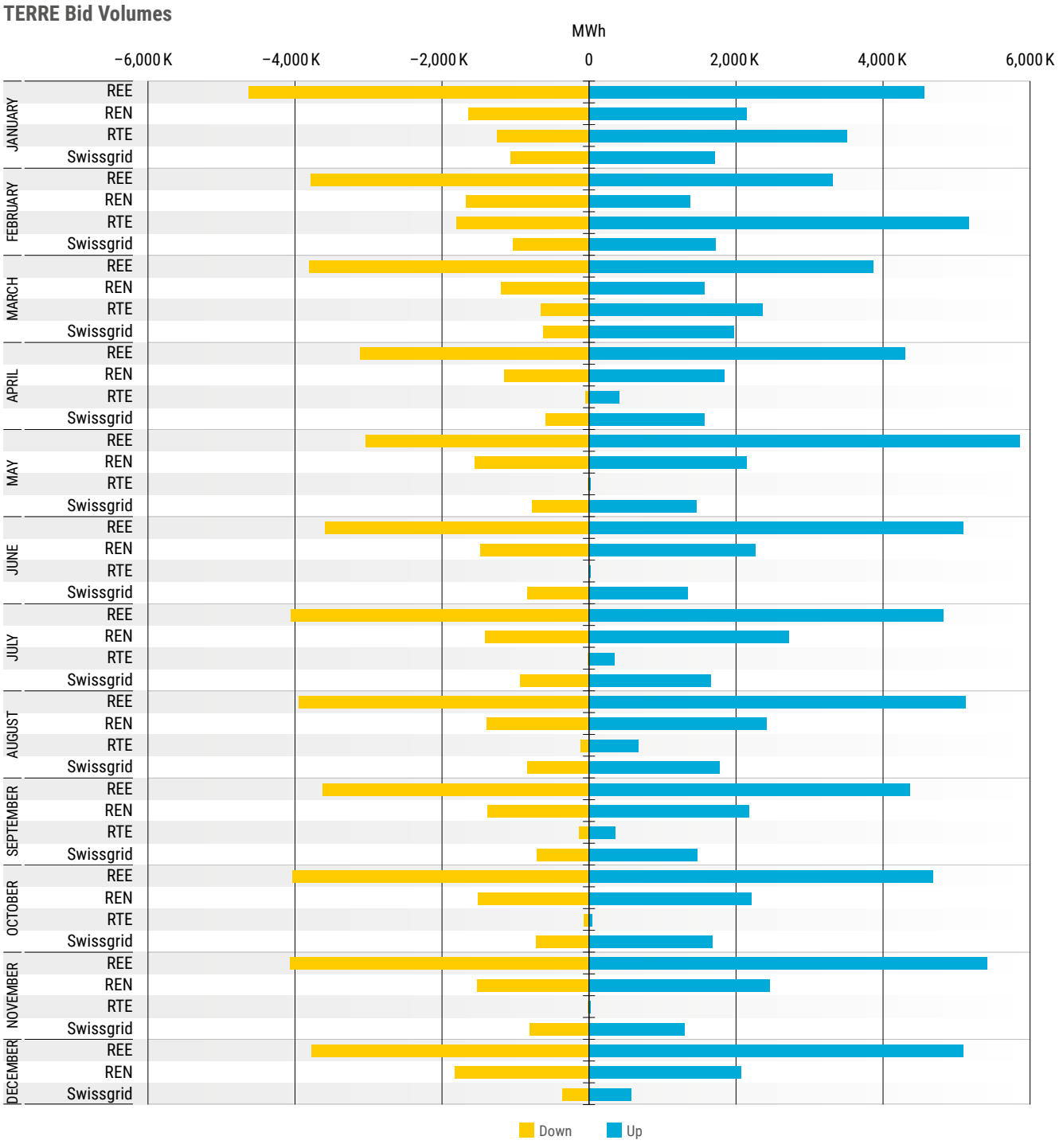



Figure 34: Monthly volume (MWh) of submitted bids in TERRE per direction and TSO in 2025.

## KPI 6.4.1: aFRR platform: VWAPs (€/MWh) of submitted bids per direction and TSO

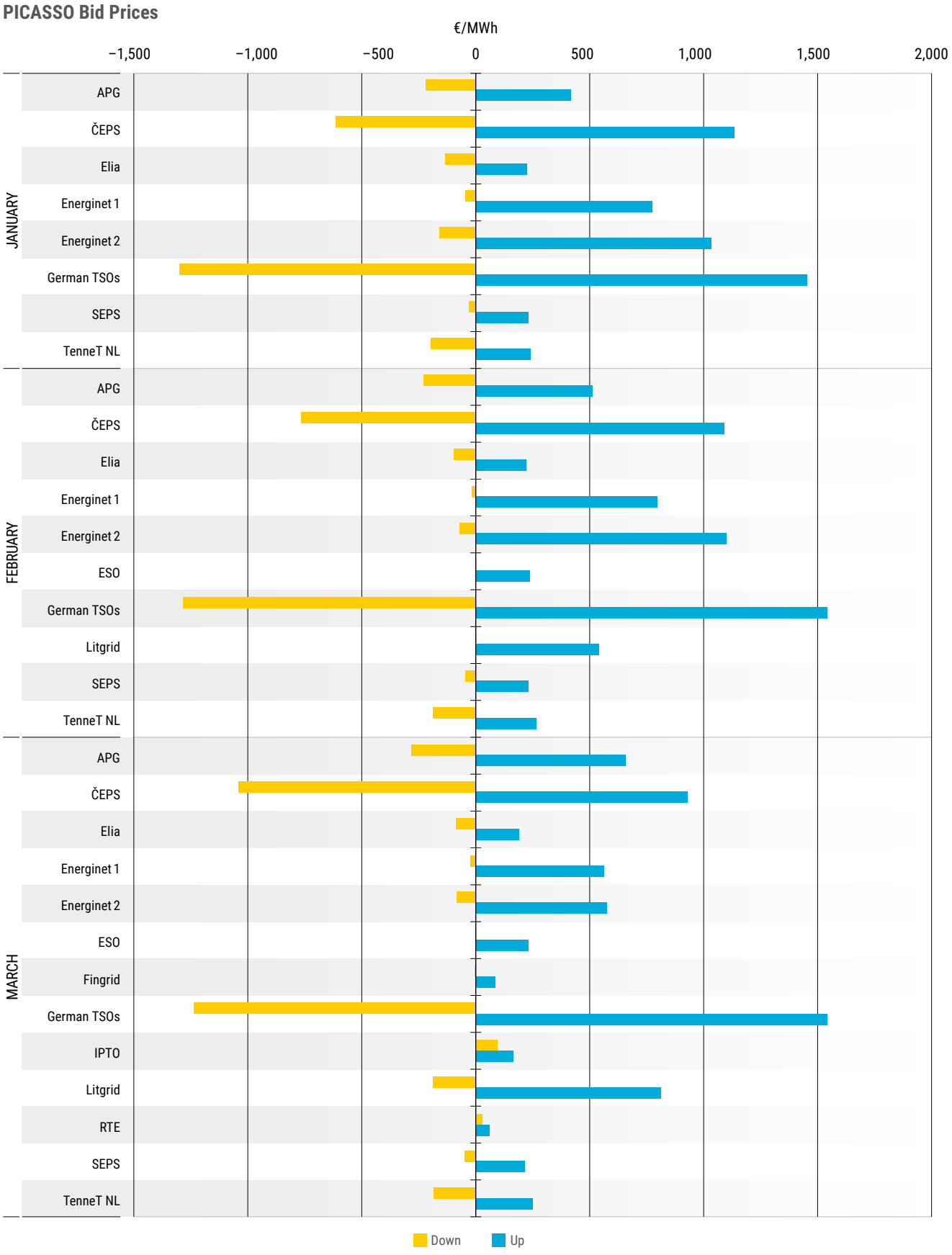



Figure 35: VWAPs (€/MWh) of submitted bids in PICASSO per direction and TSO in Q1 2025.

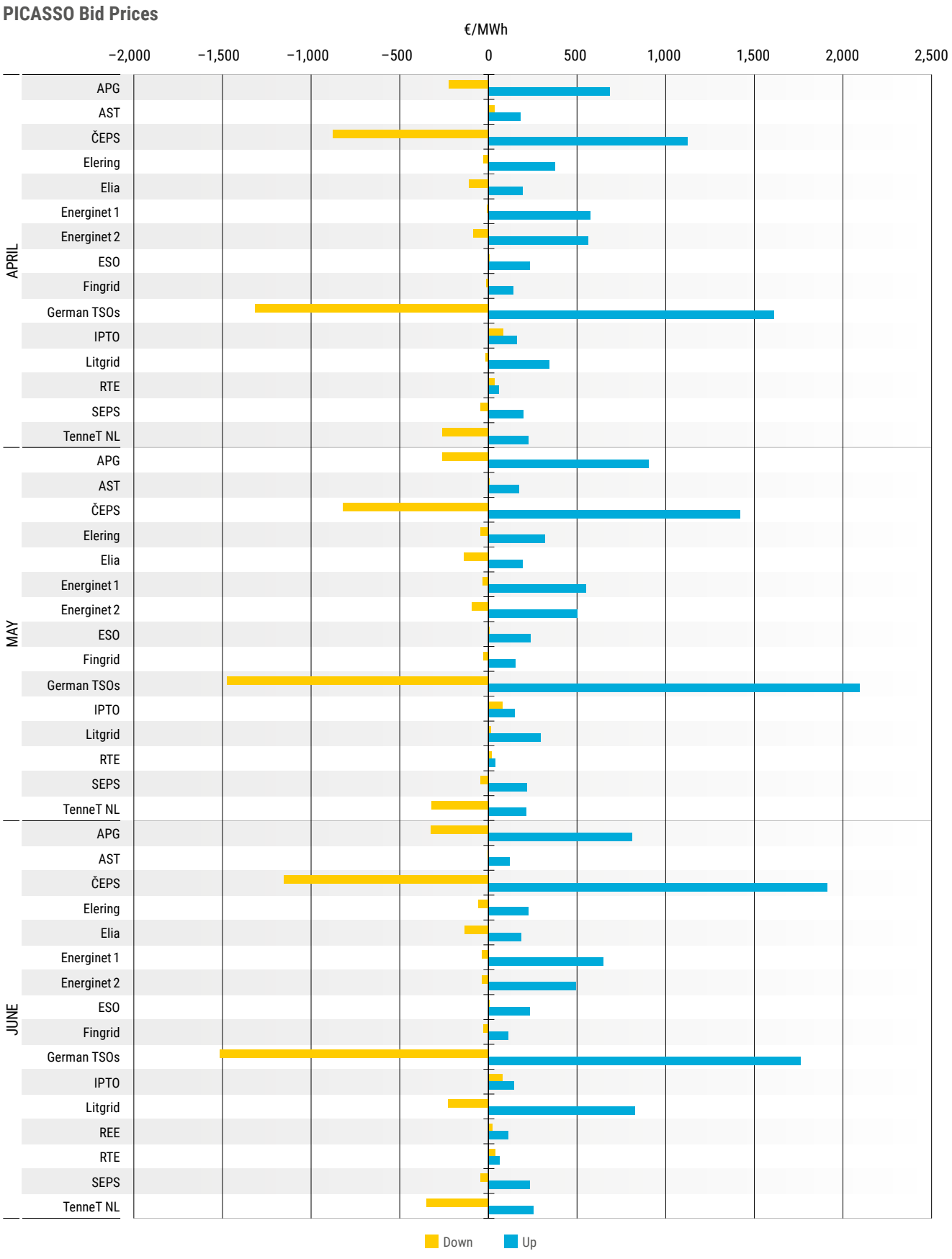



Figure 36: VWAPs (€/MWh) of submitted bids in PICASSO per direction and TSO in Q2 2025.

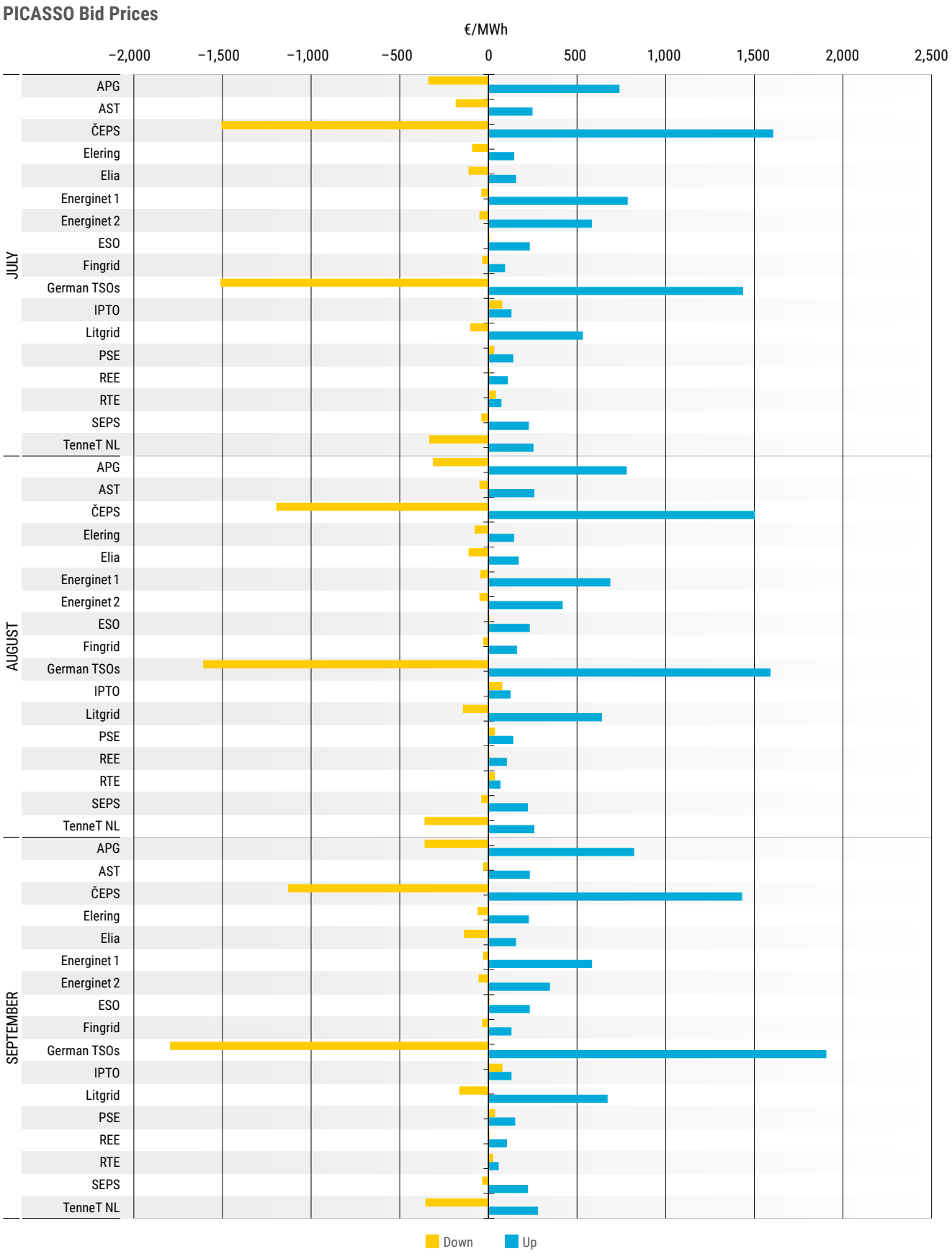



Figure 37: VWAPs (€/MWh) of submitted bids in PICASSO per direction and TSO in Q3 2025.

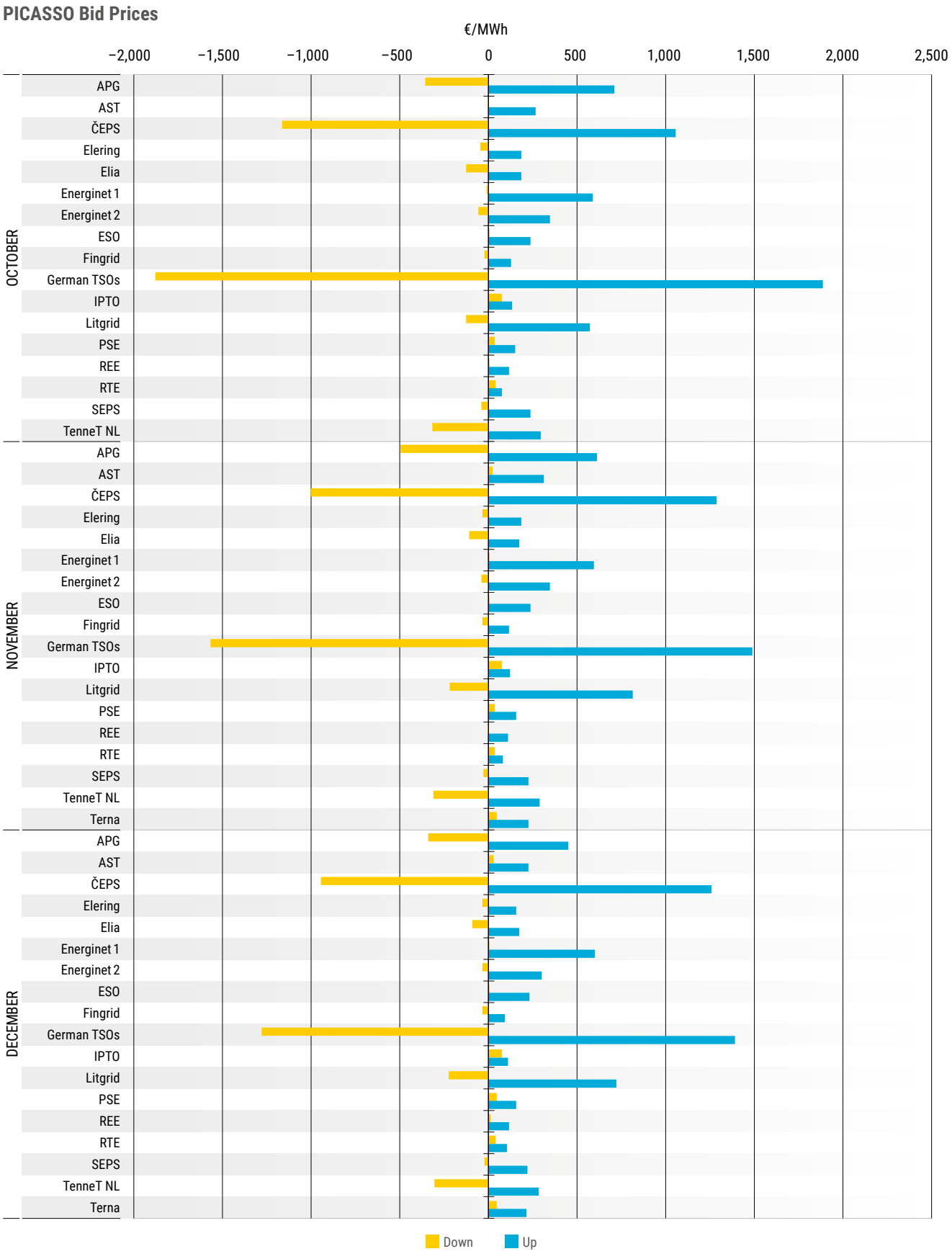



Figure 38: VWAPs (€/MWh) of submitted bids in PICASSO per direction and TSO in Q4 2025.

## KPI 6.4.1: mFRR platform: VWAPs (€/MWh) of submitted bids per direction and TSO

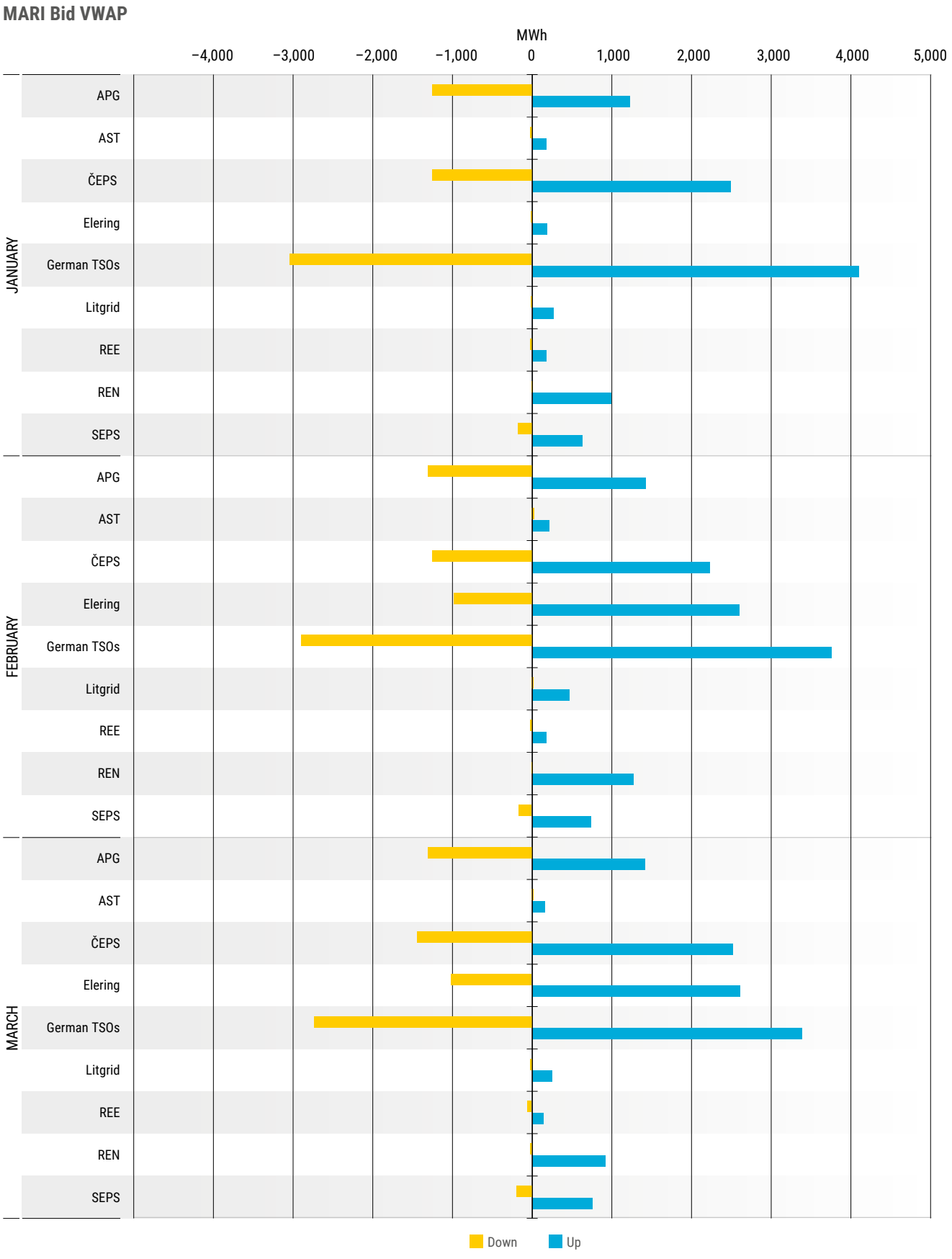



Figure 39: VWAPs (€/MWh) of submitted bids in MARI per direction and TSO in Q1 2025.

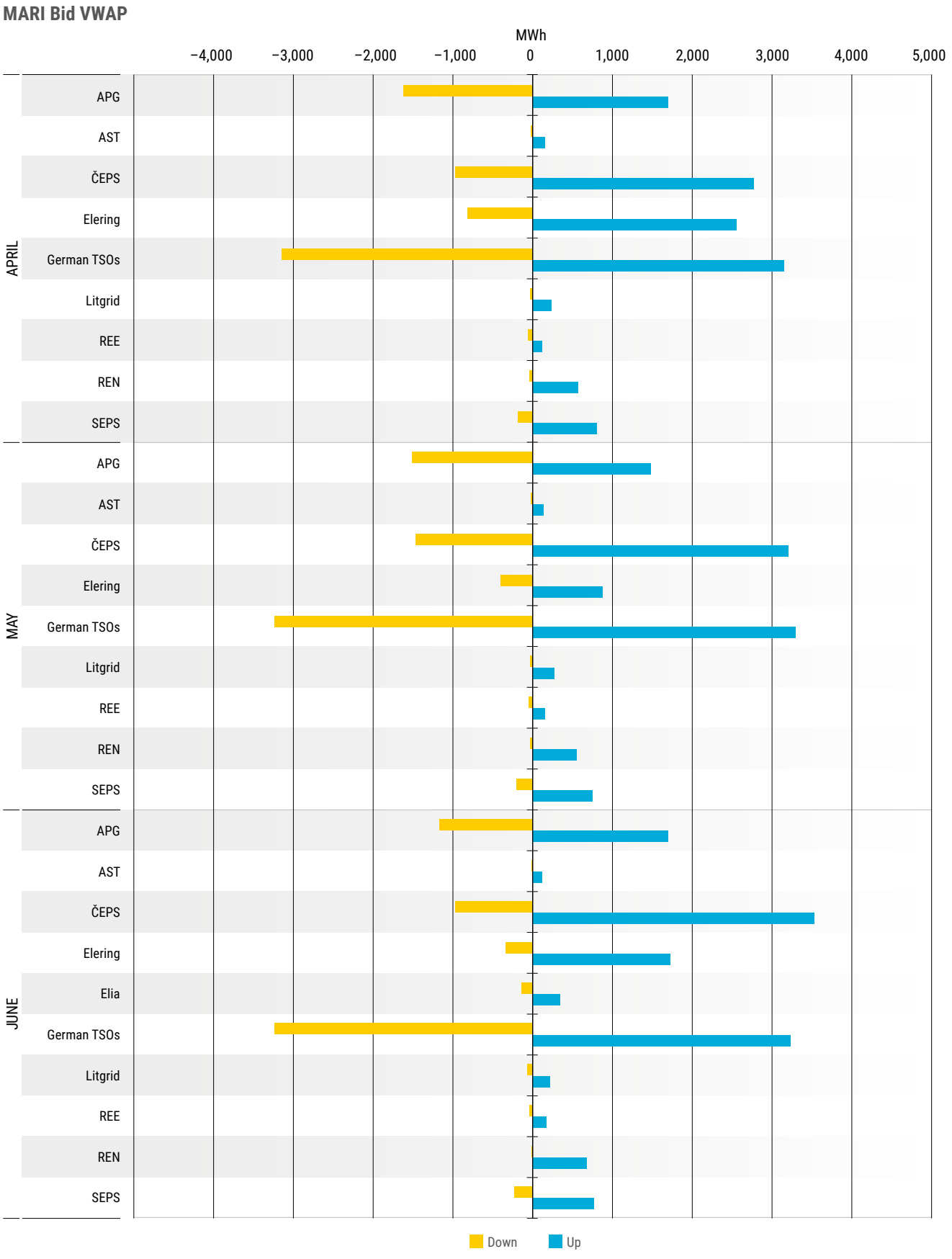



Figure 40: VWAPs (€/MWh) of submitted bids in MARI per direction and TSO in Q2 2025.

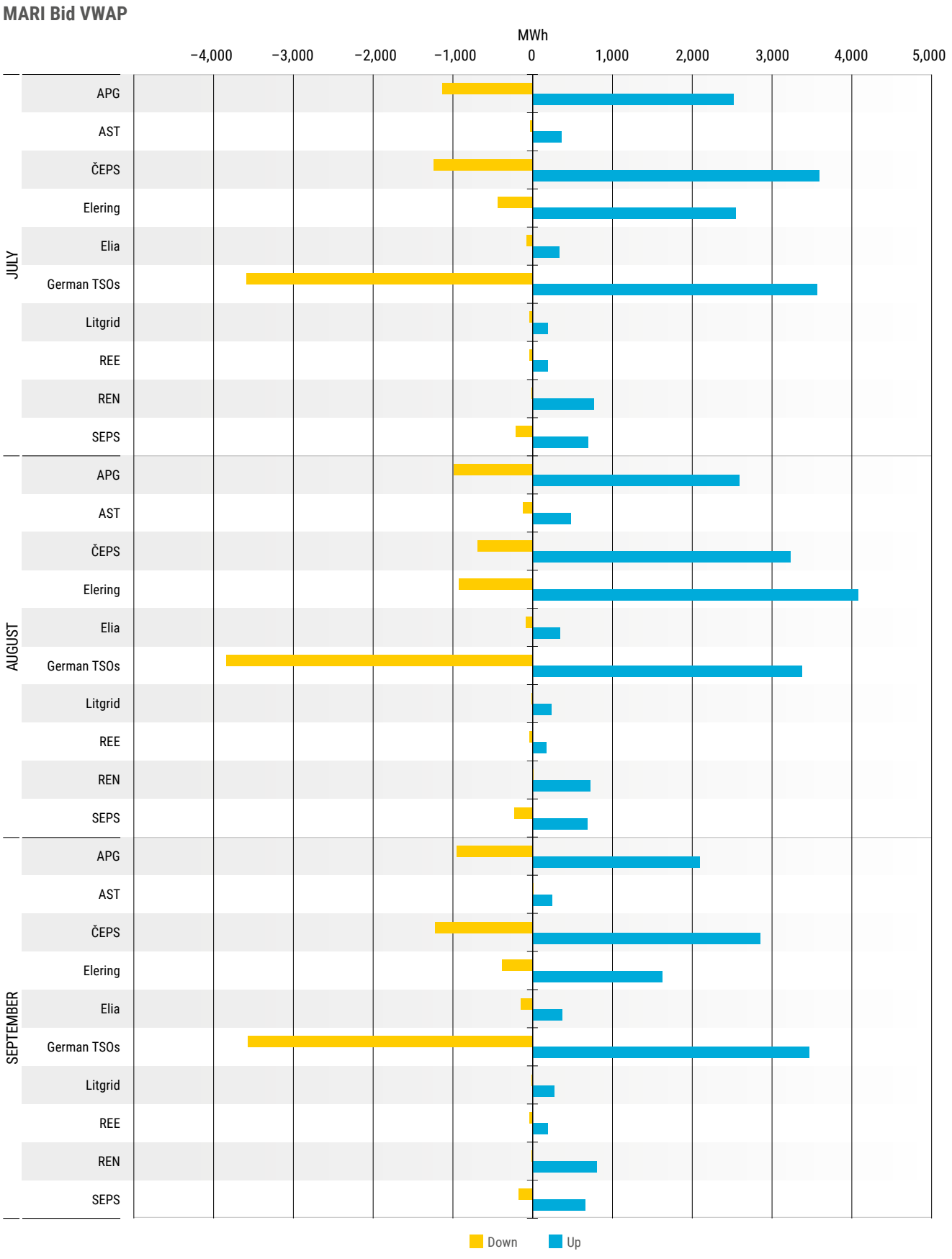



Figure 41: VWAPs (€/MWh) of submitted bids in MARI per direction and TSO in Q3 2025.

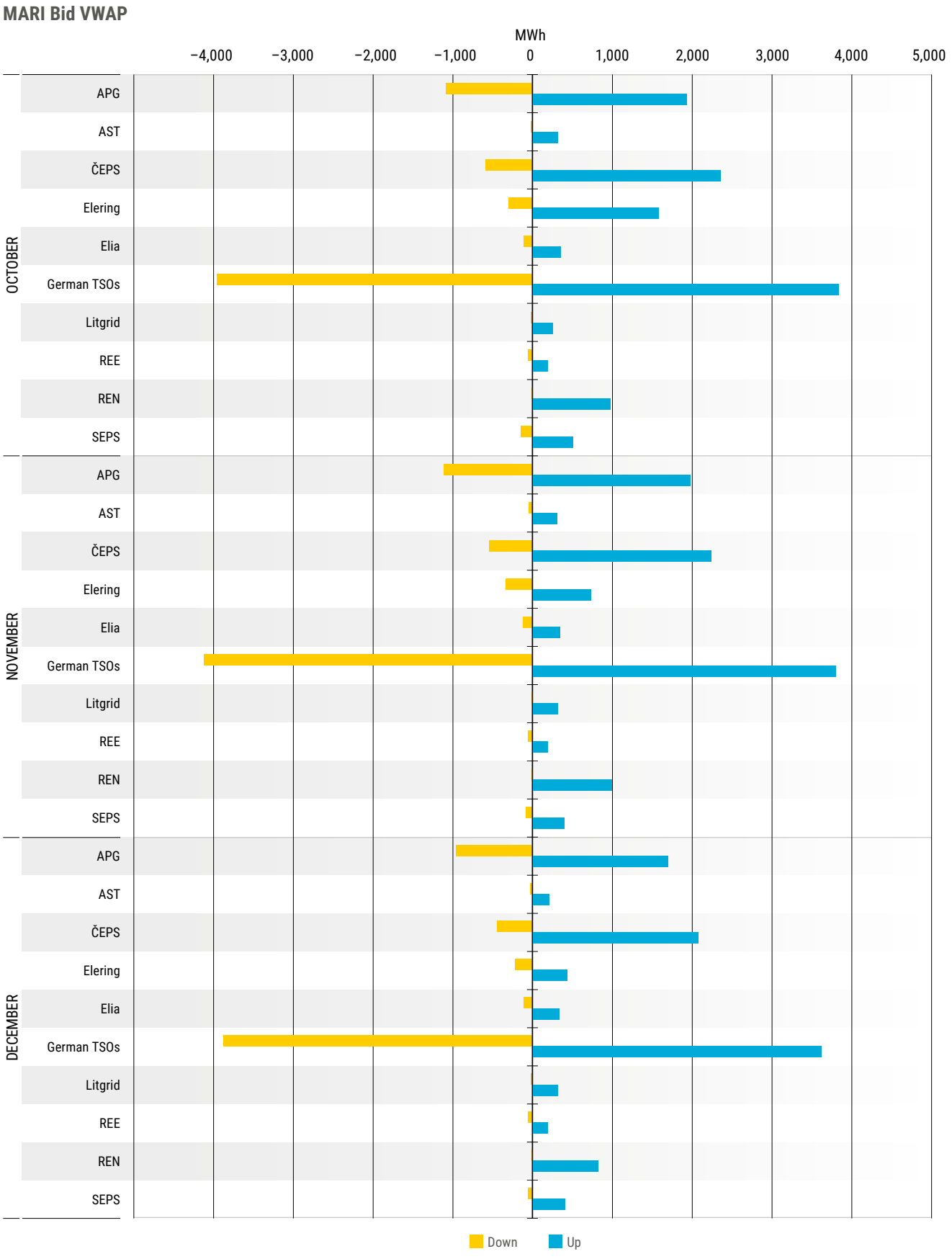



Figure 42: VWAPs (€/MWh) of submitted bids in MARI per direction and TSO in Q4 2025.

## KPI 6.4.1: RR platform: VWAPs (€/MWh) of submitted bids per direction and TSO

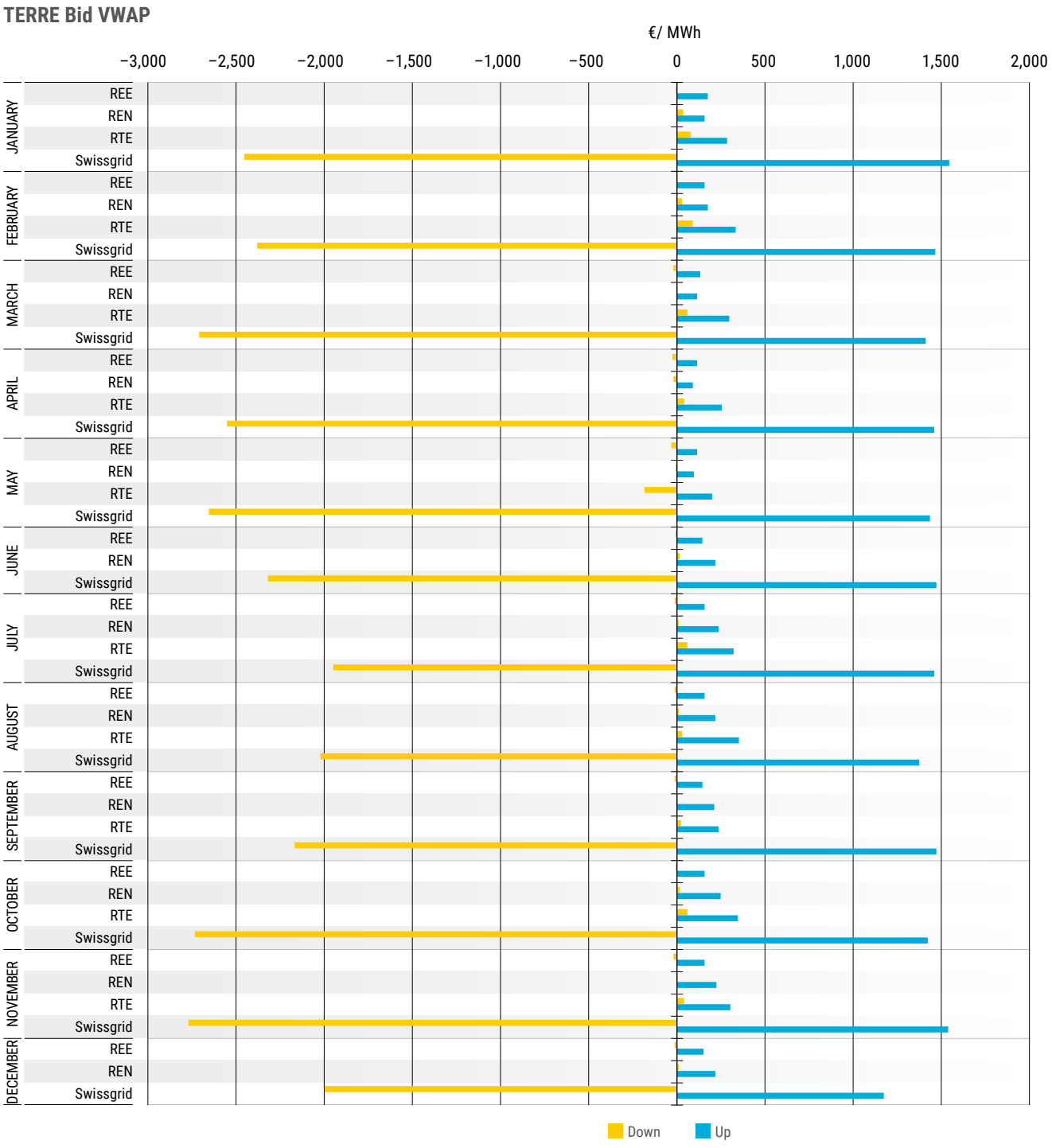



Figure 43: VWAPs (€/MWh) of submitted bids in TERRE per direction and TSO in 2025.

## KPI 6.4.2: aFRR platform: monthly volume of demand per direction and TSO (MWh)

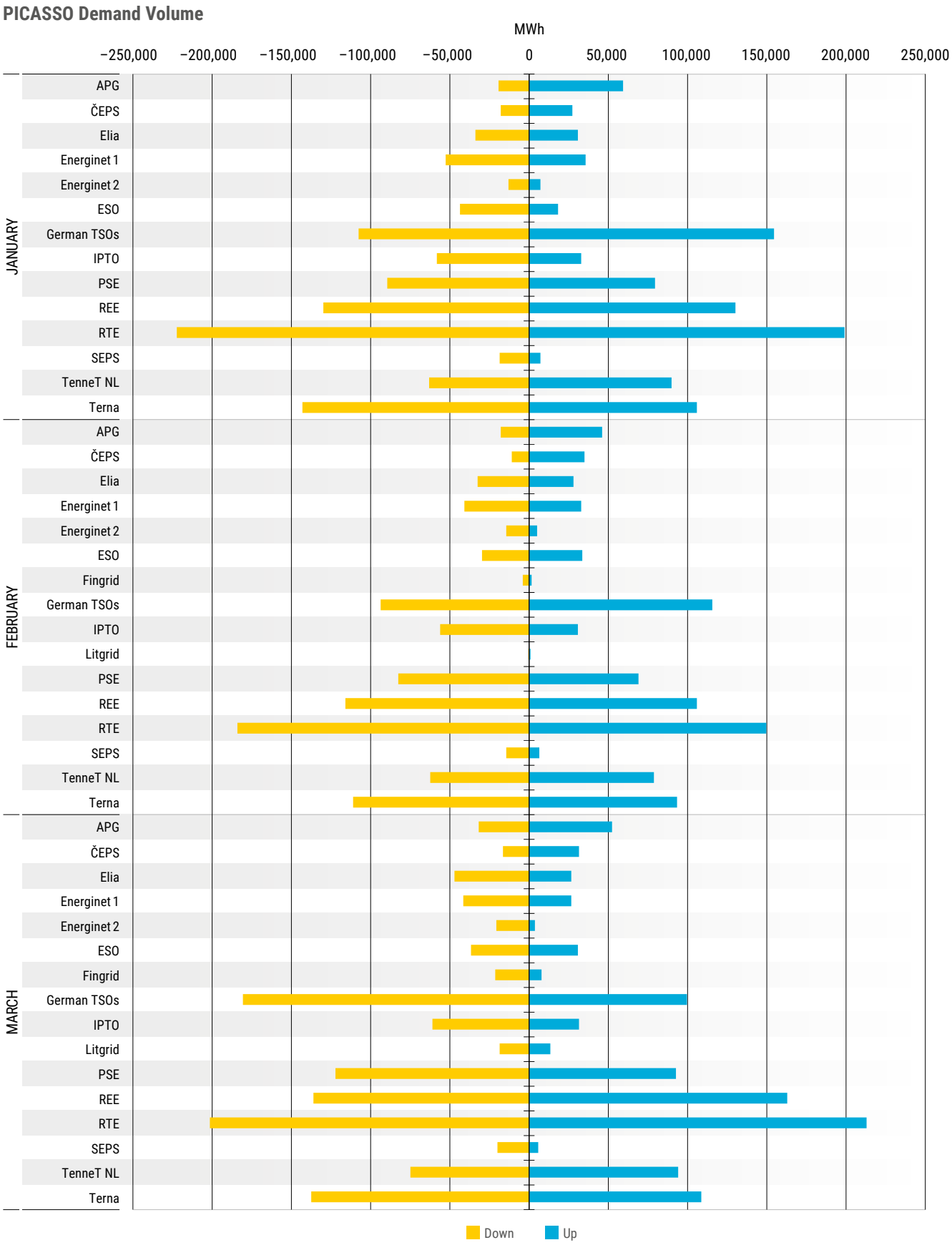



Figure 44: Monthly volume of demand in PICASSO per direction and TSO in Q1 2025.

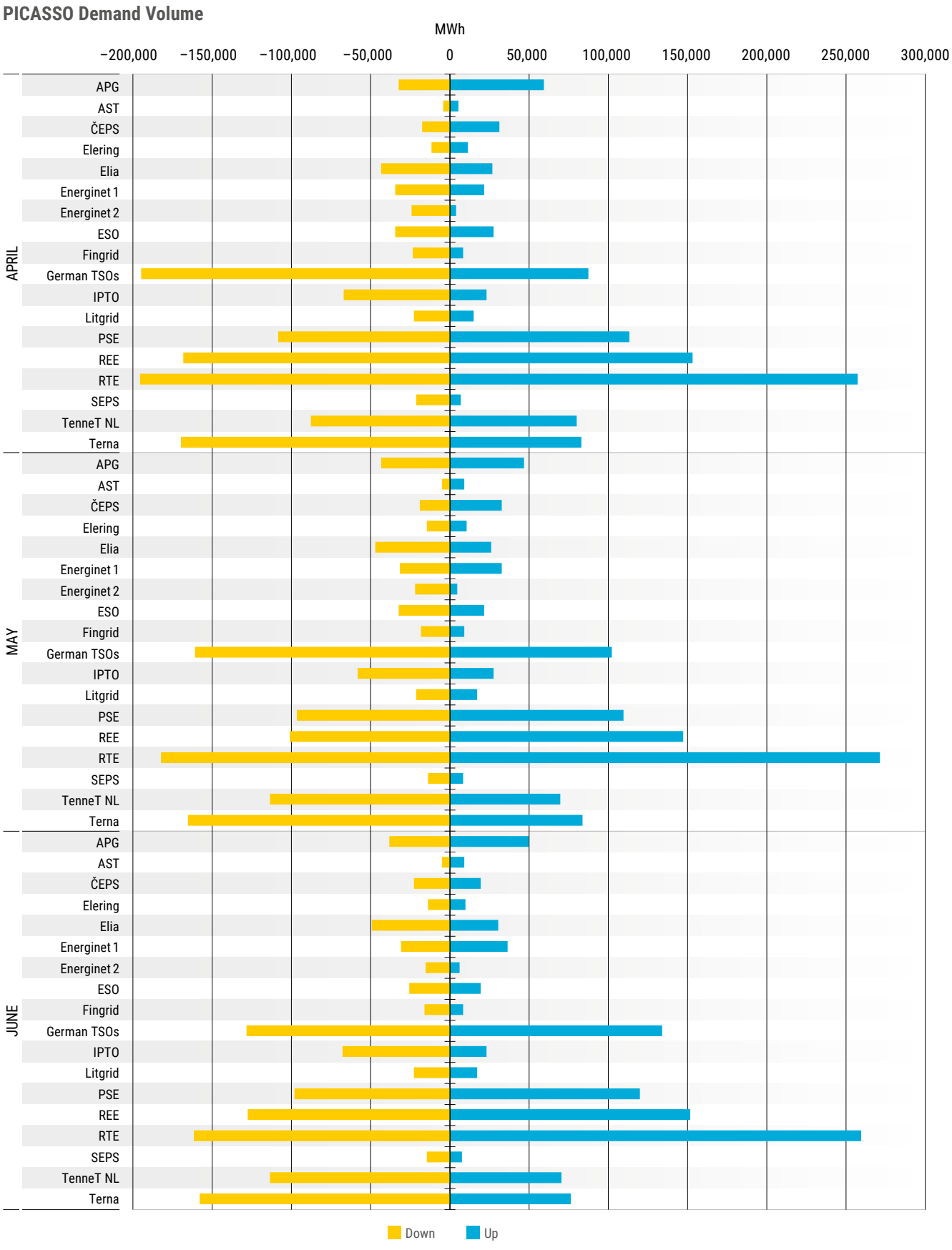



Figure 45: Monthly volume of demand in PICASSO per direction and TSO in Q2 2025.

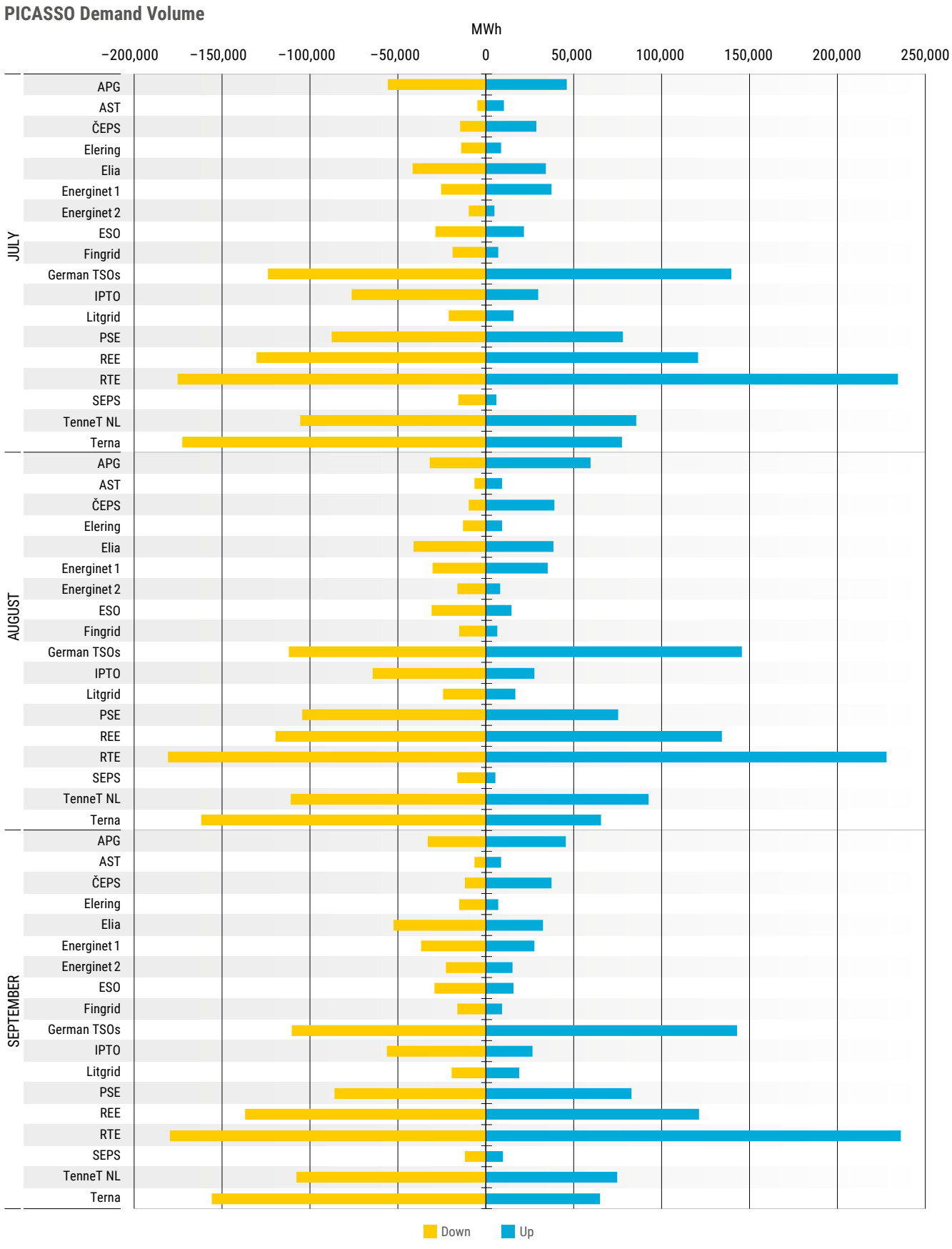



Figure 46: Monthly volume of demand in PICASSO per direction and TSO in Q3 2025.

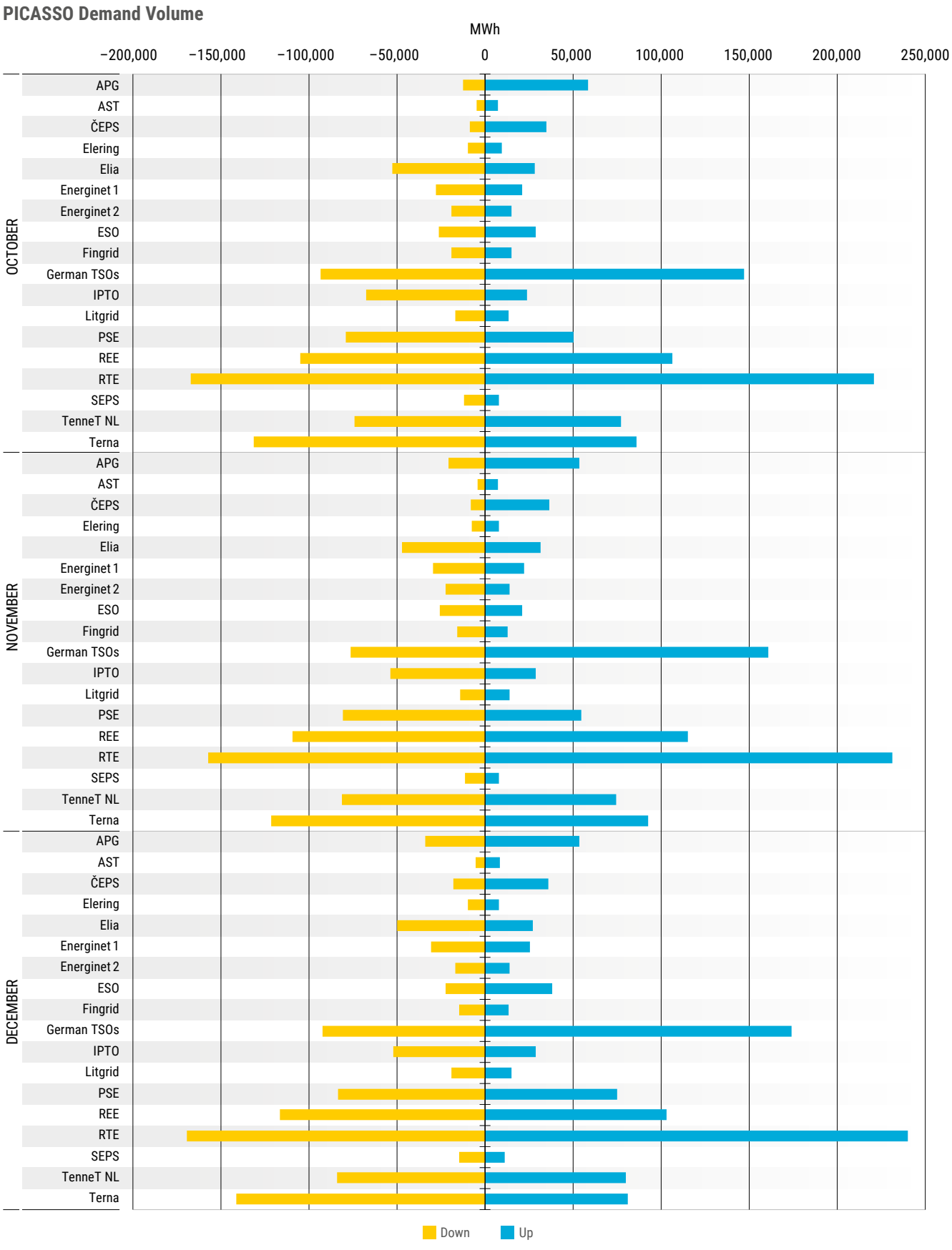



Figure 47: Monthly volume of demand in PICASSO per direction and TSO in Q4 2025.

## KPI 6.4.2: mFRR platform: monthly volume of demand per direction and TSO (MWh)

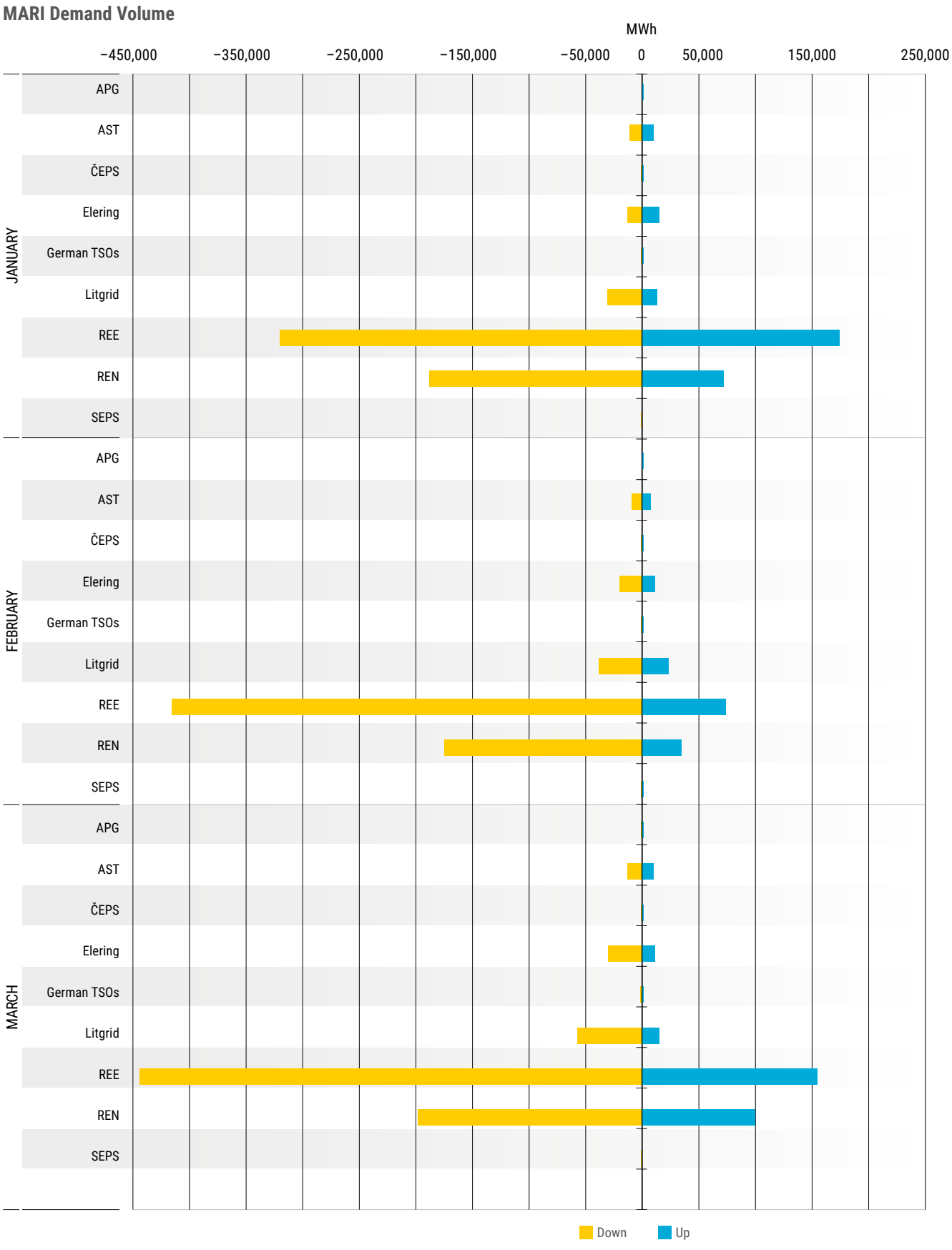



Figure 48: Monthly volume of demand in MARI per direction and TSO in Q1 2025.

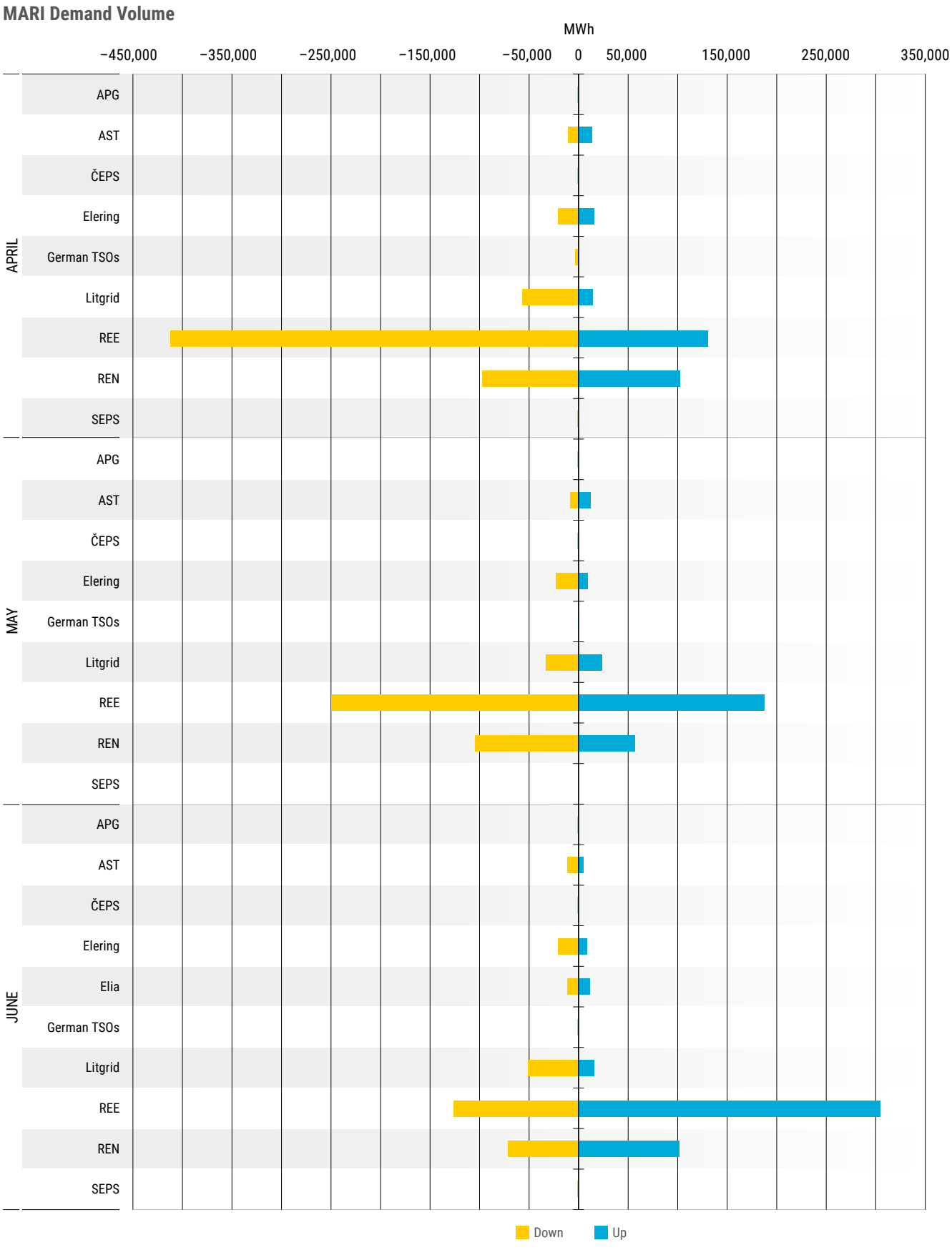



Figure 49: Monthly volume of demand in MARI per direction and TSO in Q2 2025.

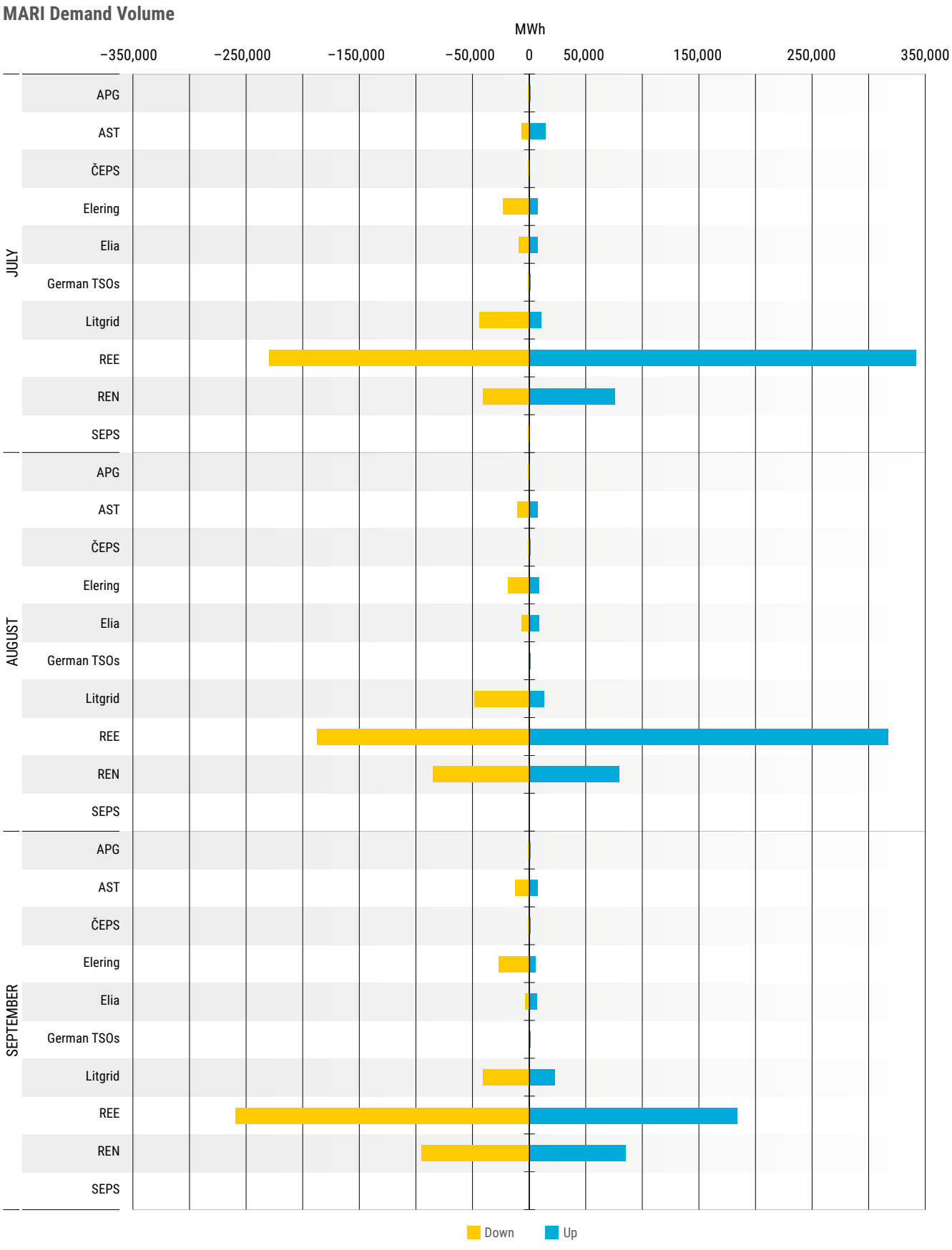



Figure 50: Monthly volume of demand in MARI per direction and TSO in Q3 2025.

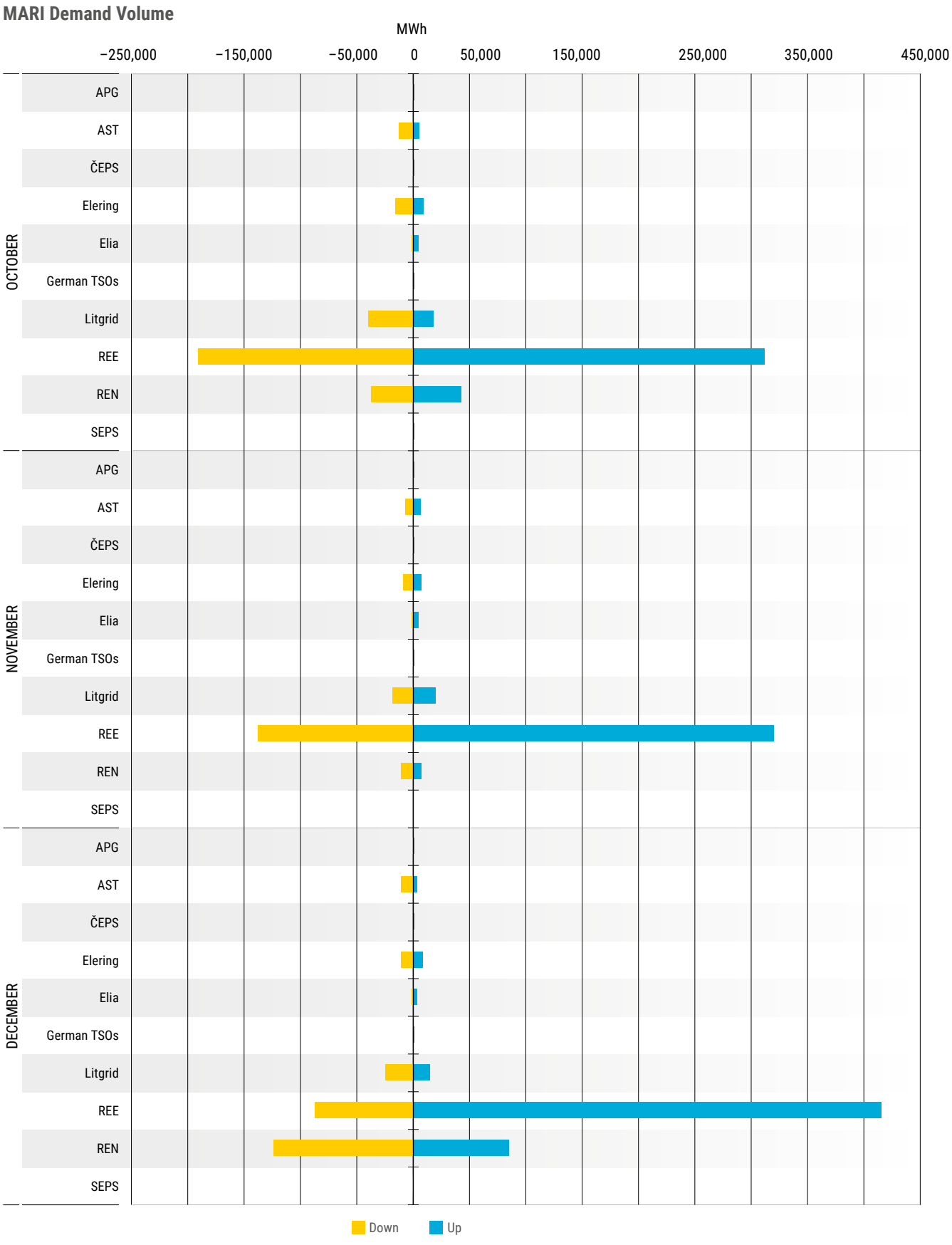



Figure 51: Monthly volume of demand in MARI per direction and TSO in Q4 2025.

## KPI 6.4.2: RR platform: monthly volume of demand per direction and TSO (MWh)

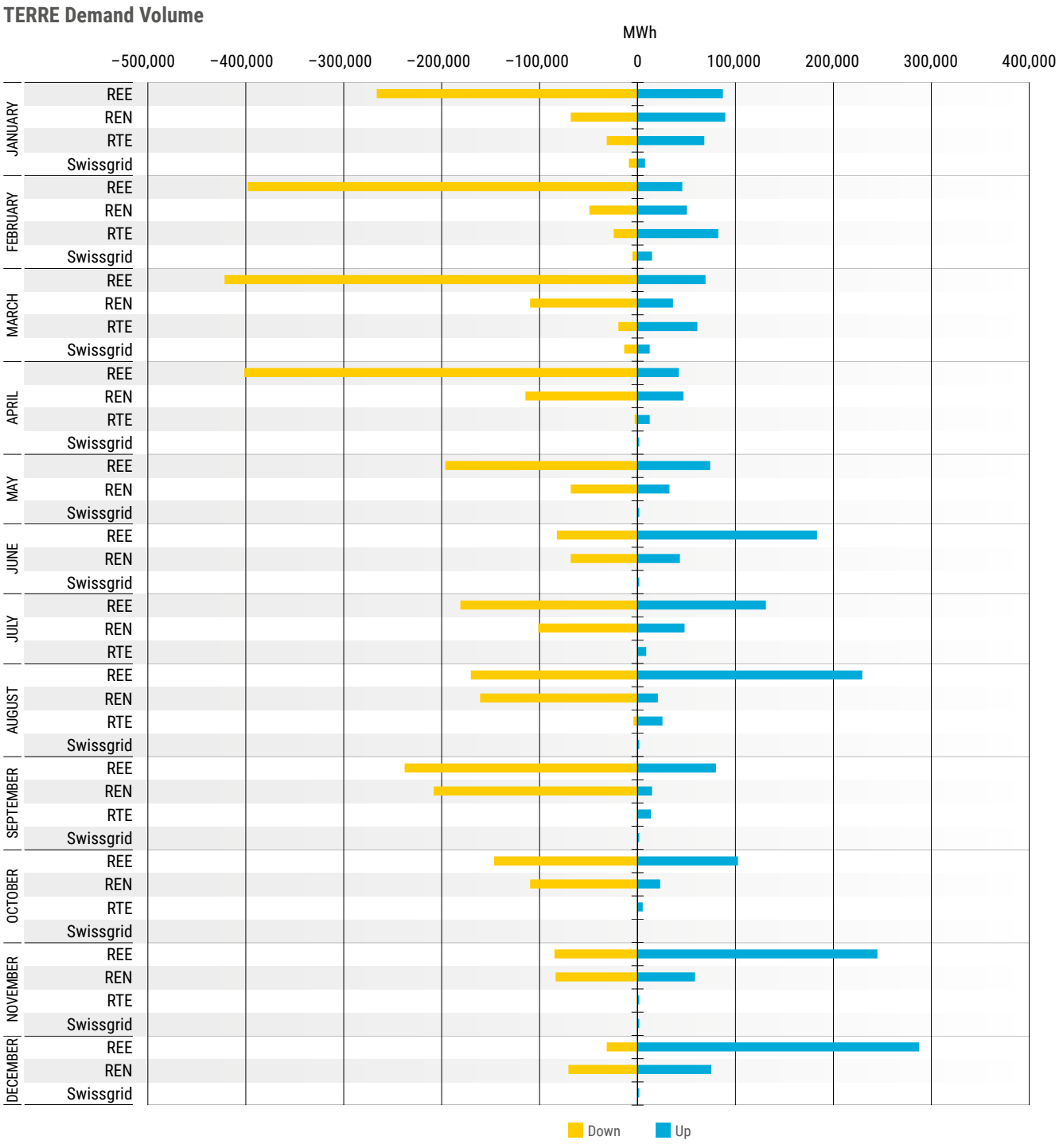



Figure 52: Monthly volume of demand in TERRE per direction and TSO in 2025.

## KPI 6.4.3: aFRR platform: monthly volume of selected bids per direction and TSO (MWh)

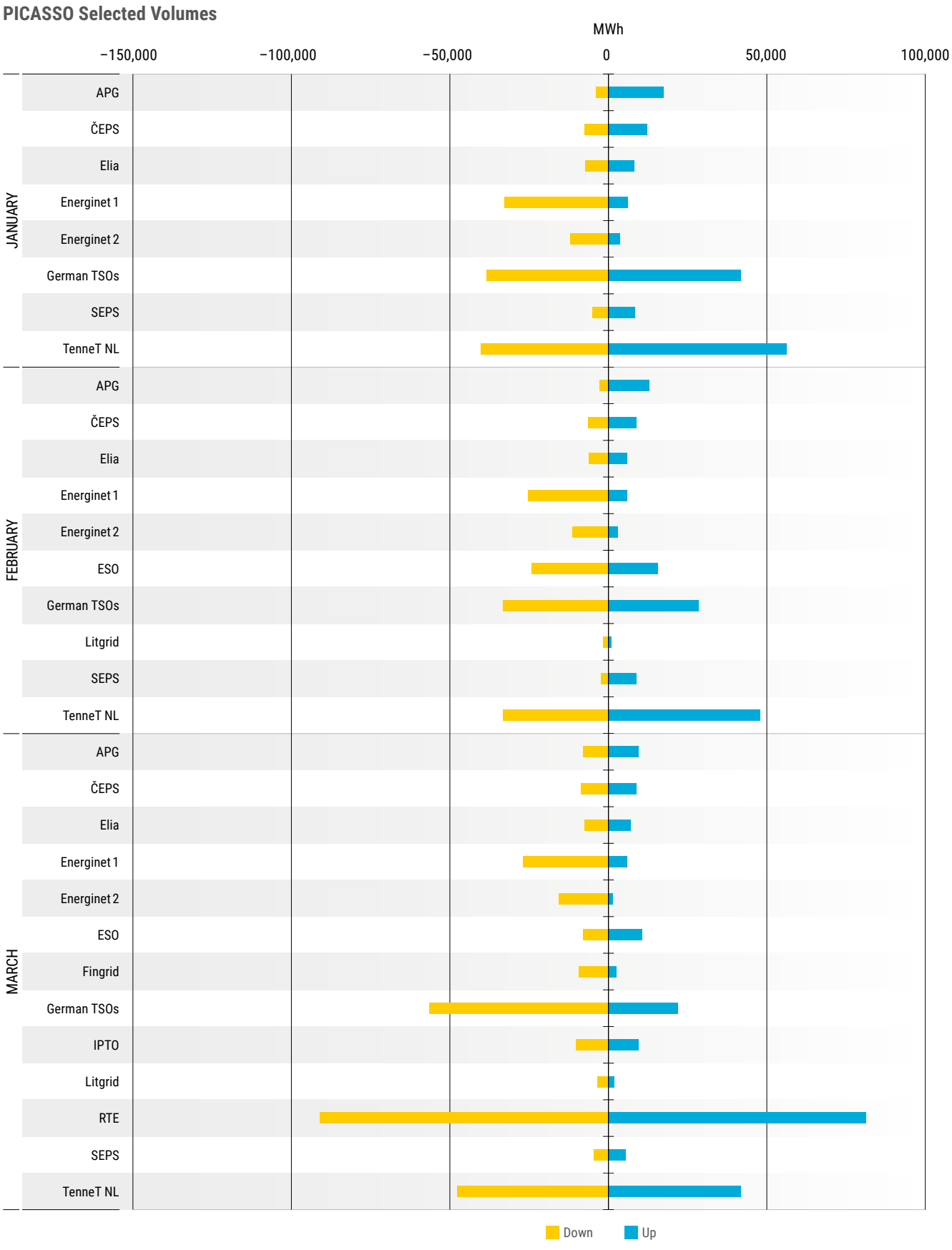



Figure 53: Monthly volume of selected bids in PICASSO per direction and TSO in Q1 2025.

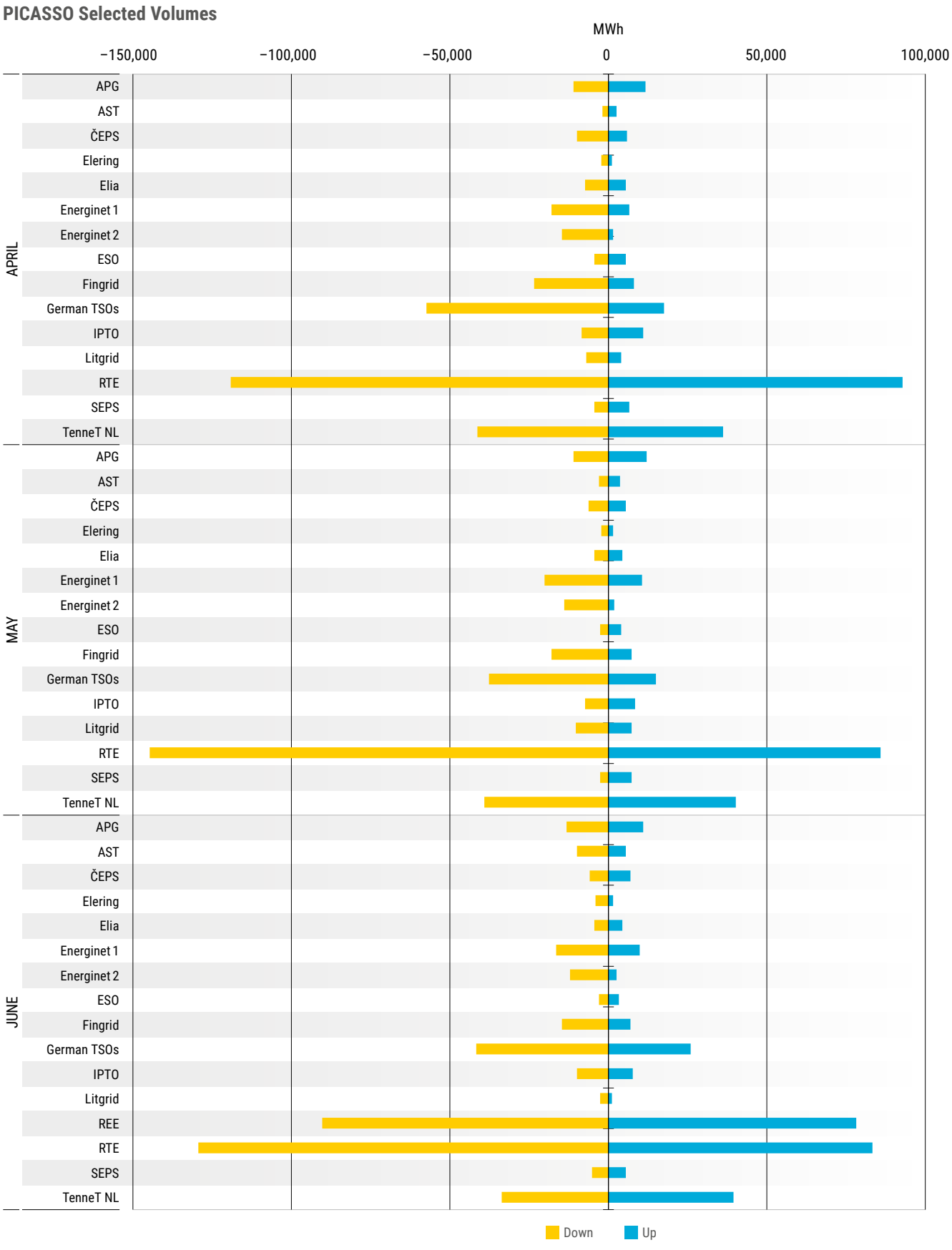



Figure 54: Monthly volume of selected bids in PICASSO per direction and TSO in Q2 2025.

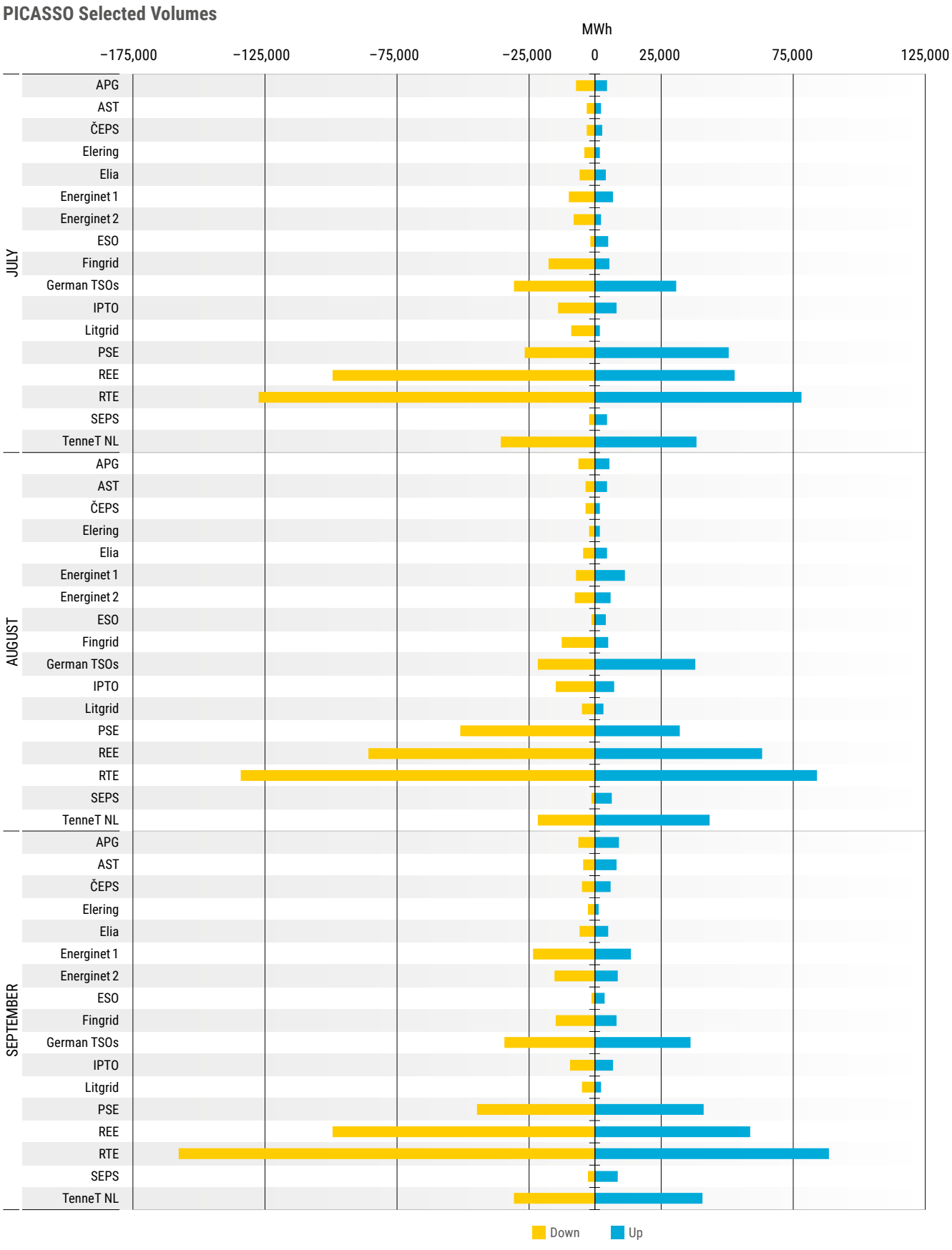



Figure 55: Monthly volume of selected bids in PICASSO per direction and TSO in Q3 2025.

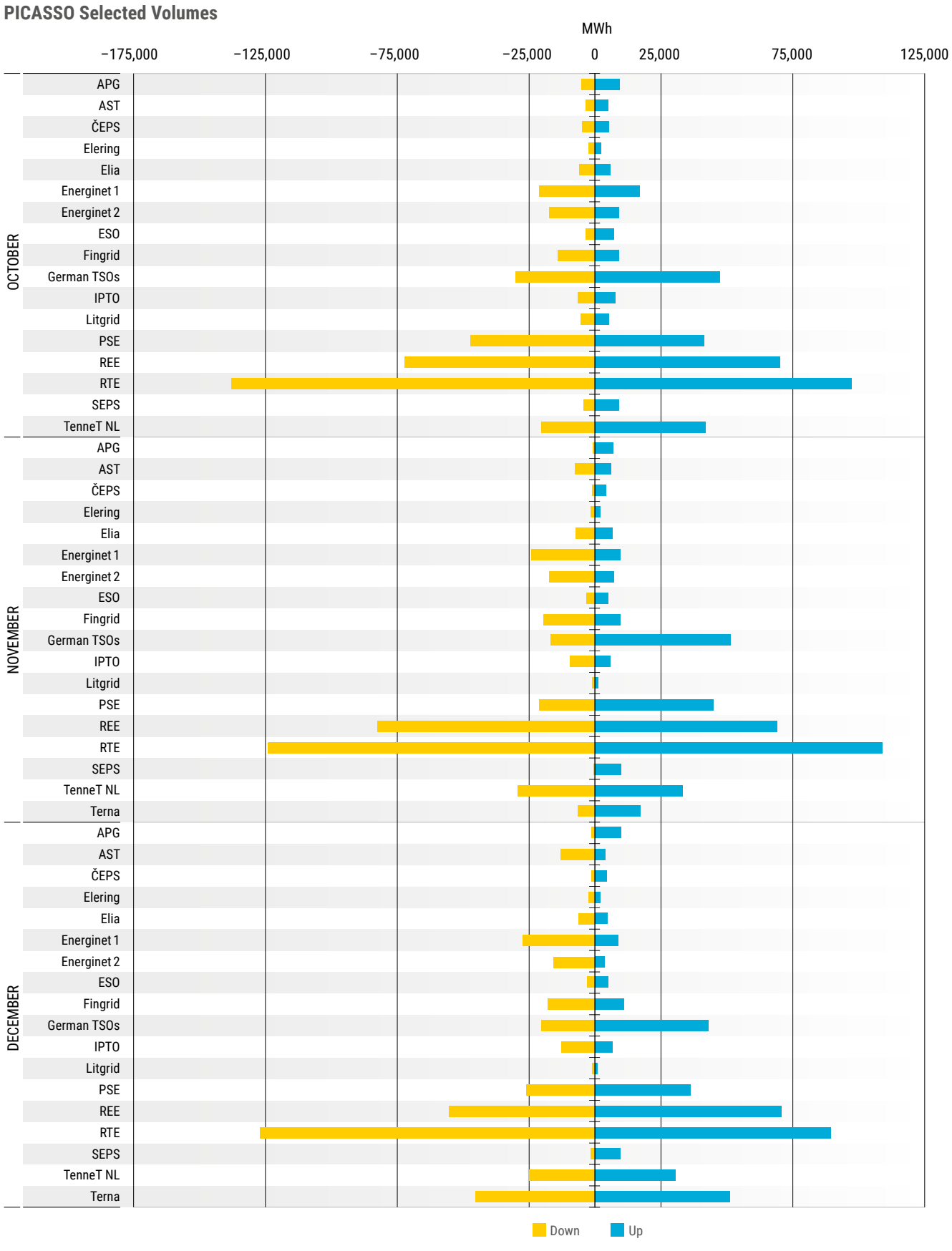



Figure 56: Monthly volume of selected bids in PICASSO per direction and TSO in Q4 2025.

## KPI 6.4.3: mFRR platform: monthly volume of selected bids per direction and TSO (MWh)

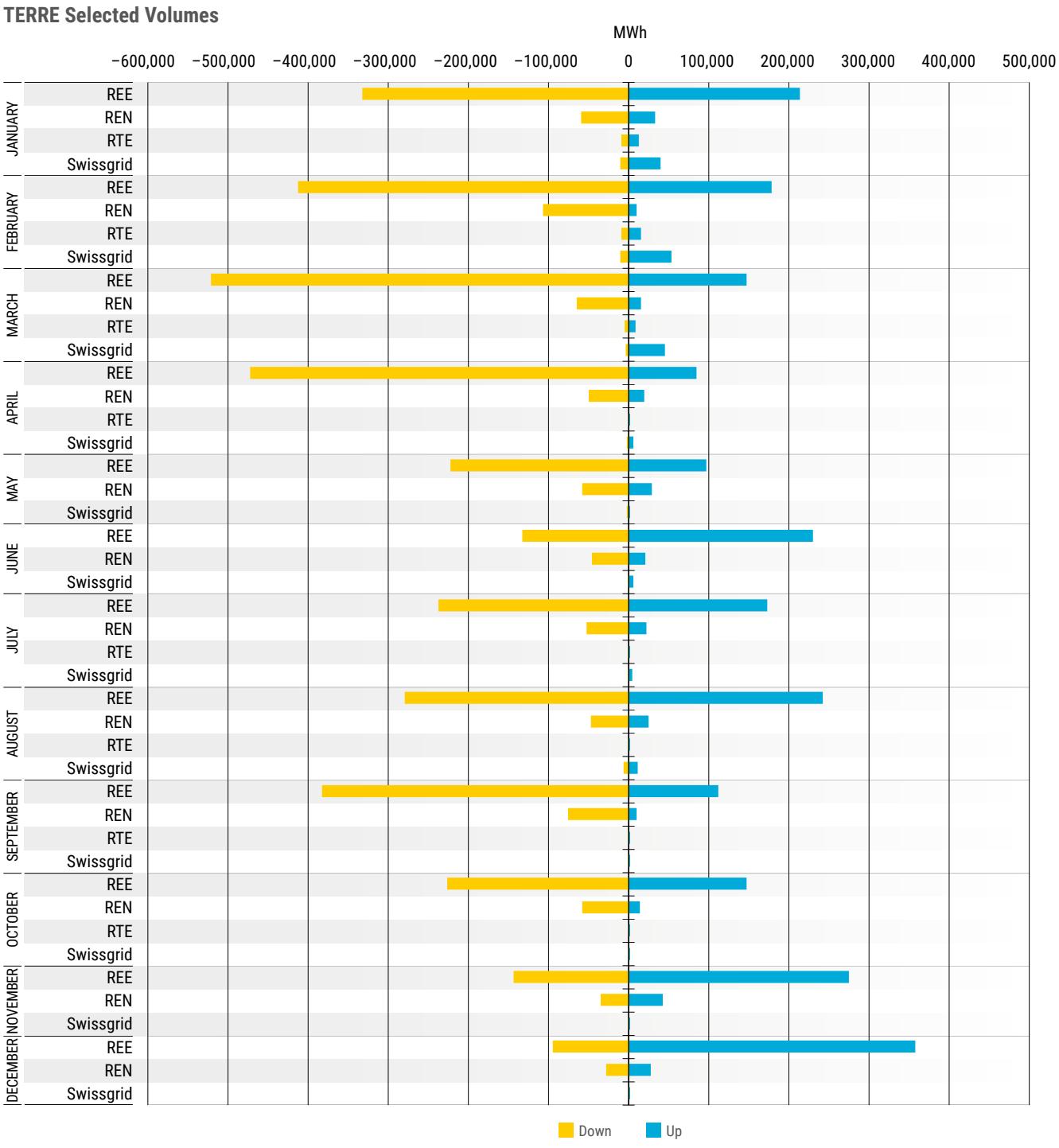



Figure 57: Monthly volume of selected bids in TERRE per direction and TSO in 2025.

## KPI 6.4.4: aFRR platform: repartition of the use of inelastic and elastic need per TSO (% of share of total demand being covered by elastic and inelastic demand)

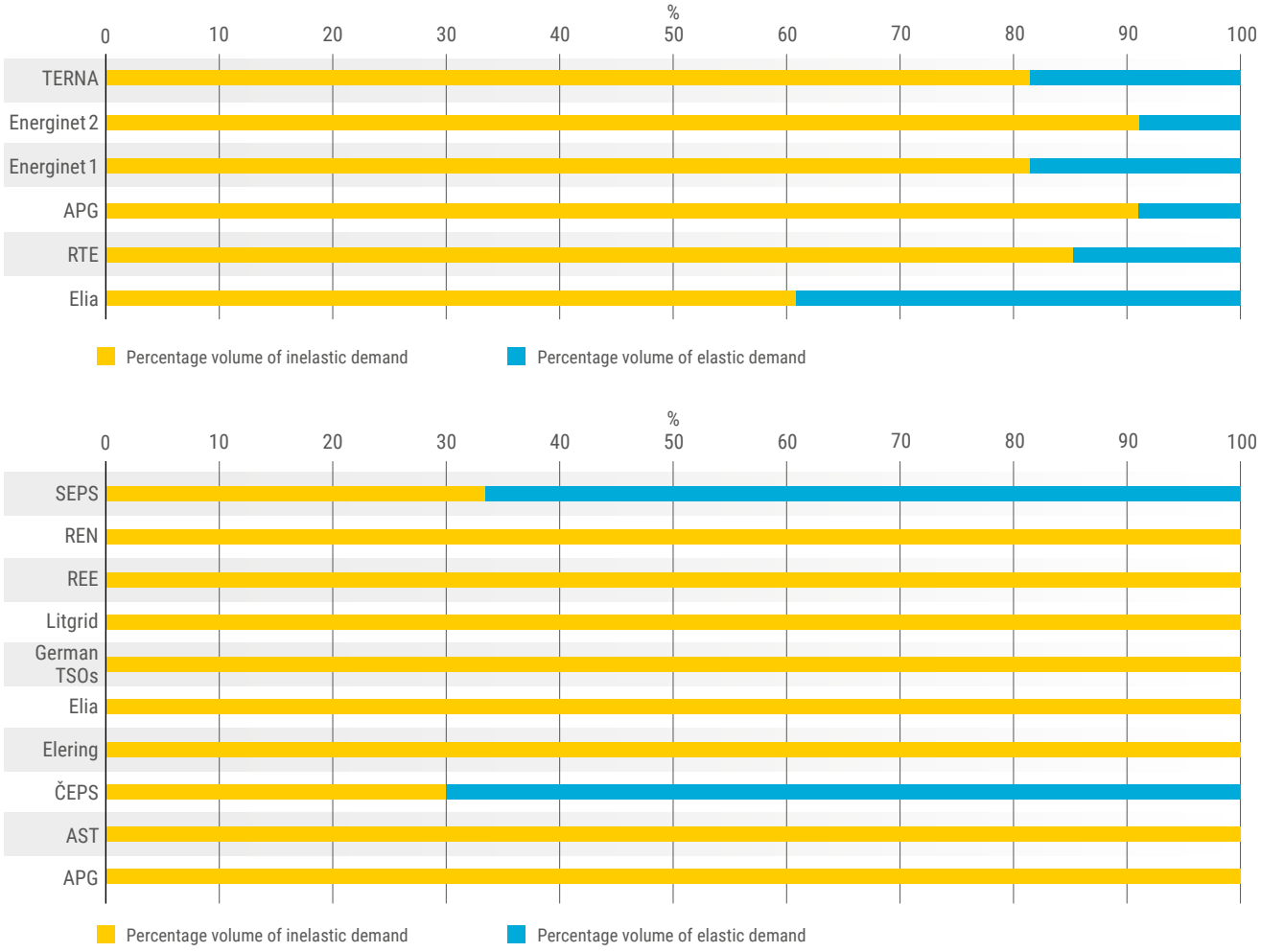



Figure 58: Repartition of the use of inelastic and elastic need per TSO in MARI.

## KPI 6.4.4: RR platform: repartition of the use of inelastic and elastic need per TSO (% of share of total demand being covered by elastic and inelastic demand)

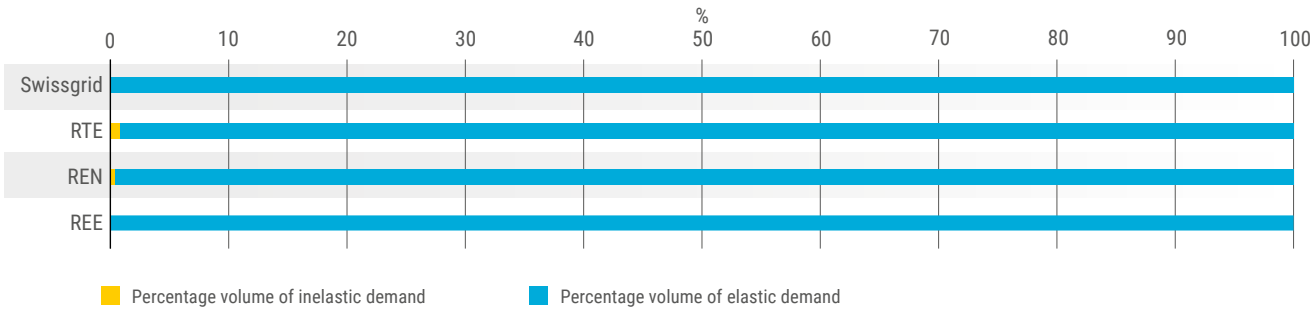



Figure 59: Repartition of the use of inelastic and elastic need per TSO in TERRE.

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – APG (€/MWh)

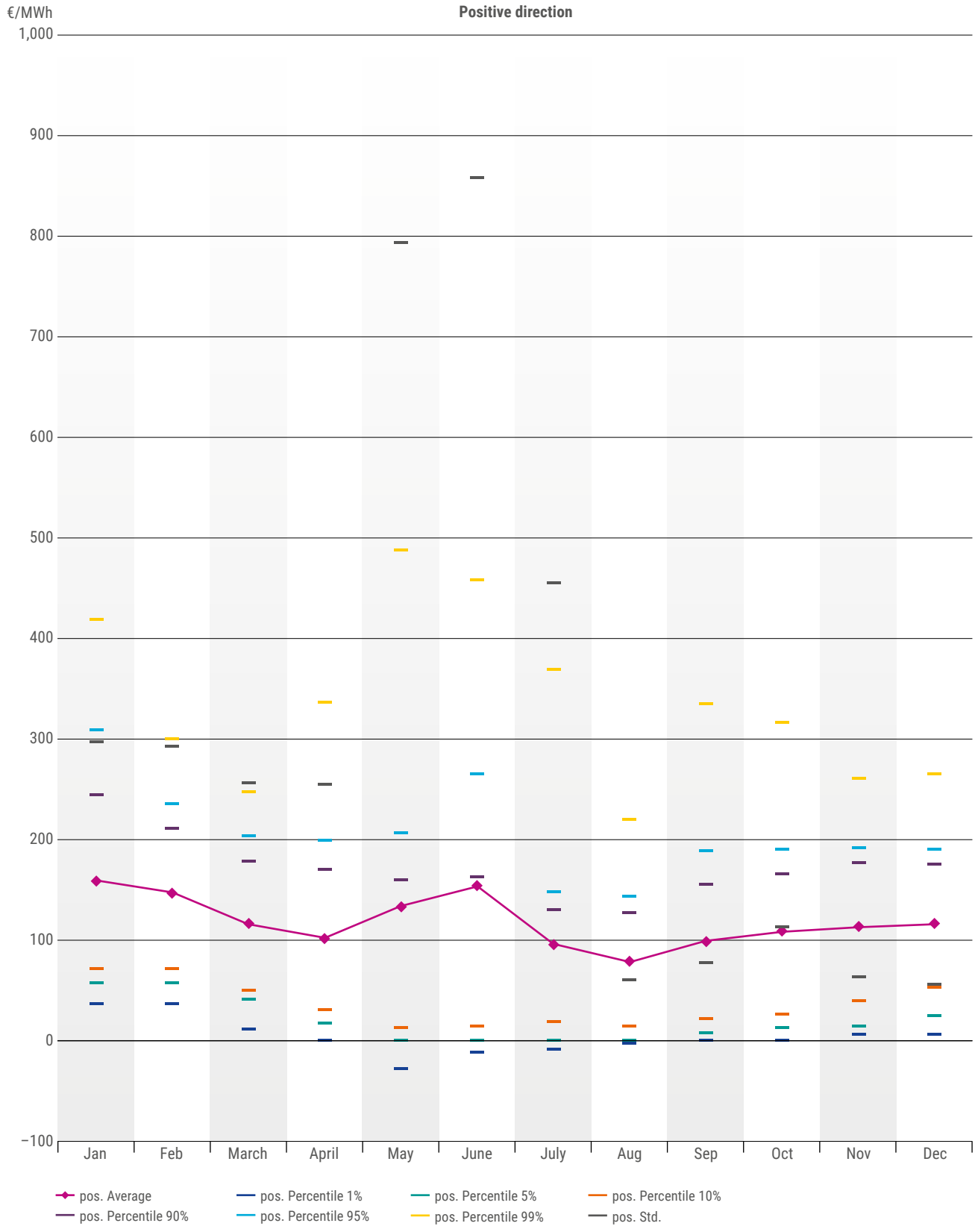



Figure 60: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – APG (€/MWh)

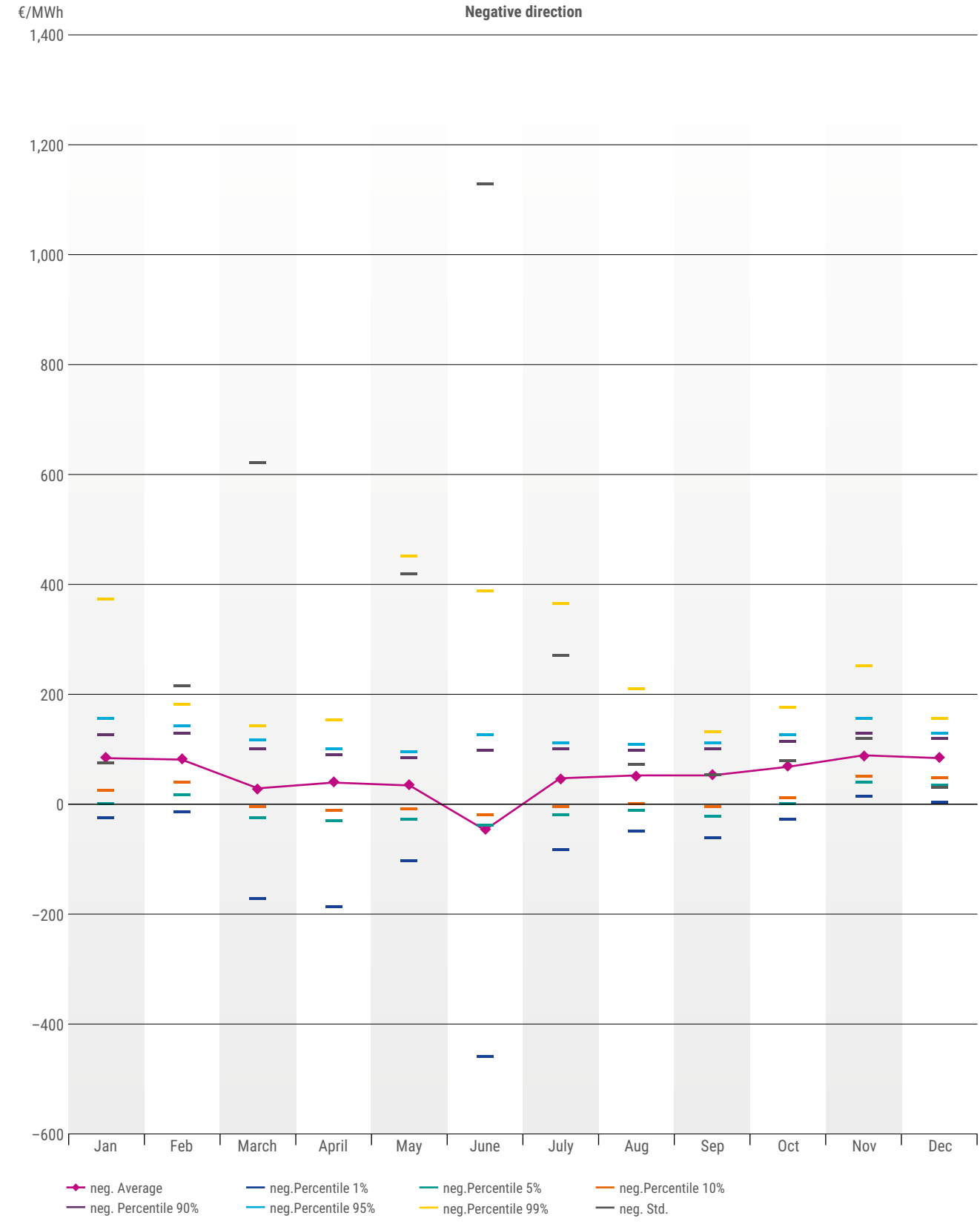



Figure 61: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – APG (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – AST (€/MWh)

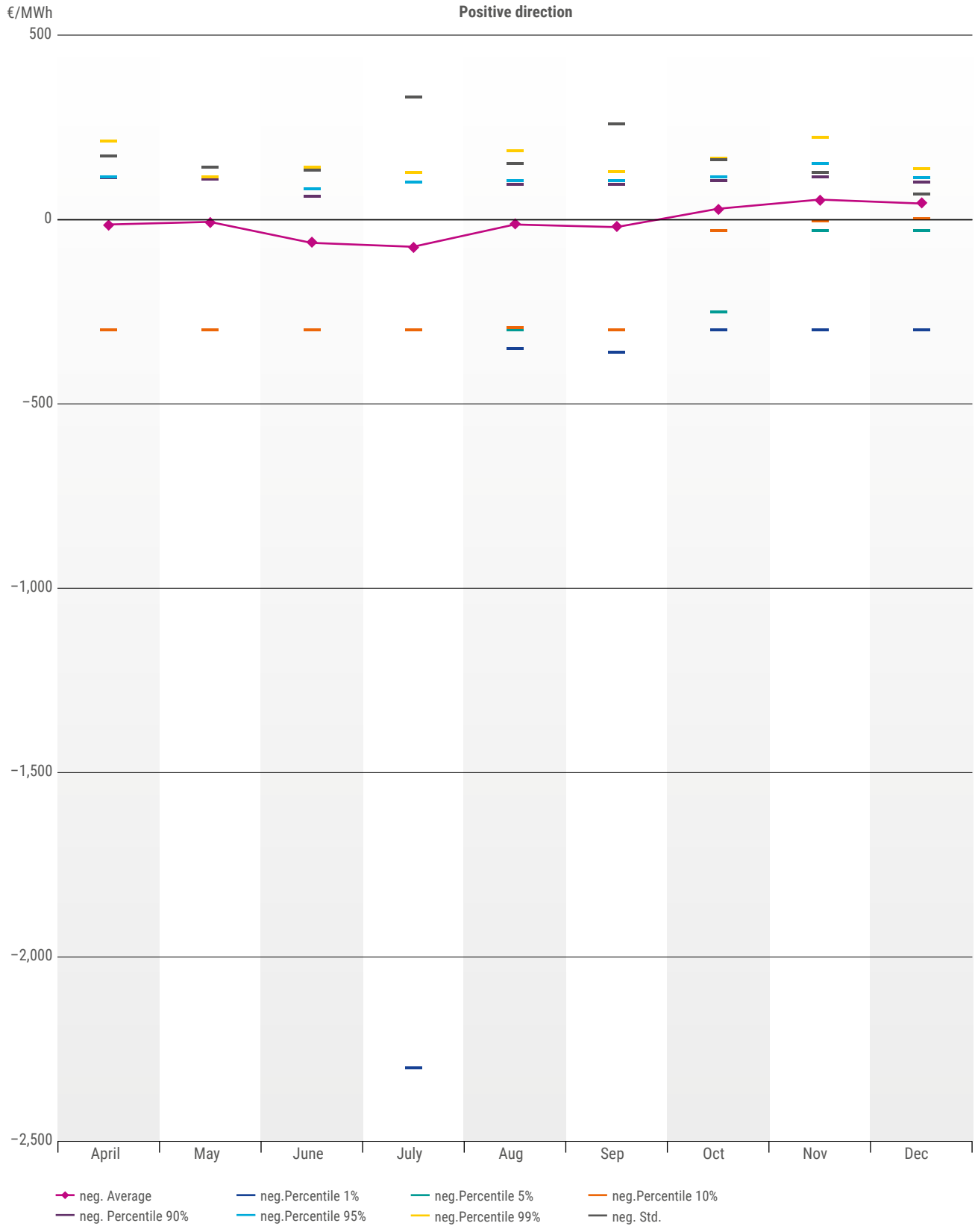



Figure 62: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – AST (€/MWh)

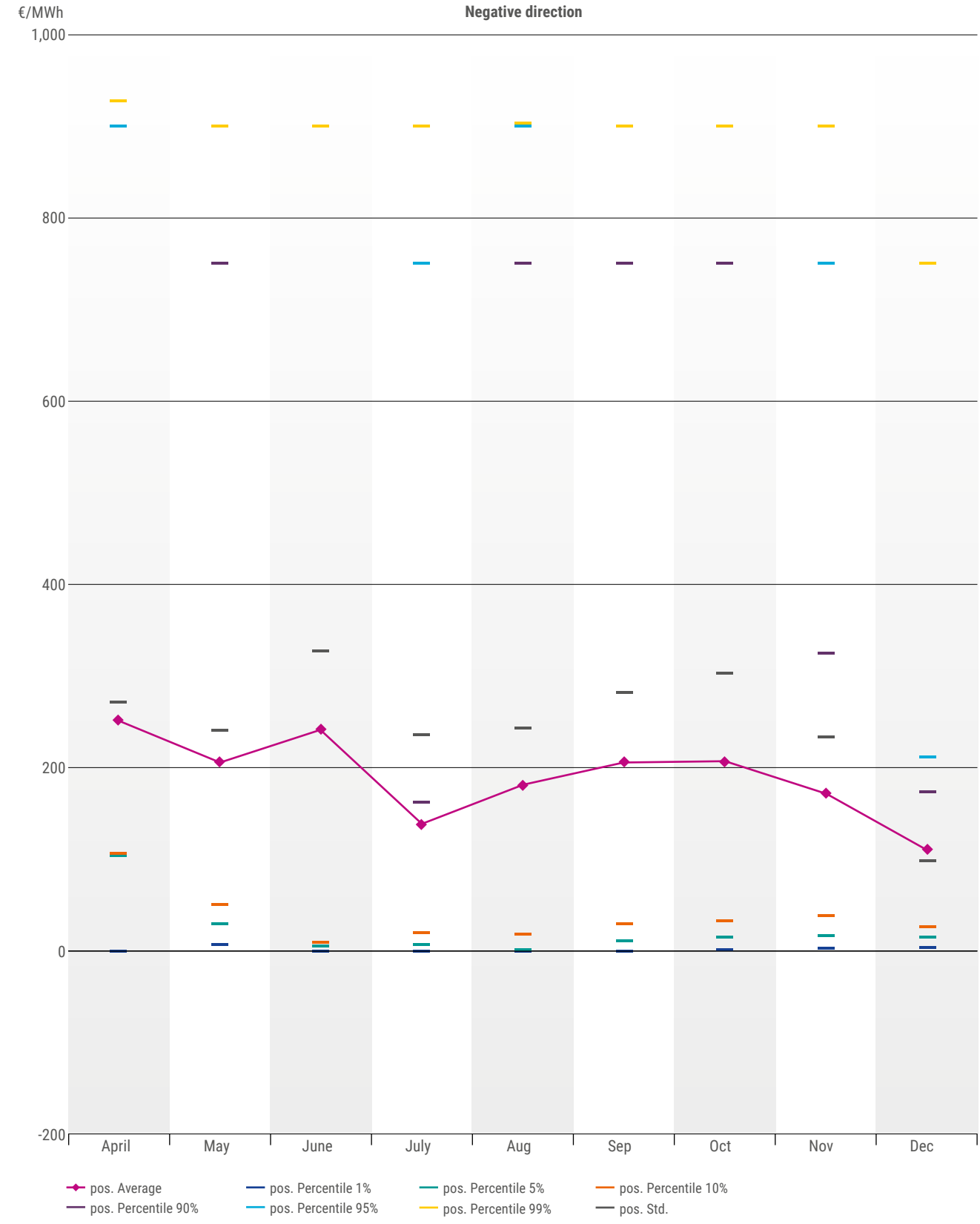



Figure 63: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – AST (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – ČEPS (€/MWh)

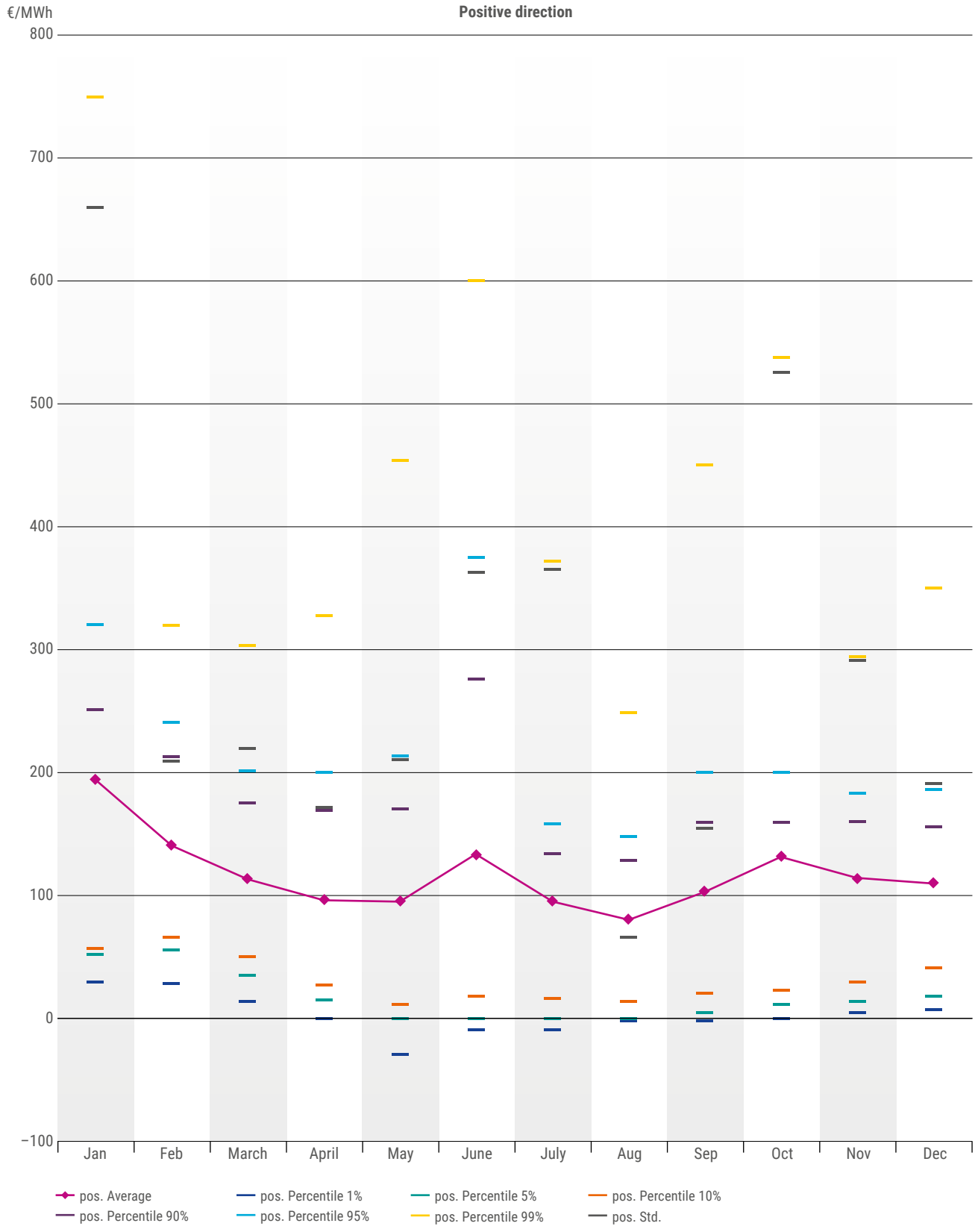



Figure 64: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – ČEPS (€/MWh)

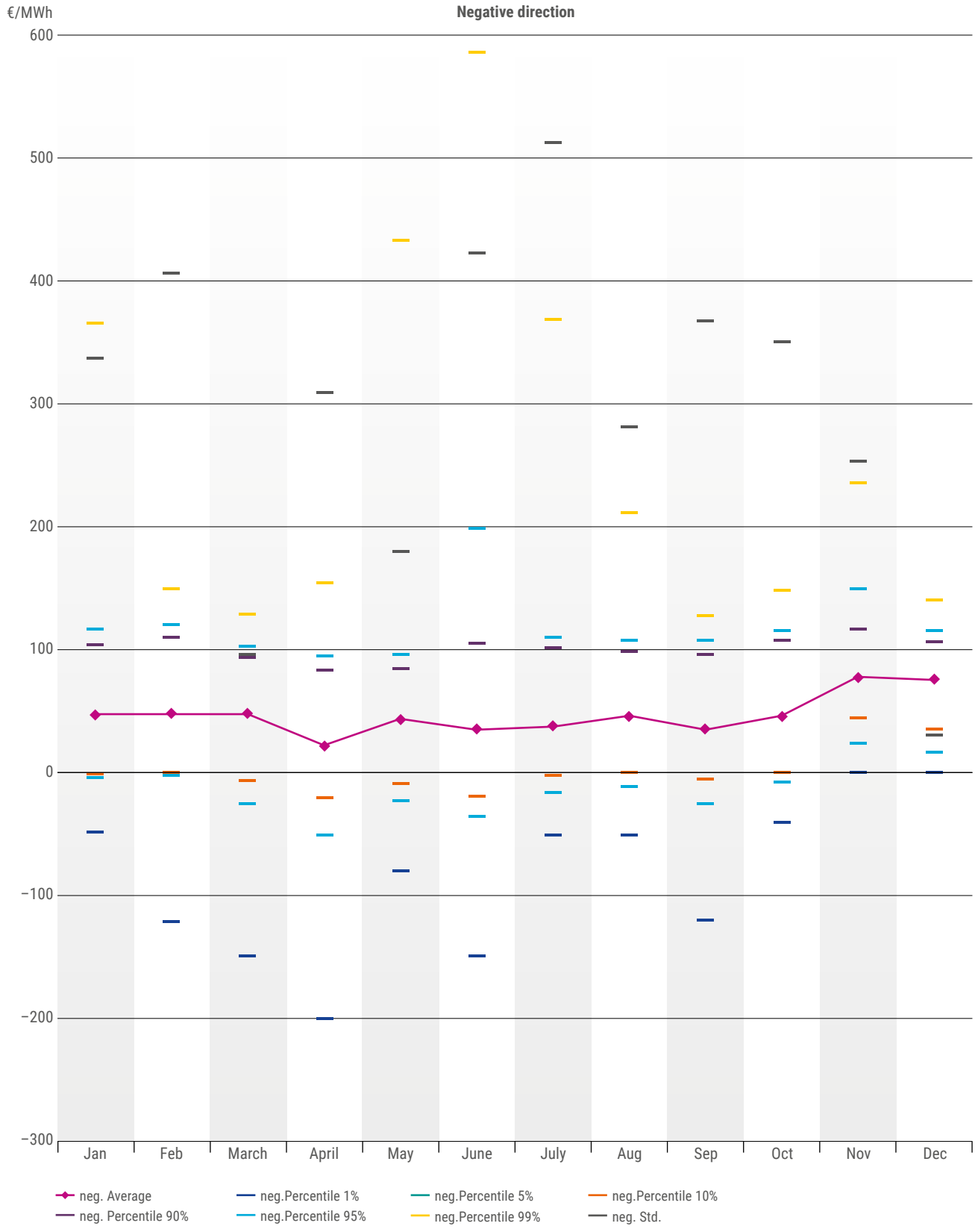



Figure 65: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – ČEPS (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Elia (€/MWh)

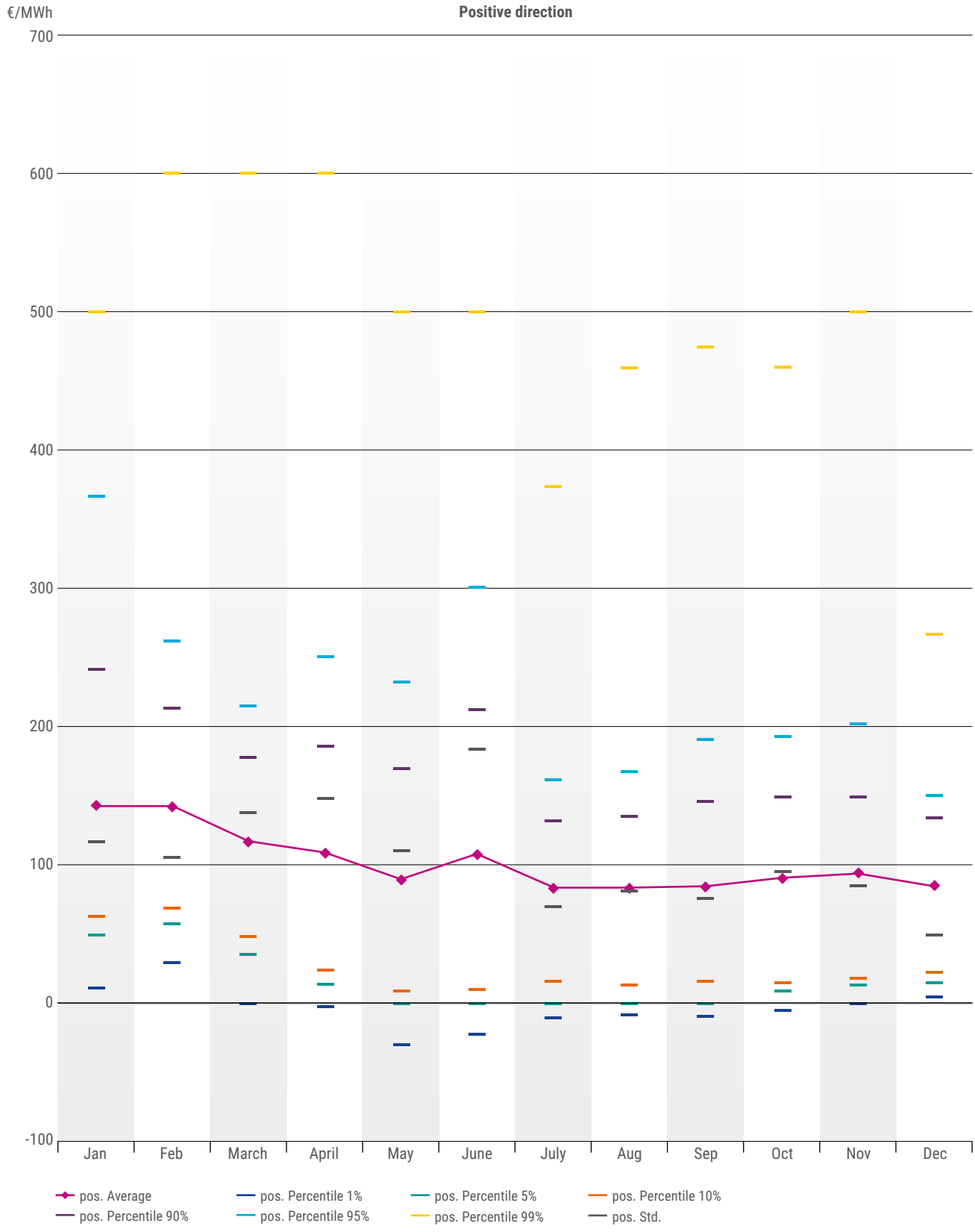



Figure 66: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Elia (€/MWh)

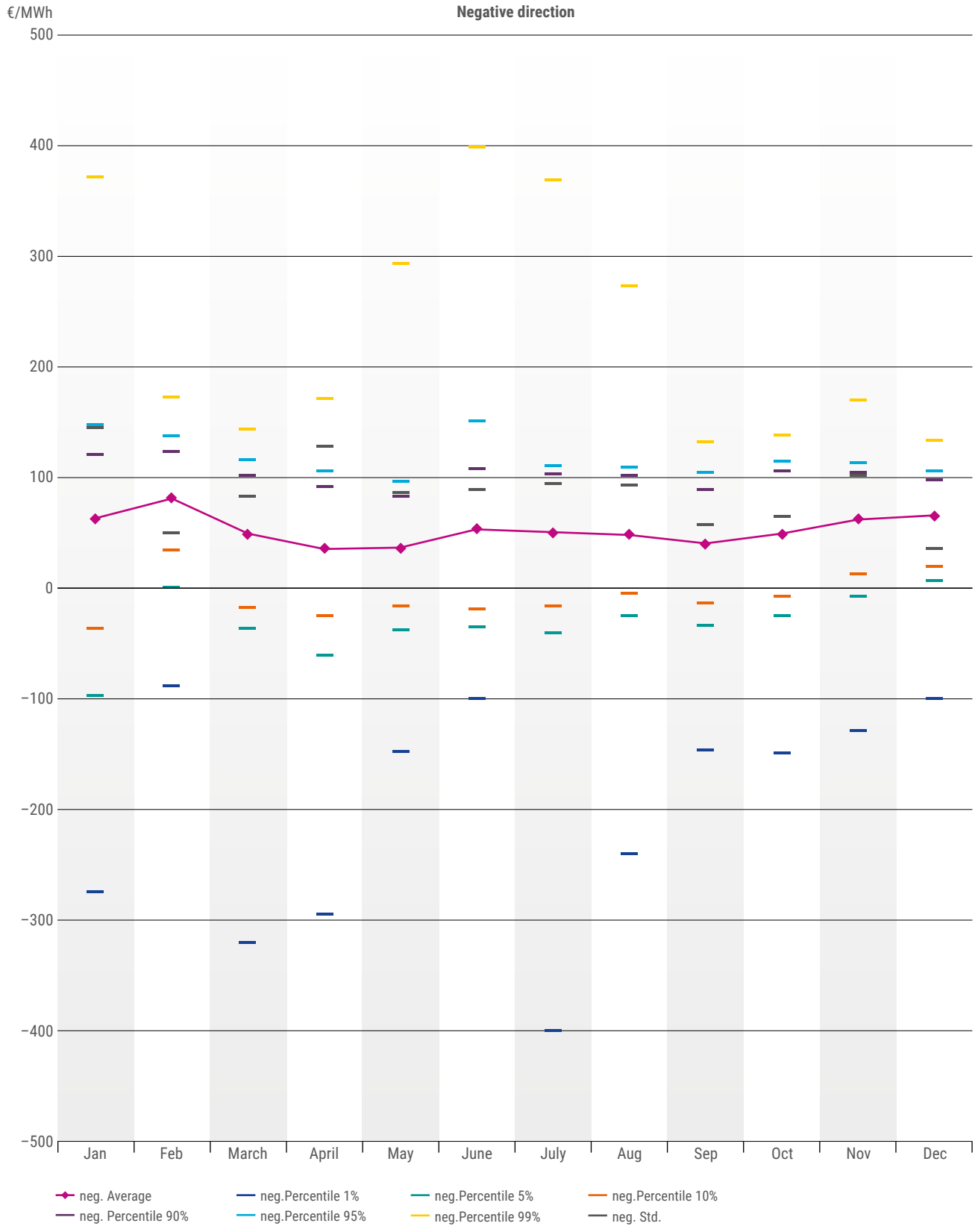



Figure 67: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Elia (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Energinet O (€/MWh)

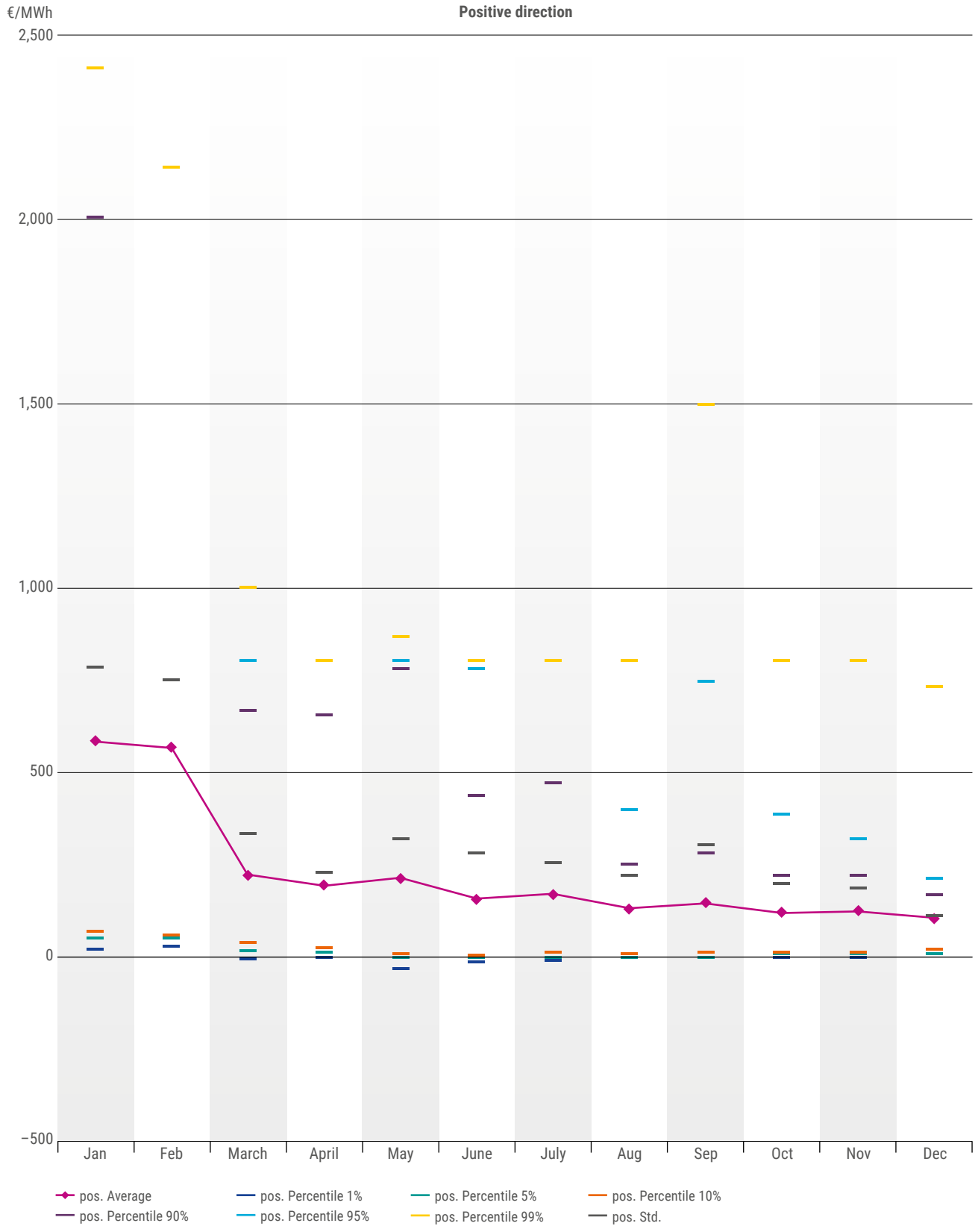



Figure 68: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Energinet O (€/MWh)

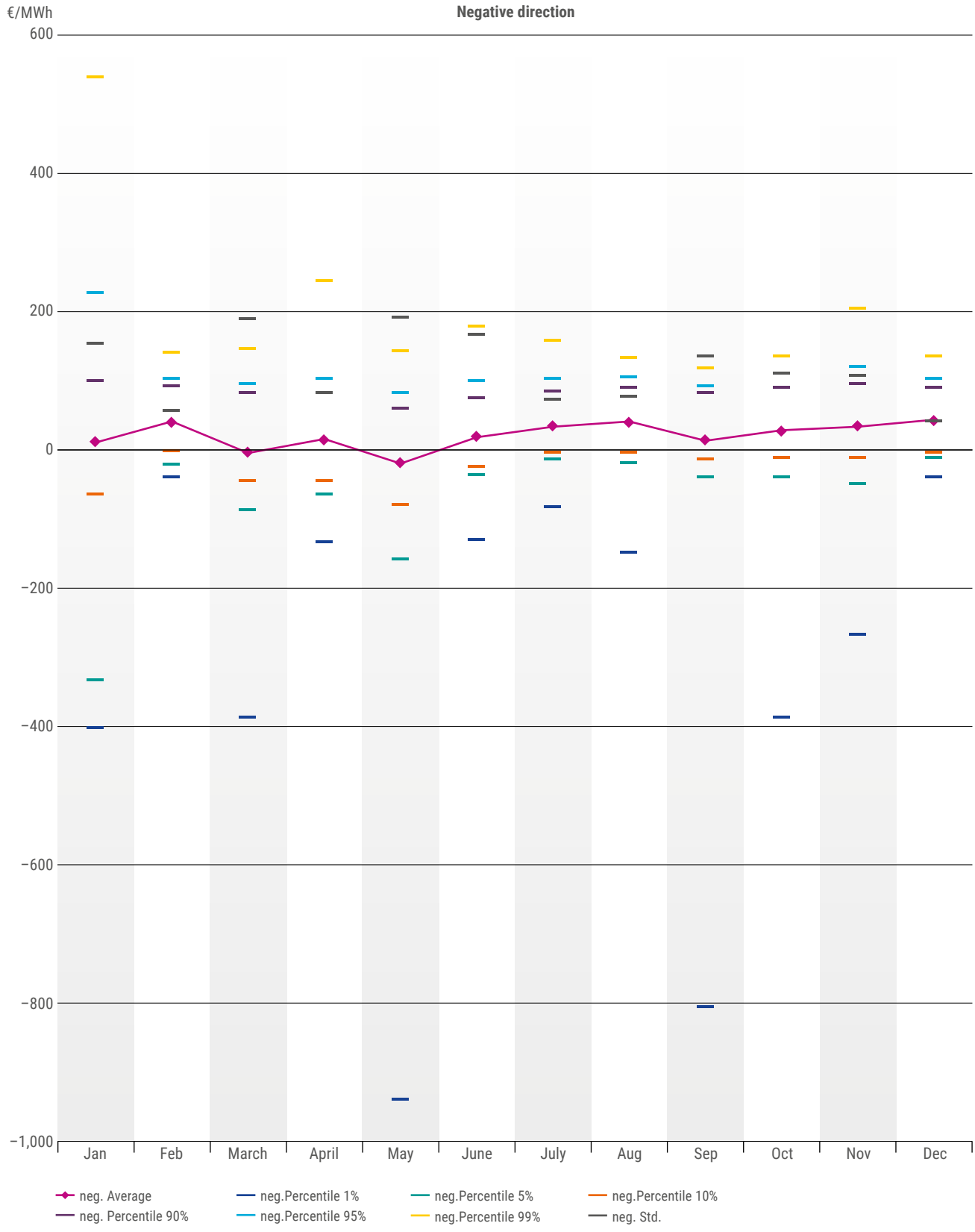



Figure 69: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Energinet O (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Energinet W (€/MWh)

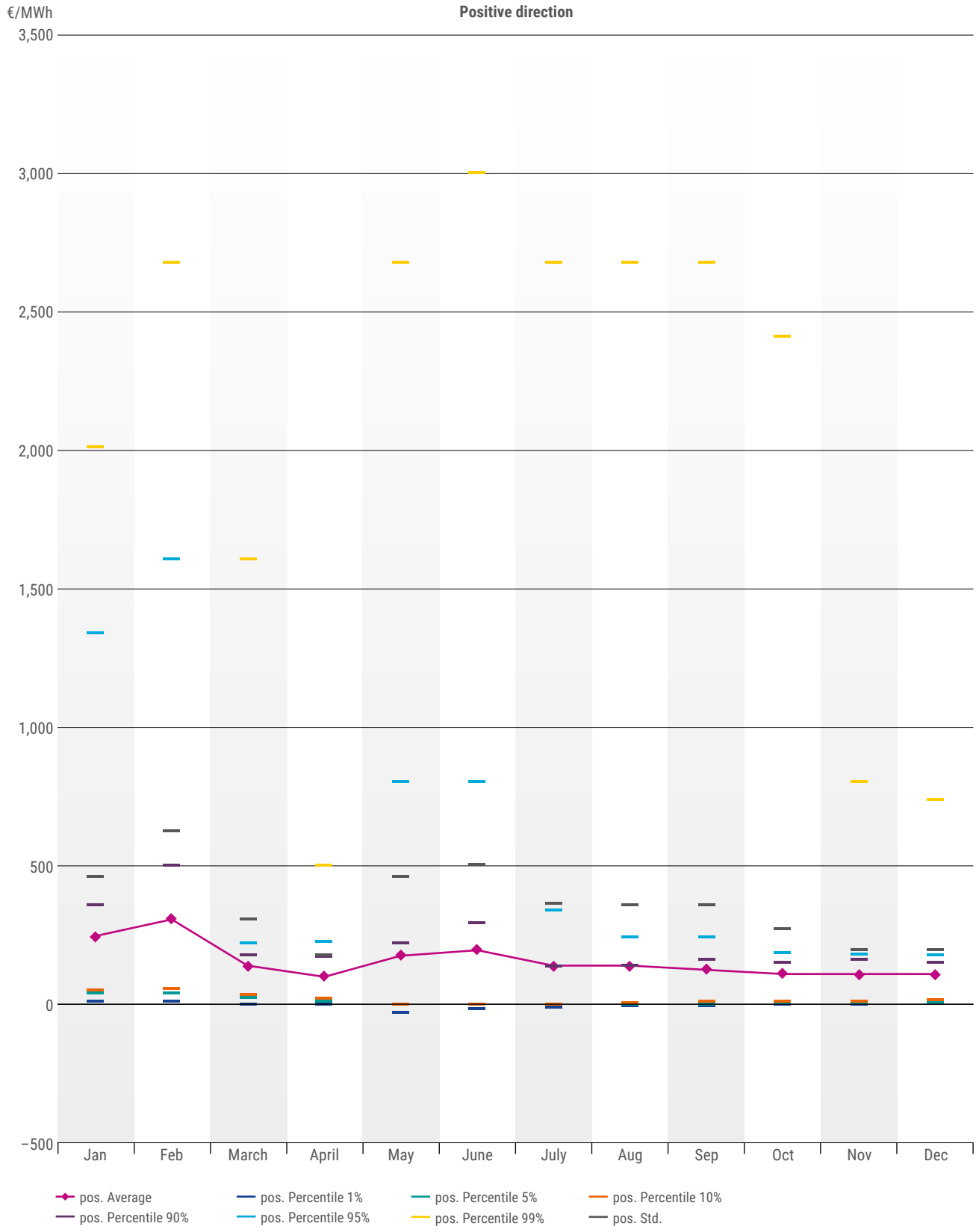



Figure 70: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Energinet W (€/MWh)

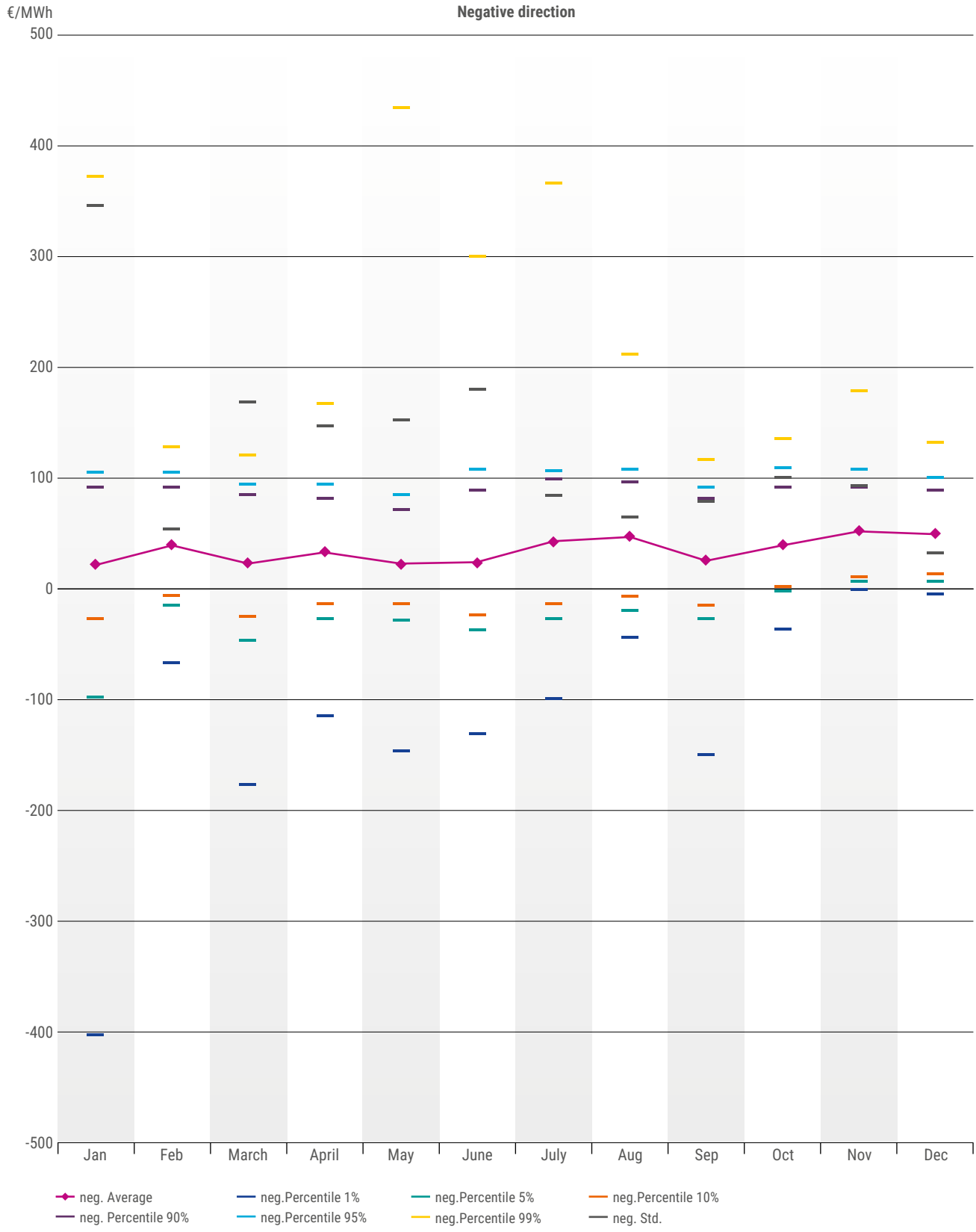



Figure 71: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Energinet W (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – ESO (€/MWh)

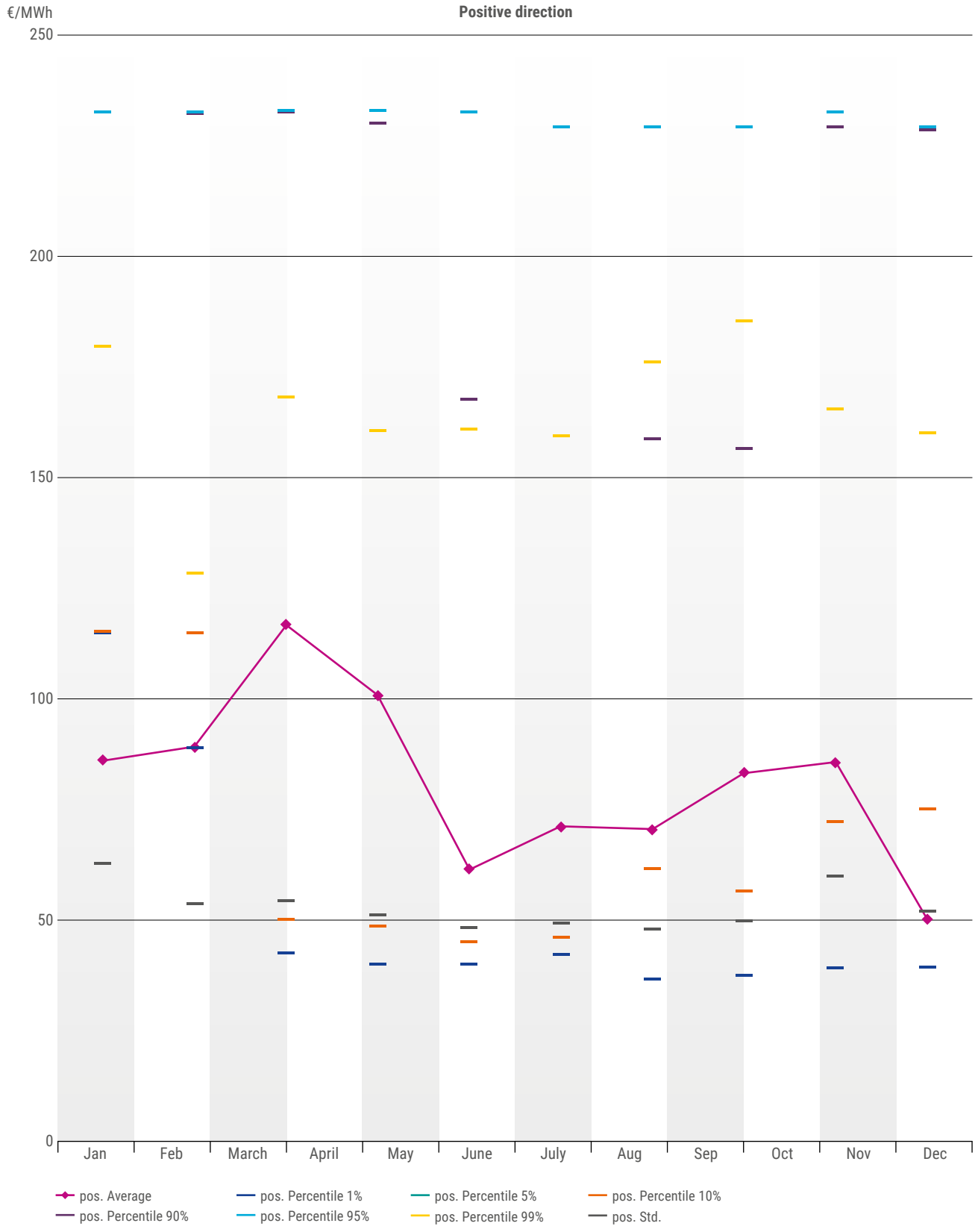



Figure 72: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – ESO (€/MWh)

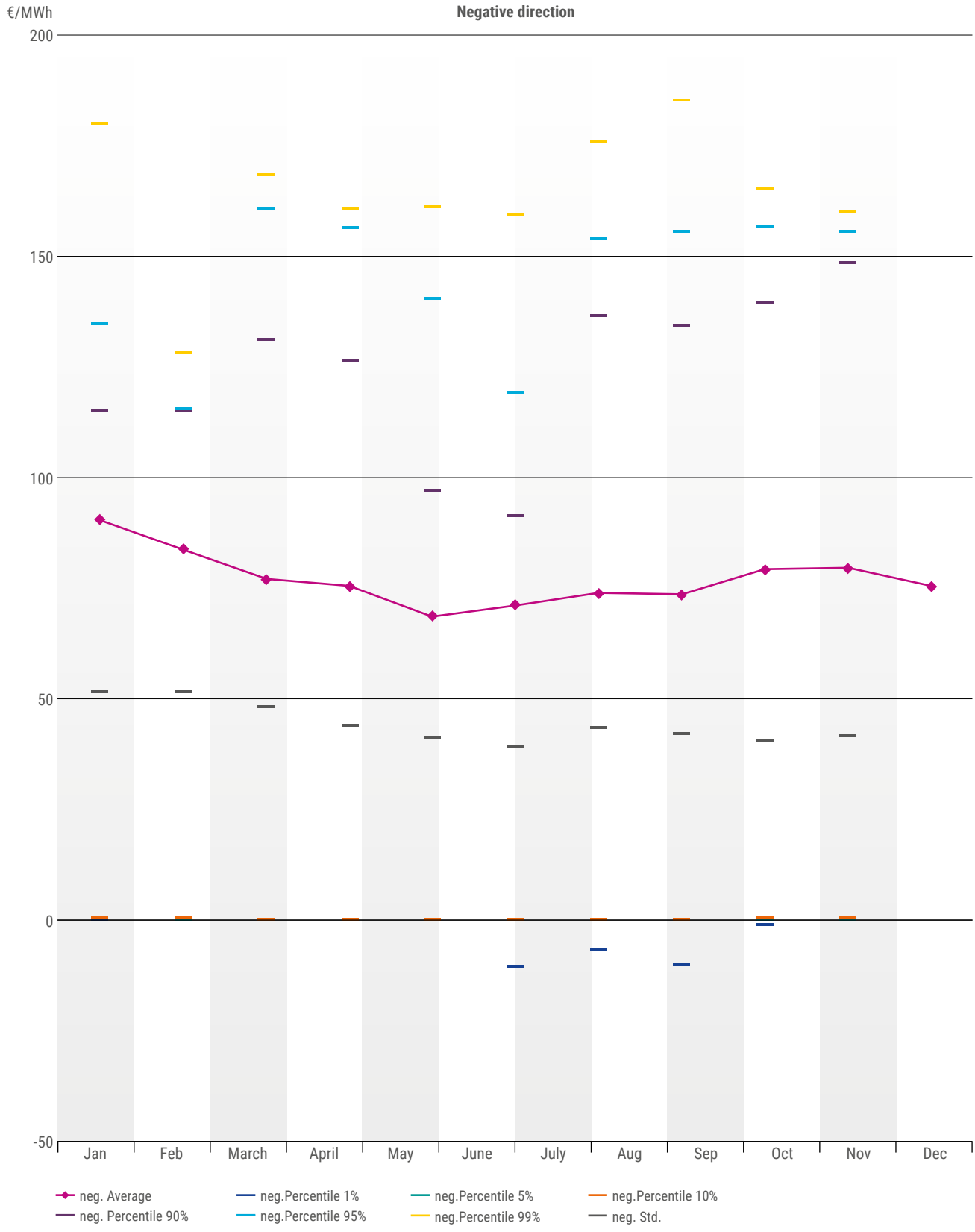



Figure 73: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – ESO (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Fingrid (€/MWh)

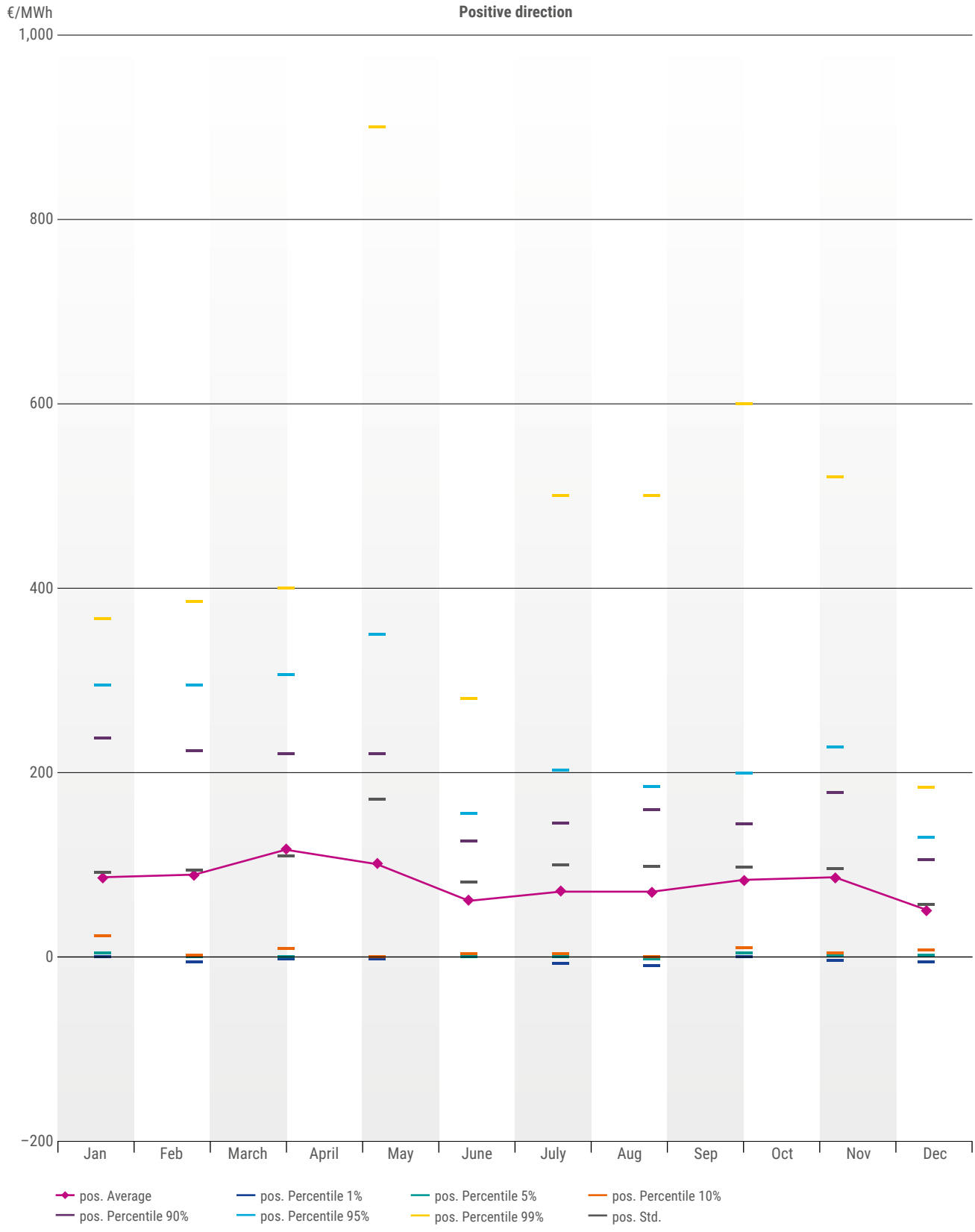



Figure 74: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Fingrid (€/MWh)

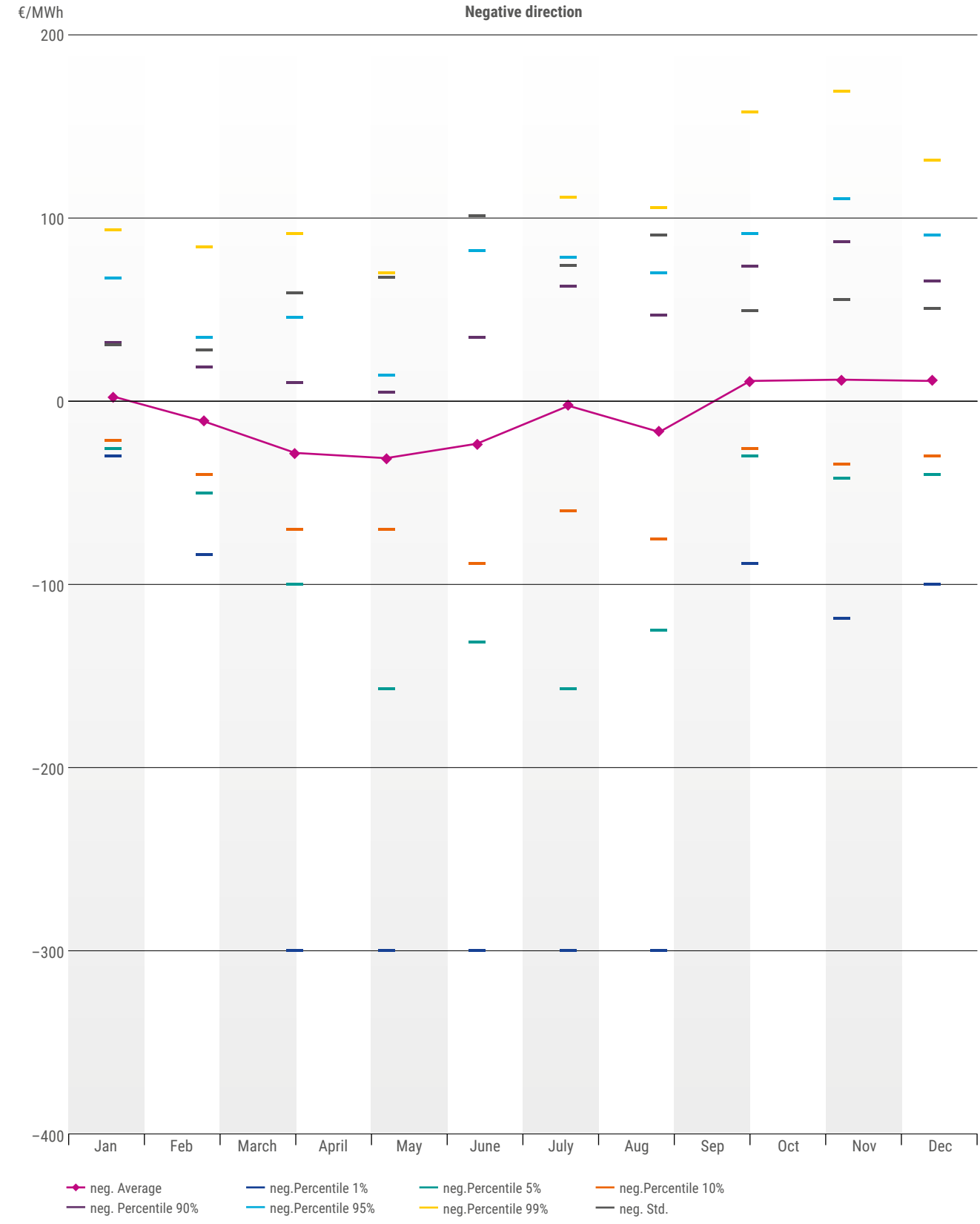



Figure 75: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Fingrid (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – German TSOs (€/MWh)

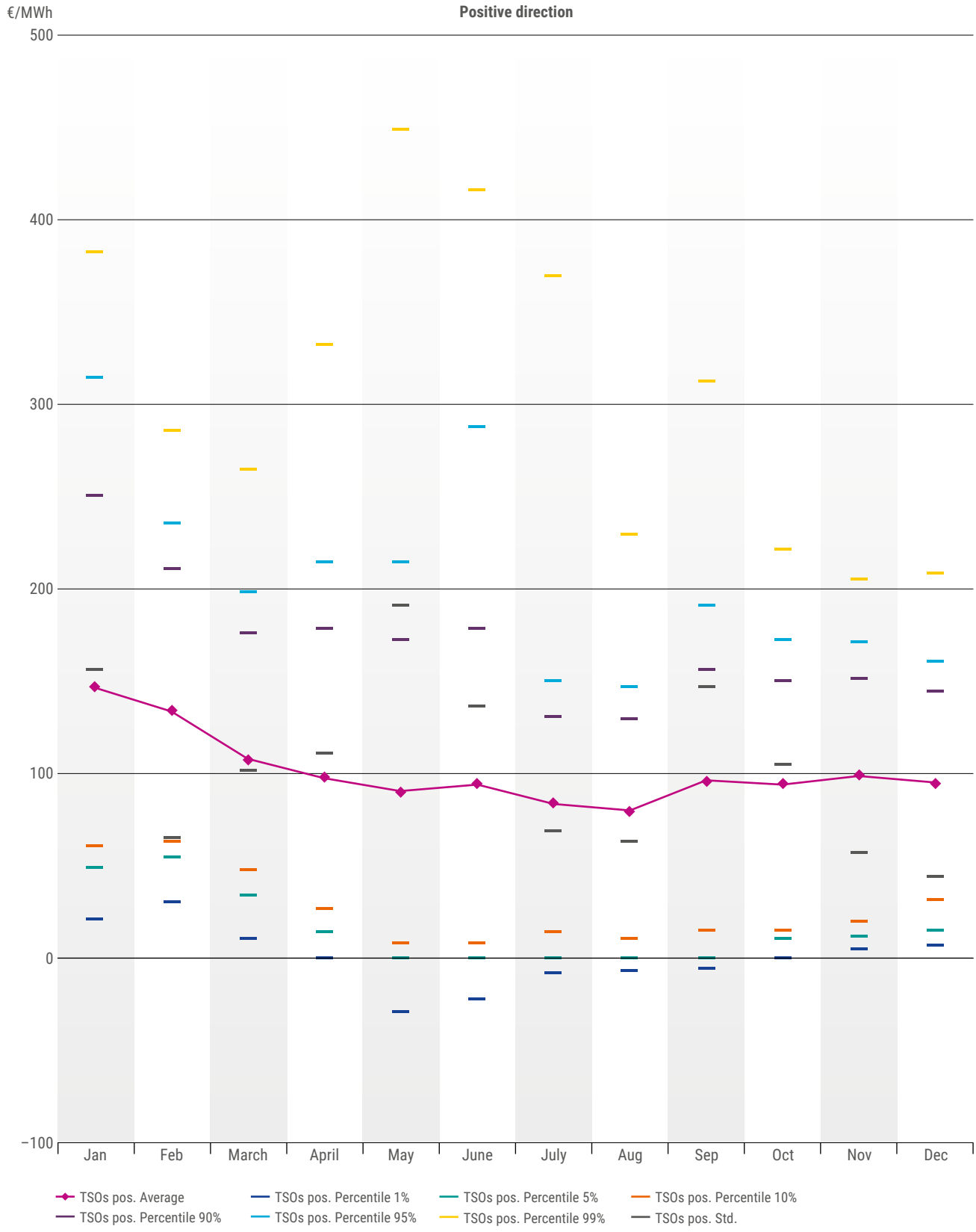



Figure 76: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – German TSOs (€/MWh)

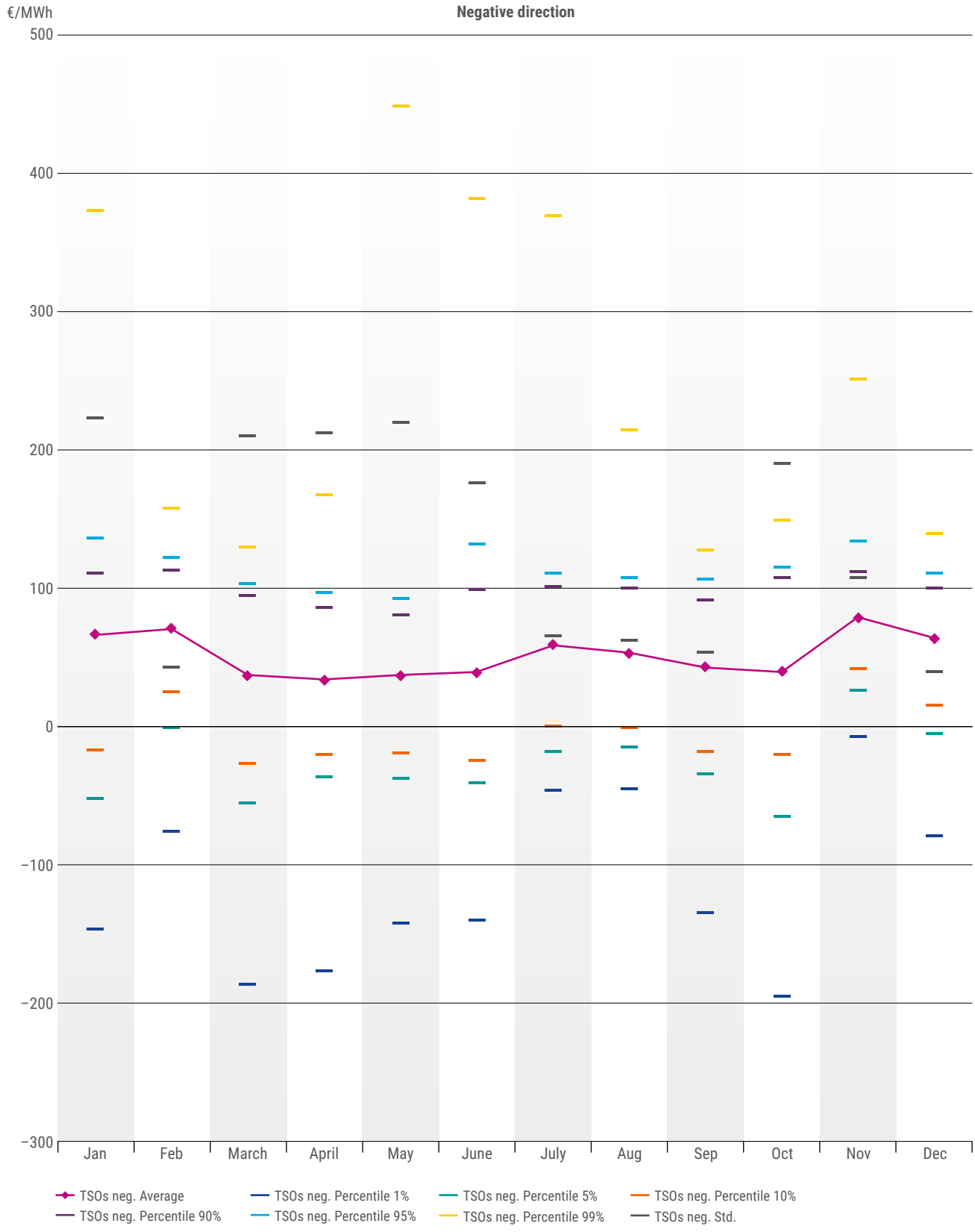



Figure 77: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – German TSOs (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – IPTO (€/MWh)

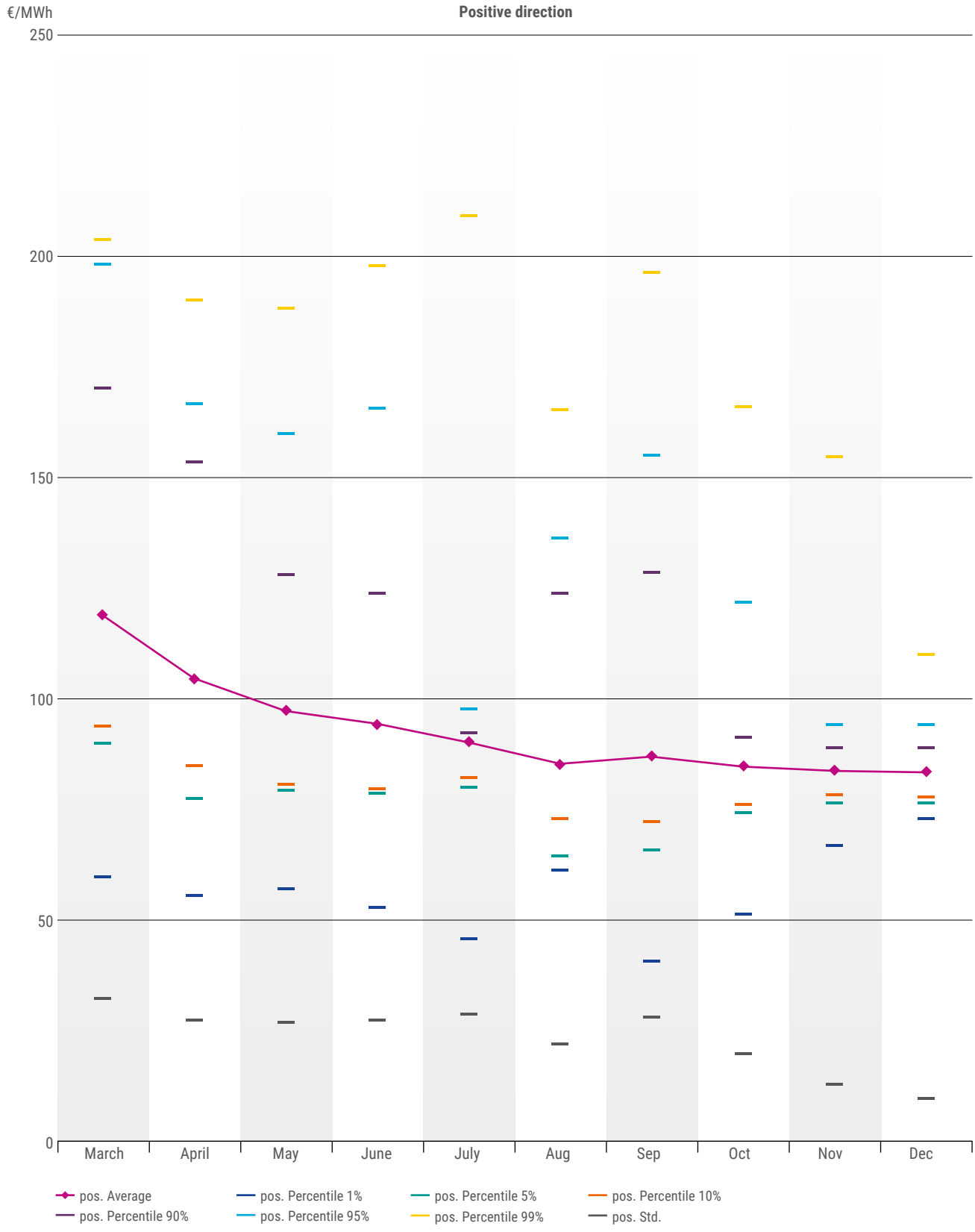



Figure 78: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – IPTO (€/MWh)

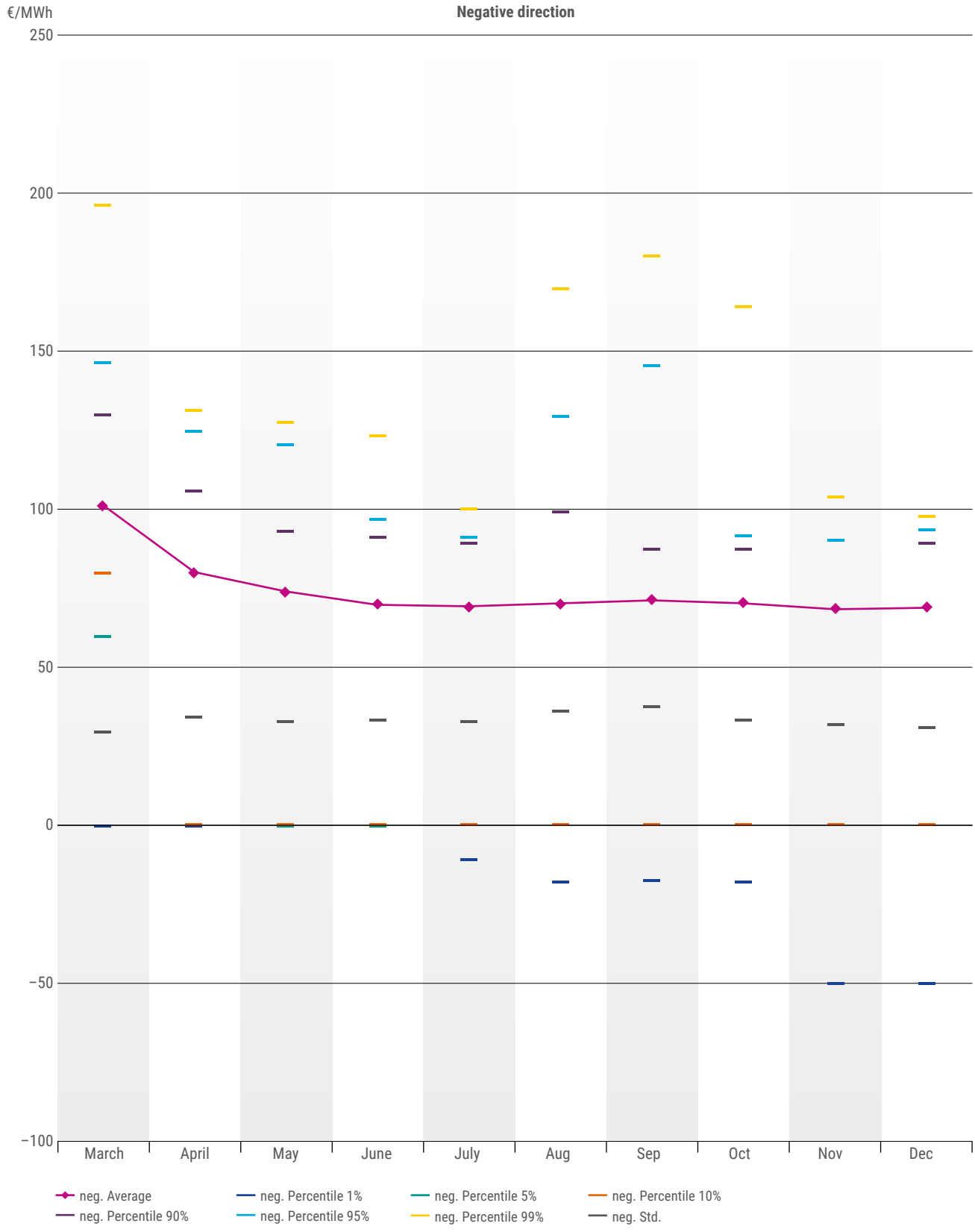



Figure 79: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – IPTO (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Litgrid (€/MWh)

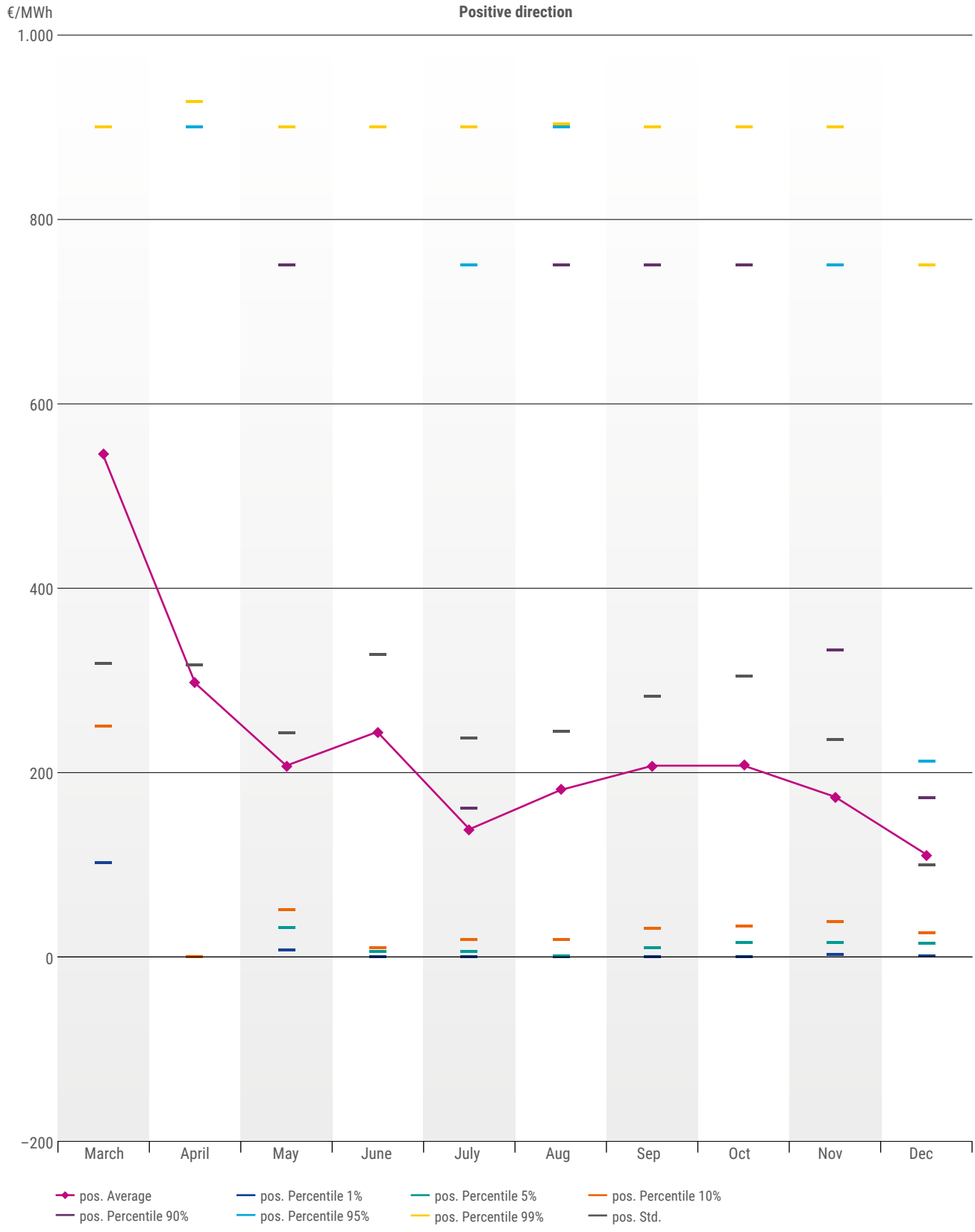



Figure 80: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Litgrid (€/MWh)

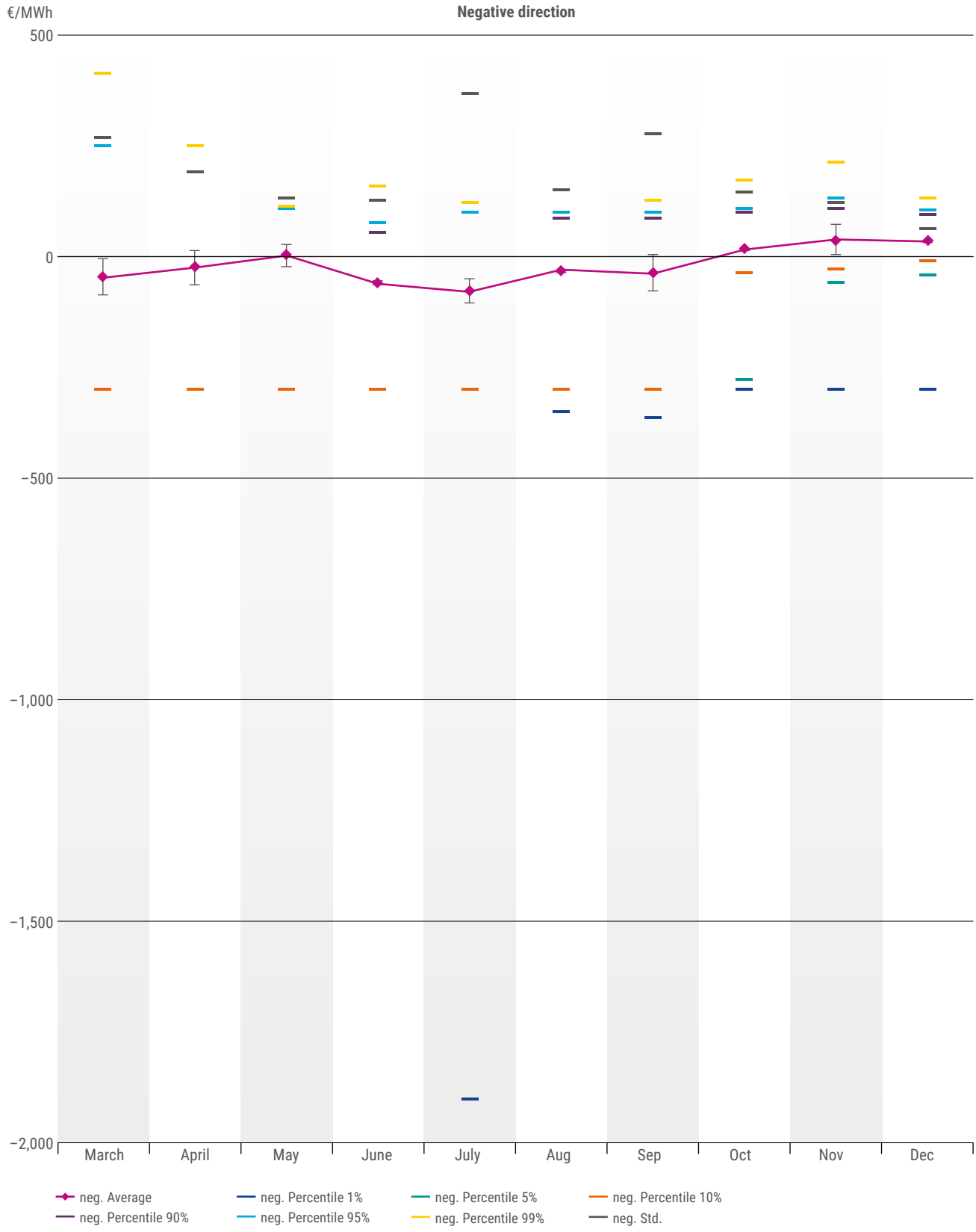



Figure 81: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Litgrid (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – PSE (€/MWh)

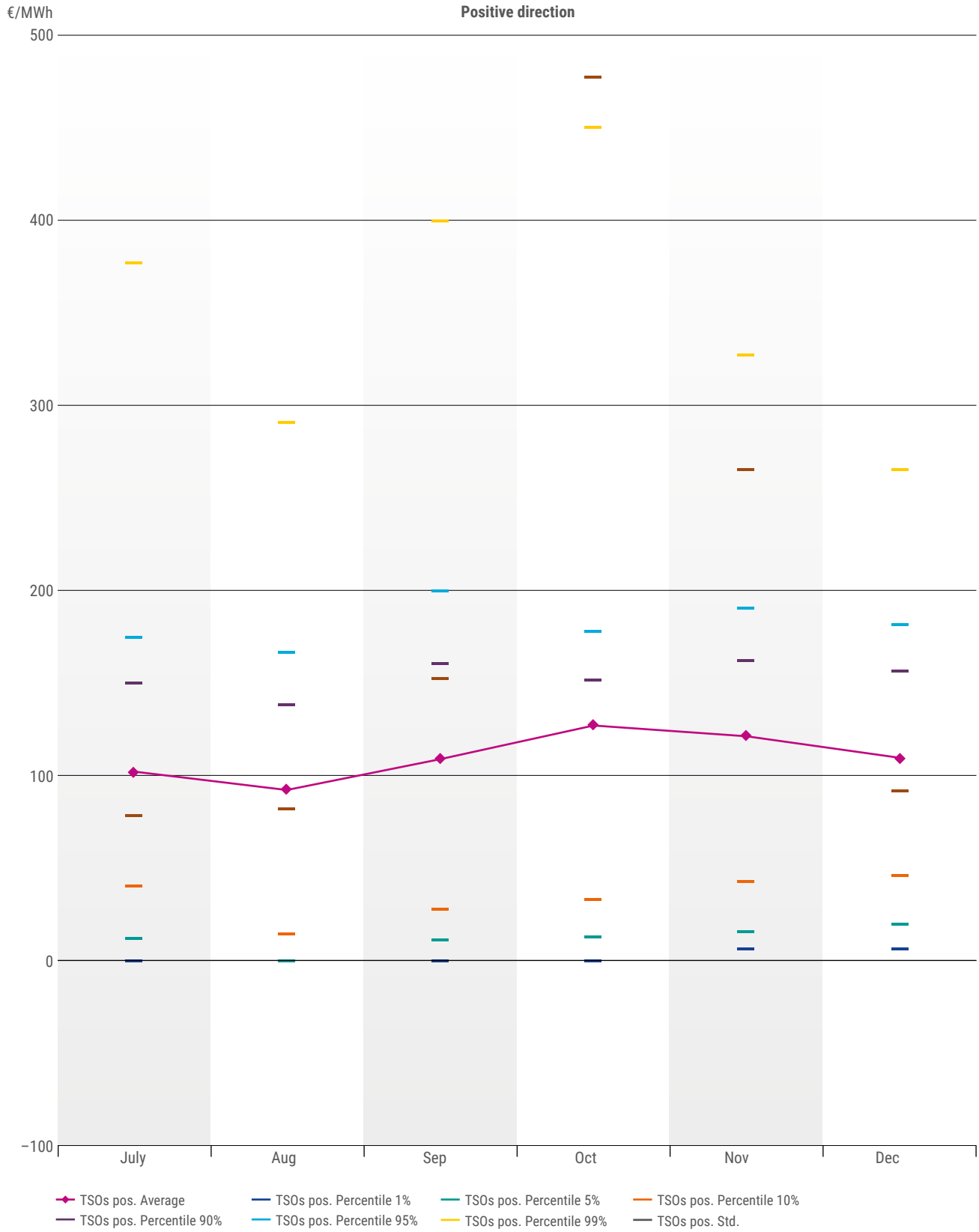



Figure 82: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – PSE (€/MWh)

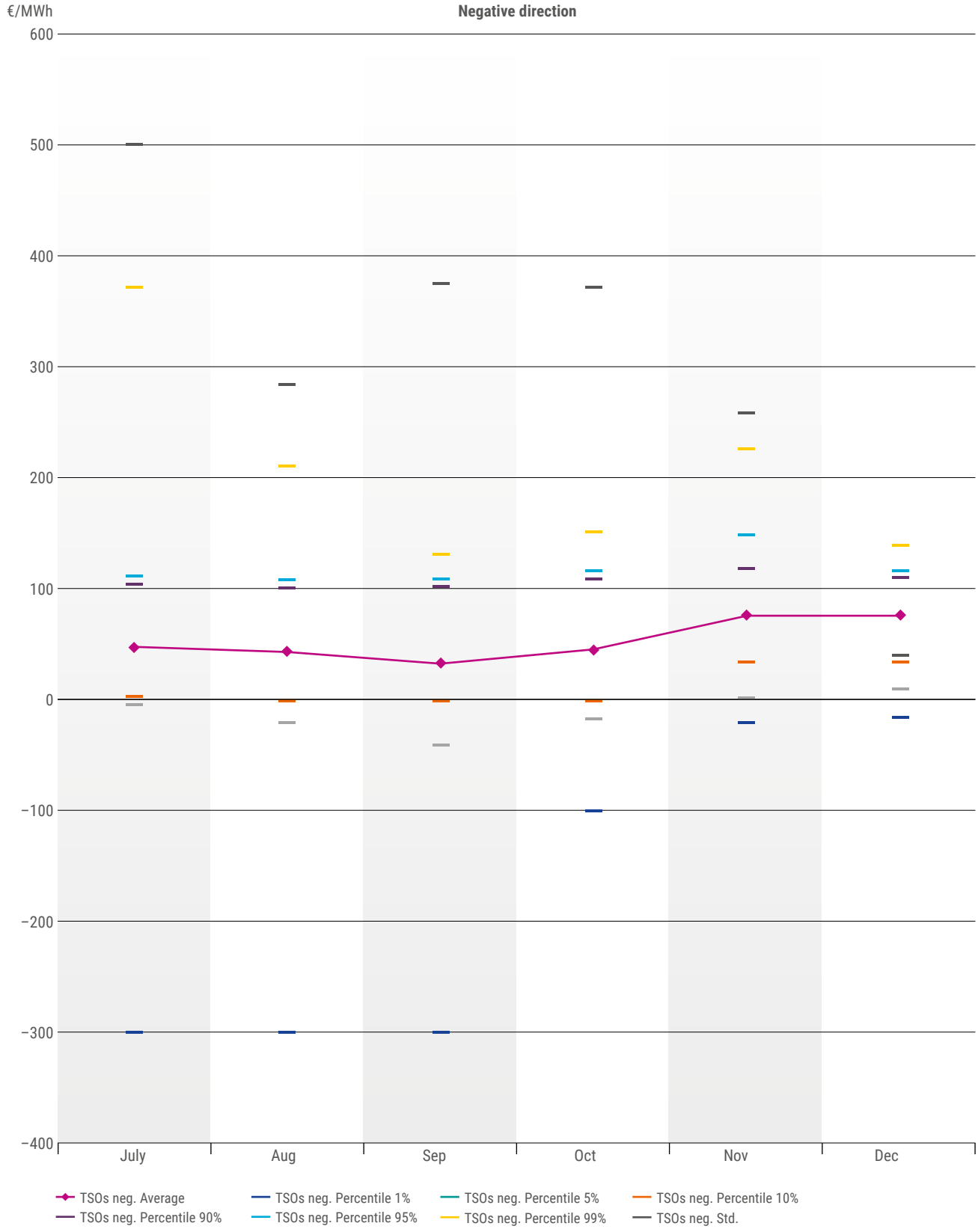



Figure 83: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – PSE (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – REE (€/MWh)

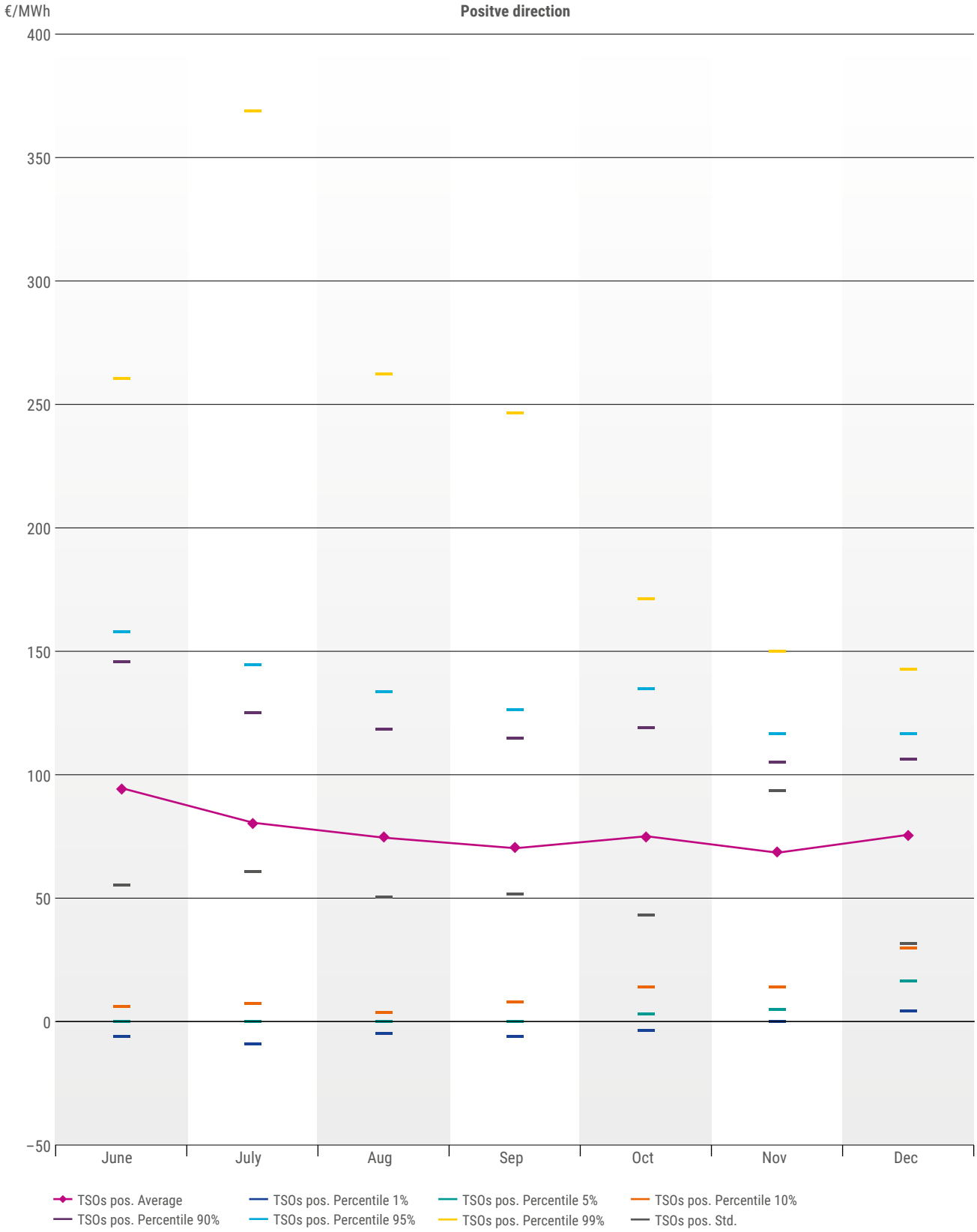



Figure 84: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – REE (€/MWh)

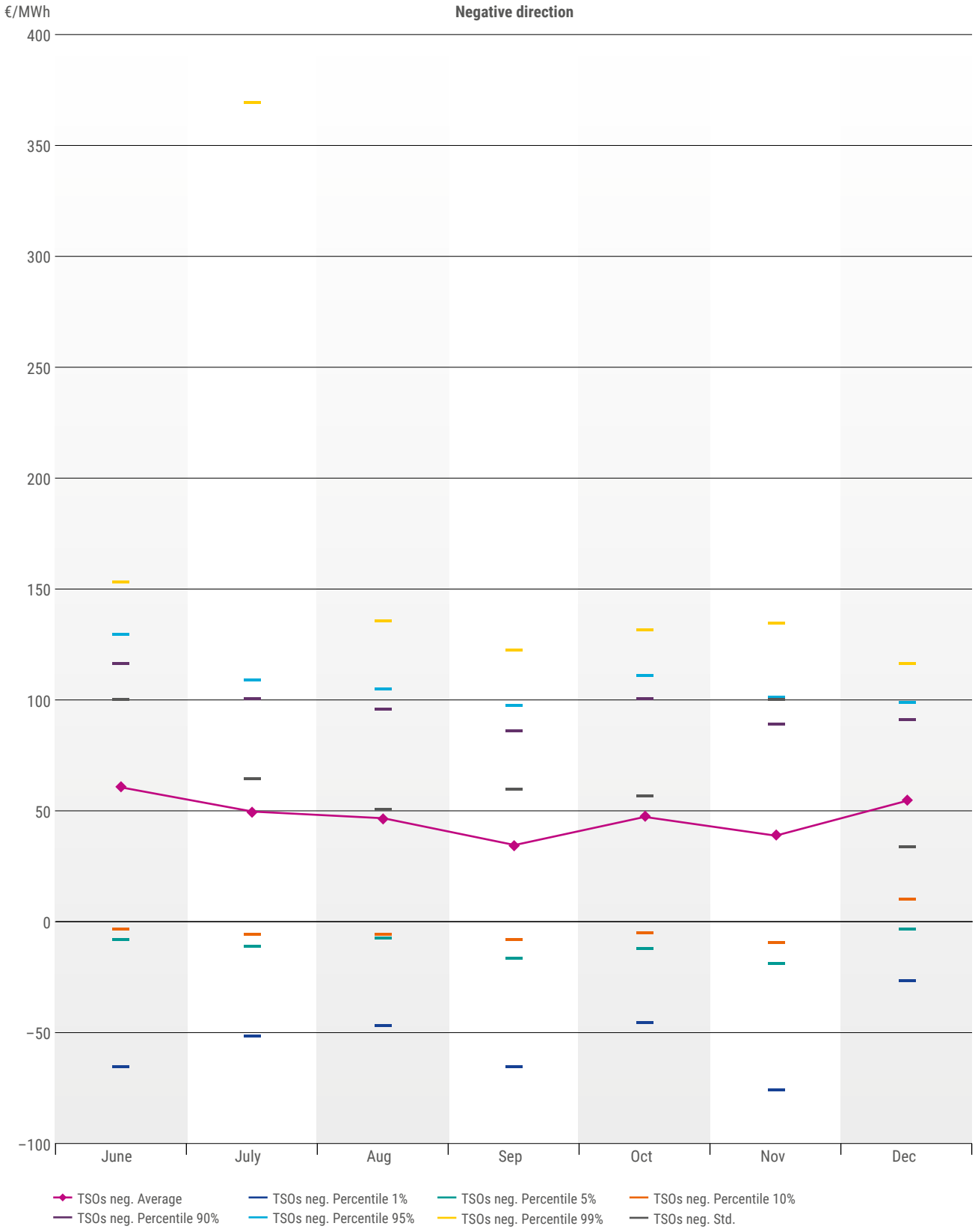



Figure 85: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – REE (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – RTE (€/MWh)

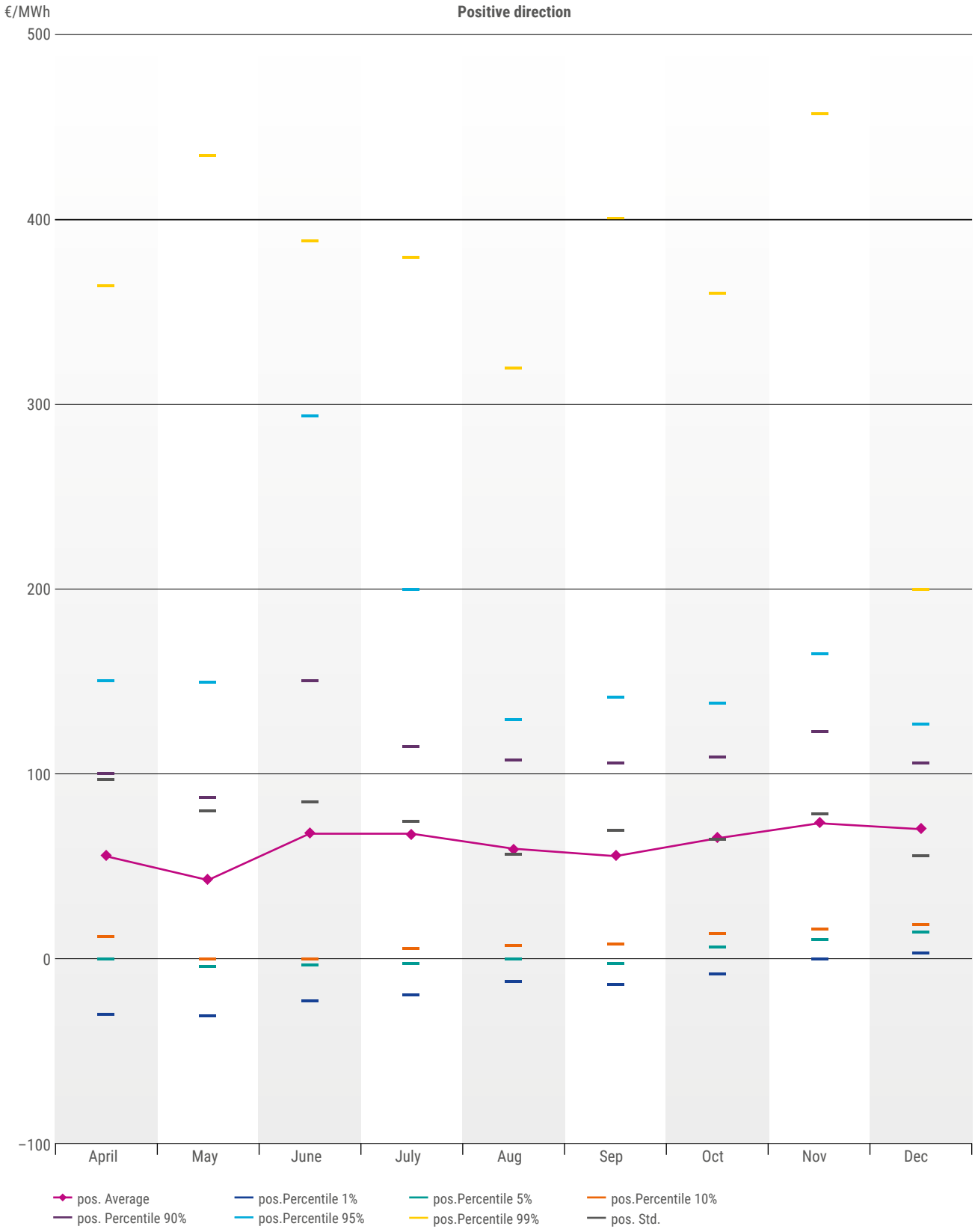



Figure 86: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – RTE (€/MWh)

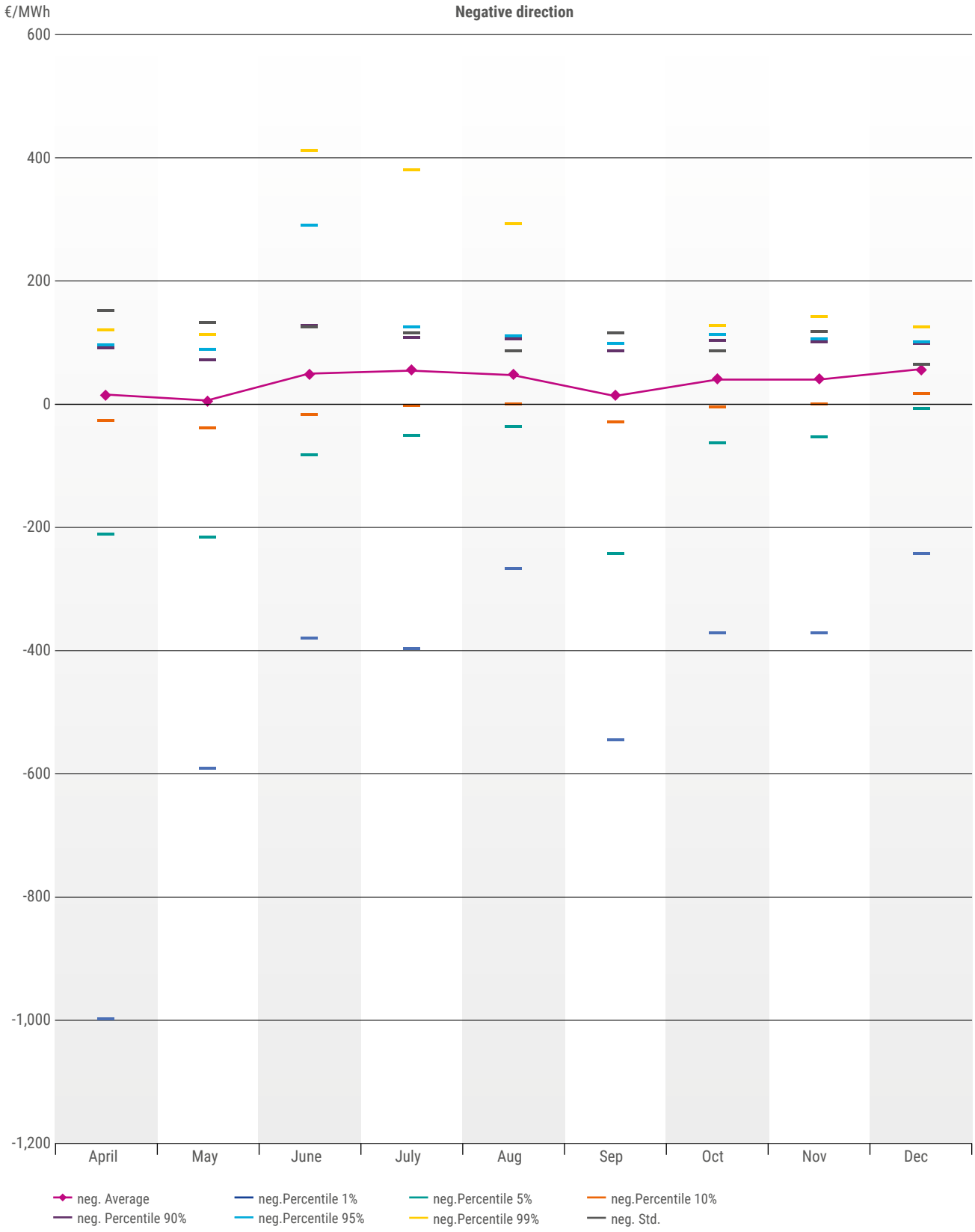



Figure 87: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – RTE (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – SEPS (€/MWh)

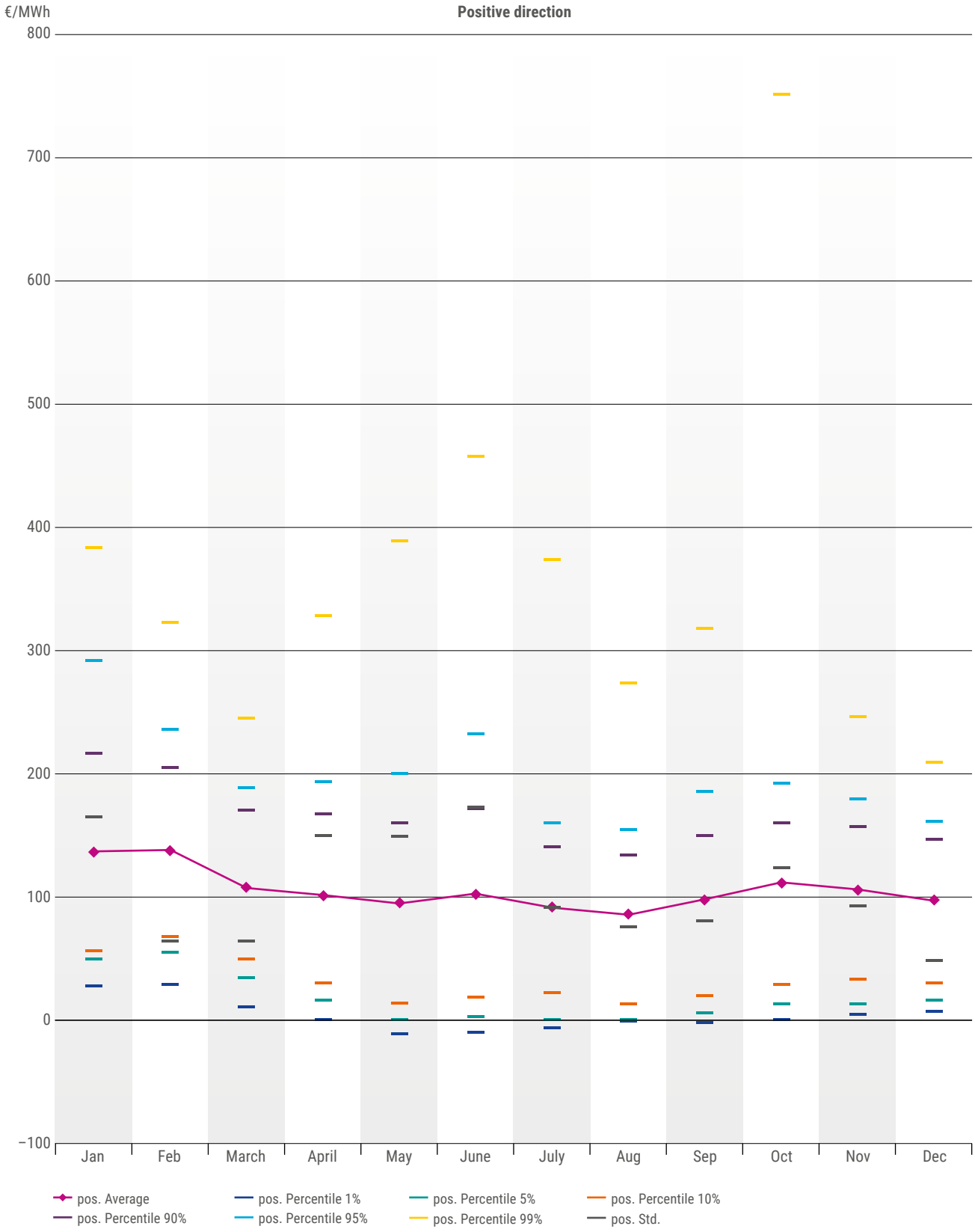



Figure 88: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – SEPS (€/MWh)

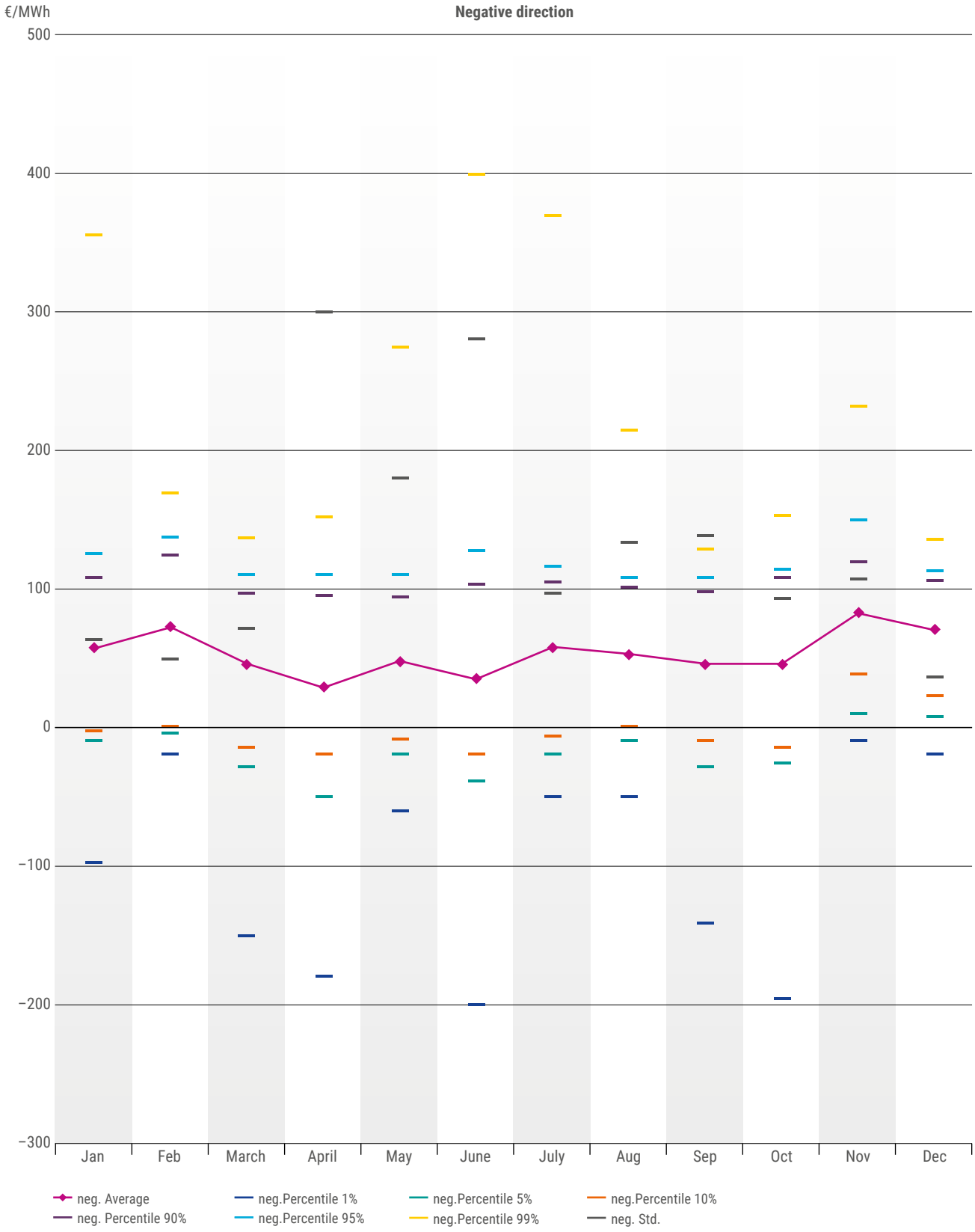



Figure 89: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – SEPS (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution ofthe CBMP per month – TenneT NL (€/MWh)

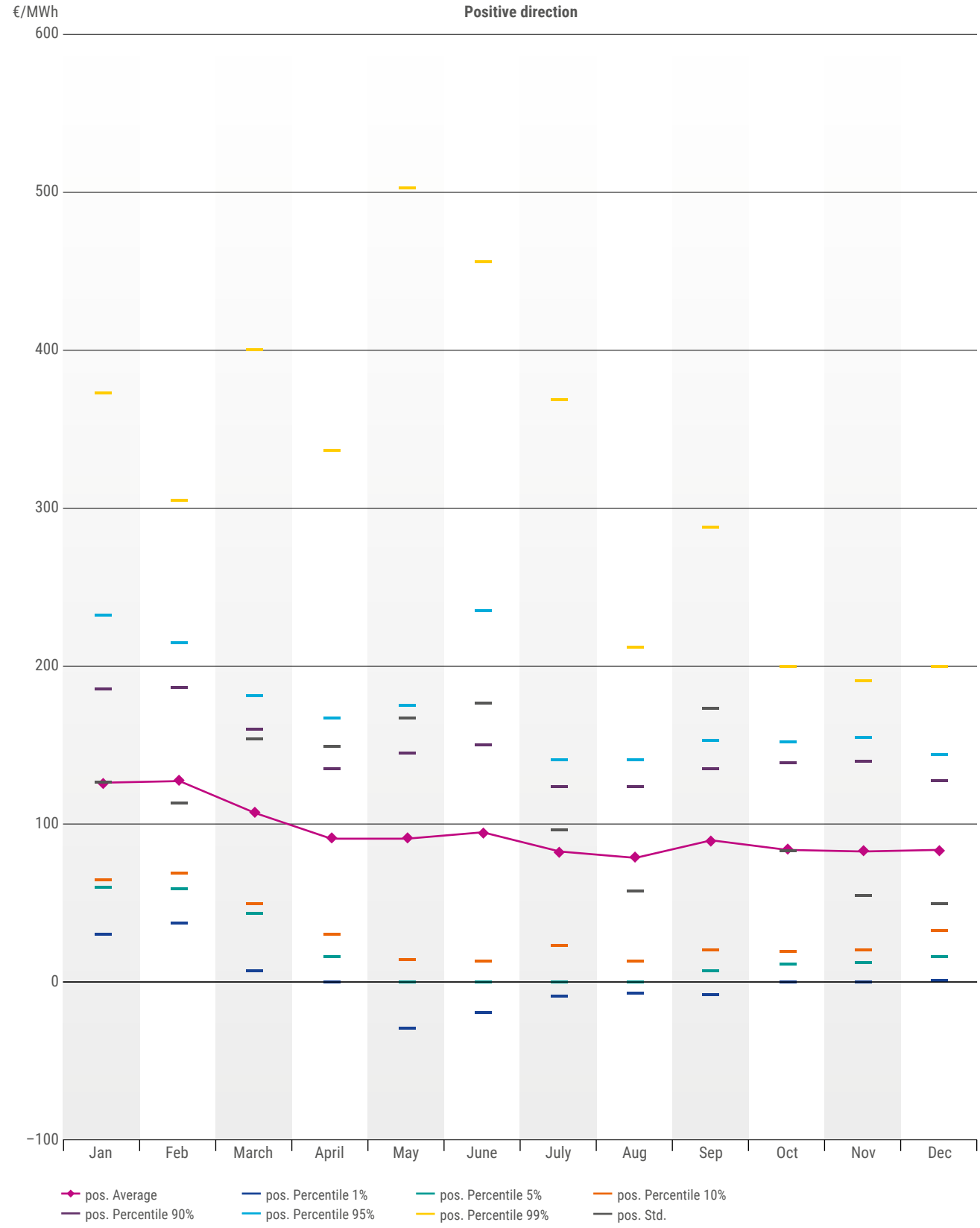



Figure 90: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – TenneT NL (€/MWh)

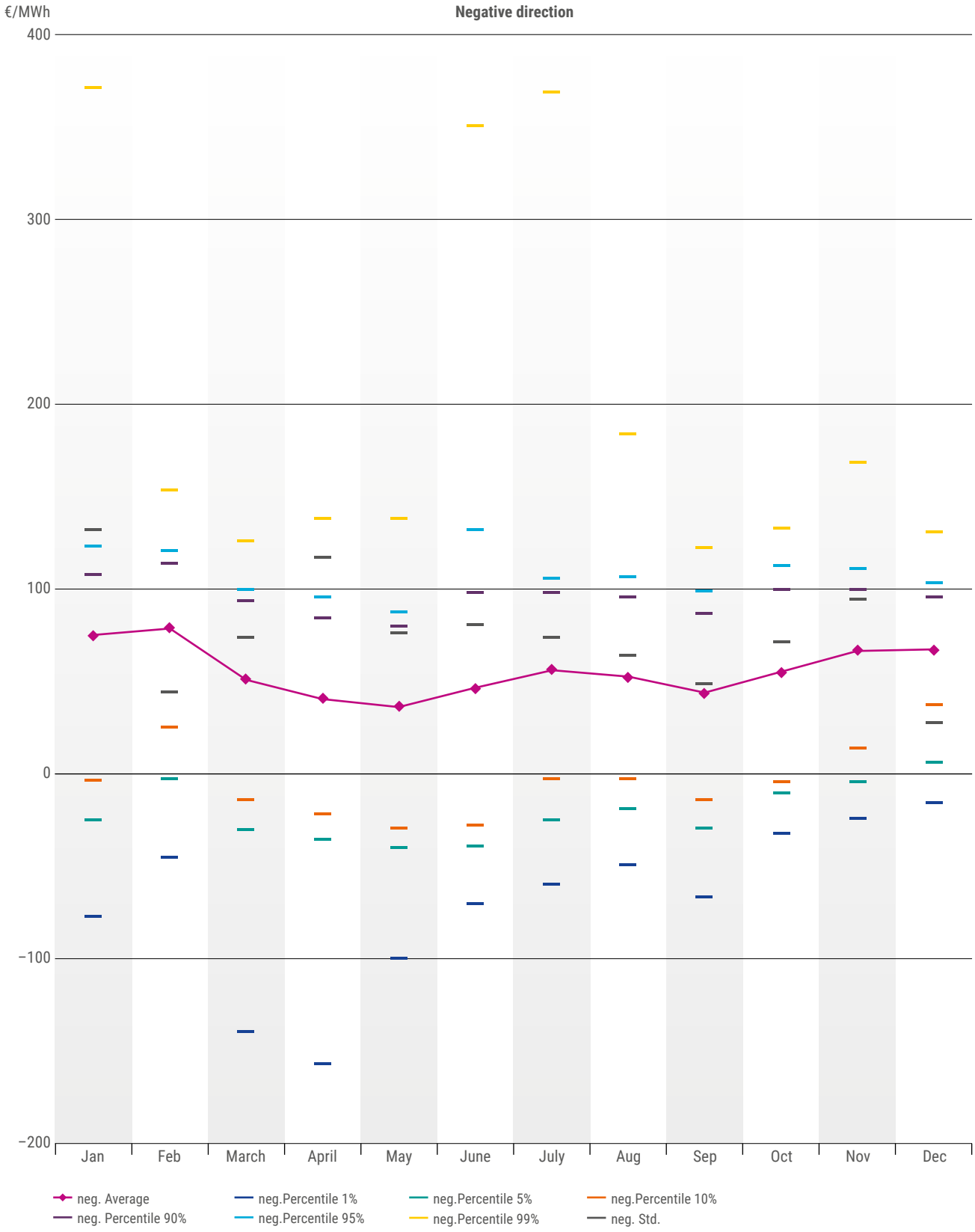



Figure 91: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – TenneT NL (€/MWh)

## KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Terna (€/MWh)

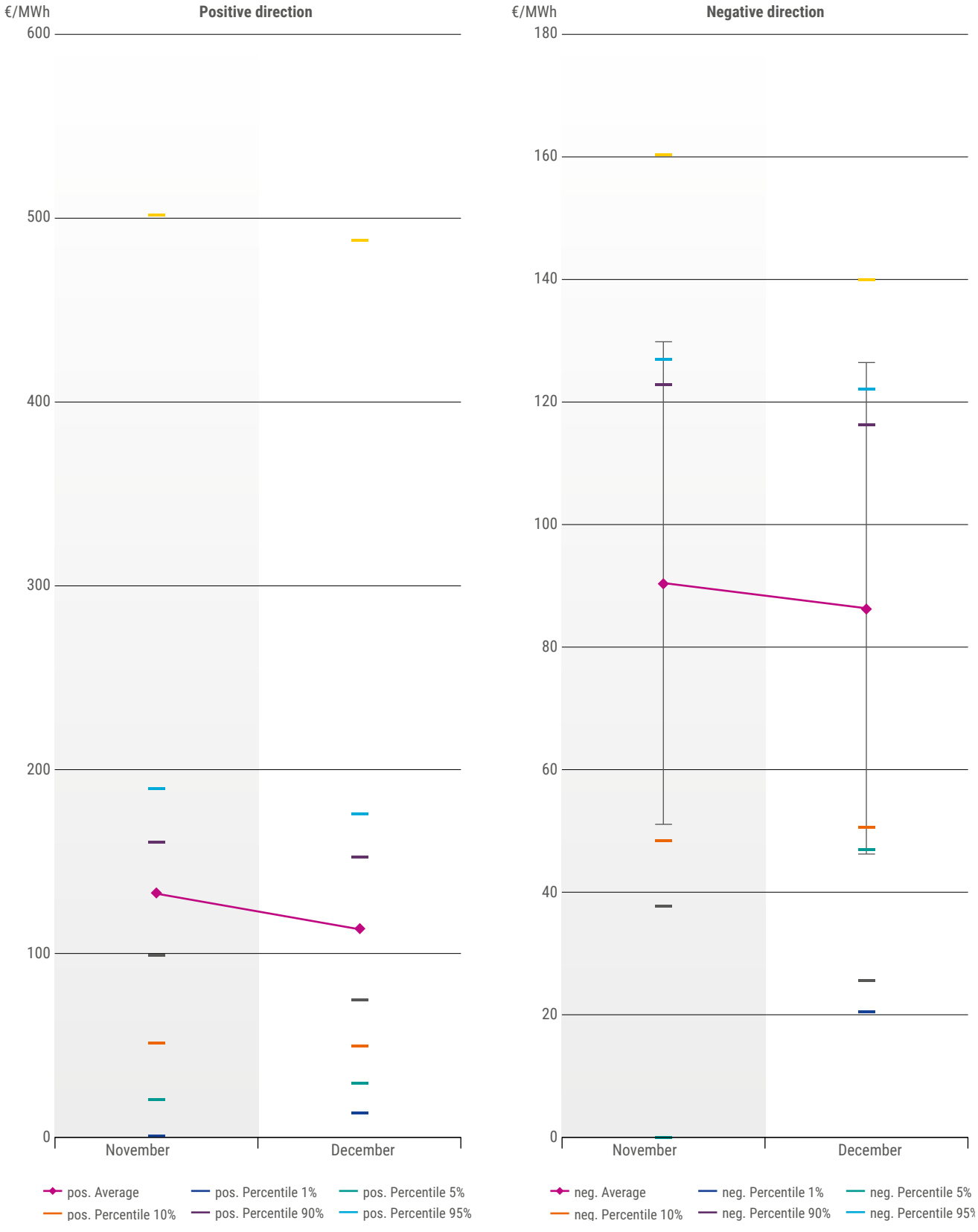



Figure 92: KPI 6.4.5: aFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Terna (€/MWh)

## KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – APG (€/MWh)

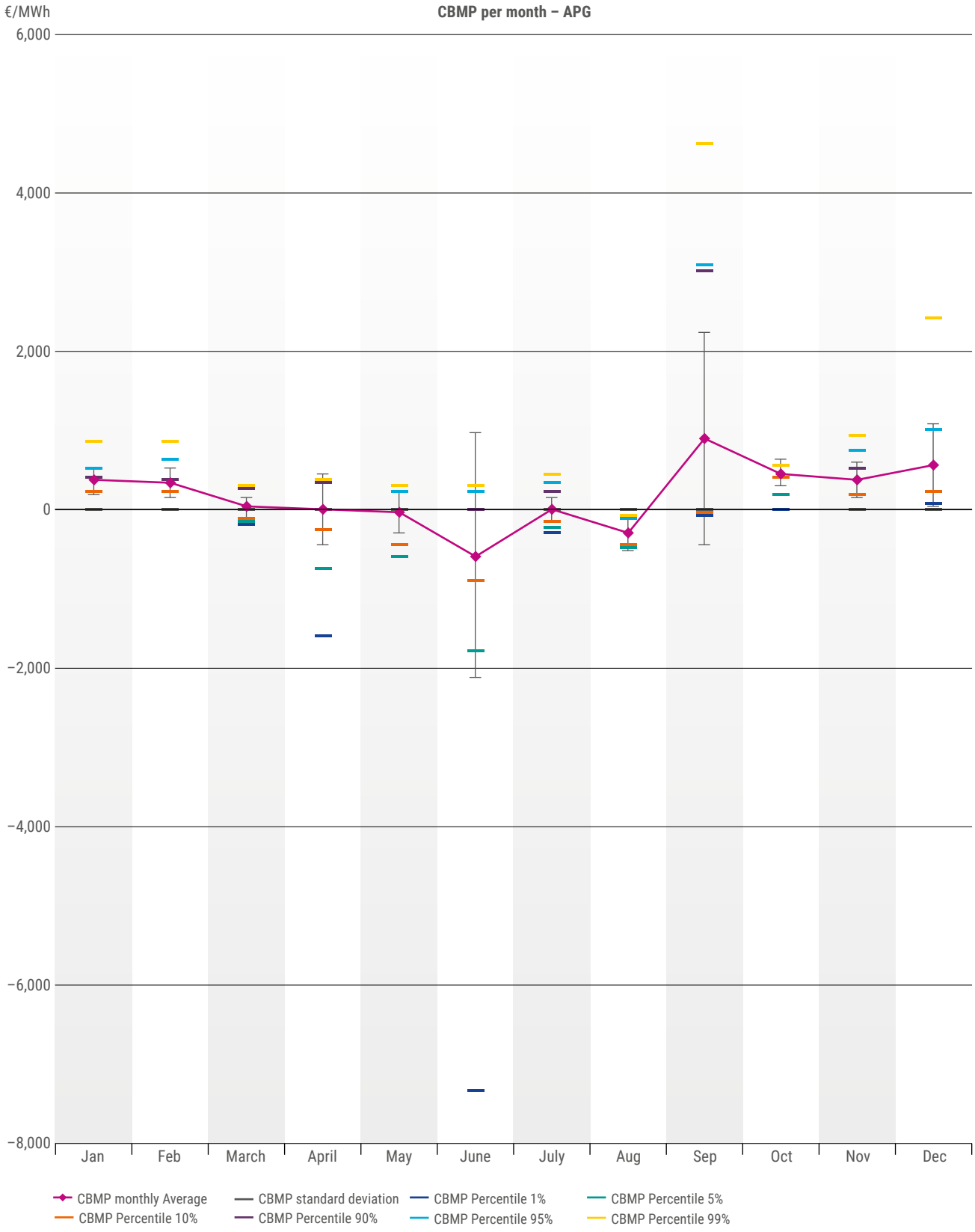



Figure 93: KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – APG (€/MWh)

## KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – AST (€/MWh)

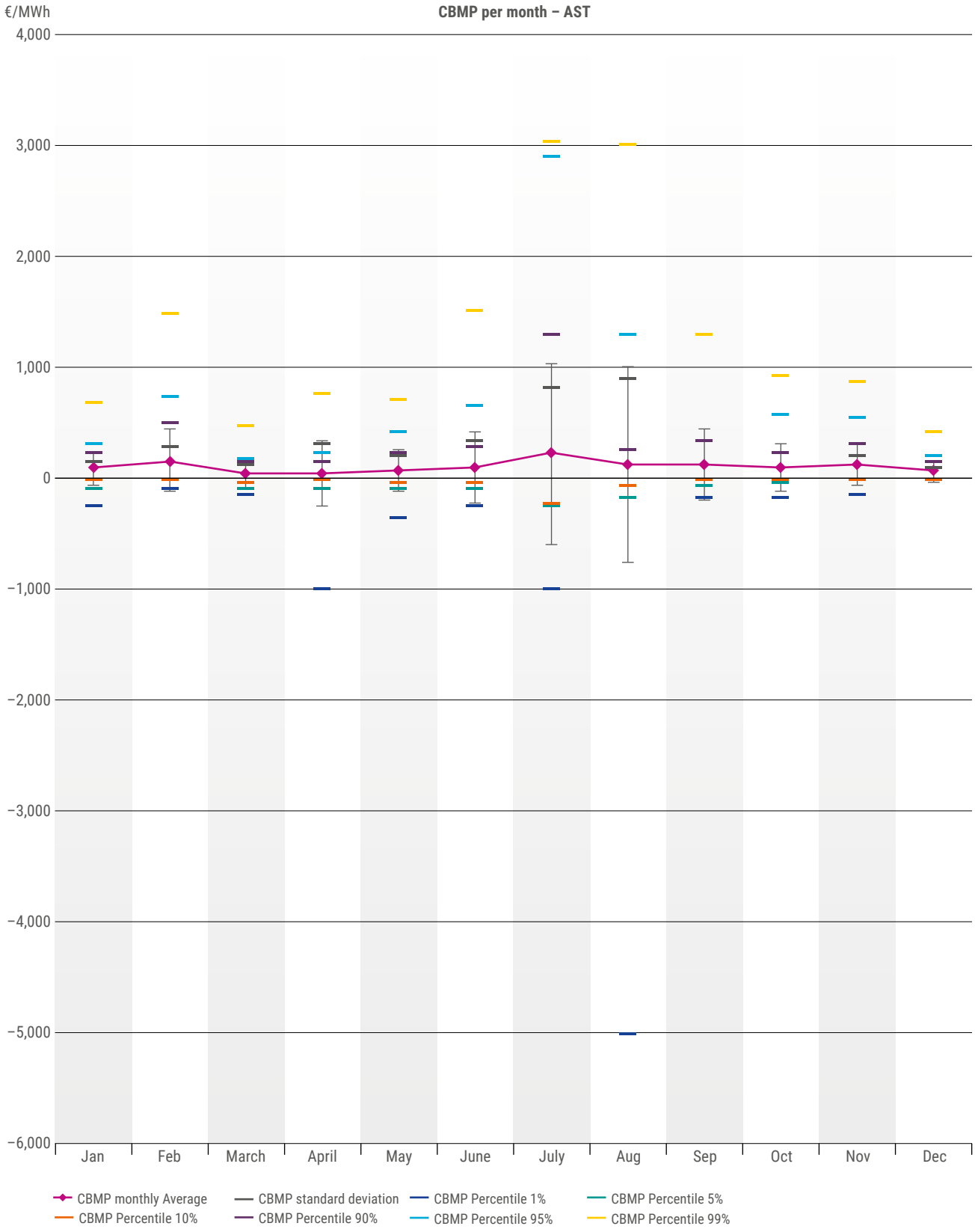



Figure 94: KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – AST (€/MWh)

## KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – ČEPS (€/MWh)

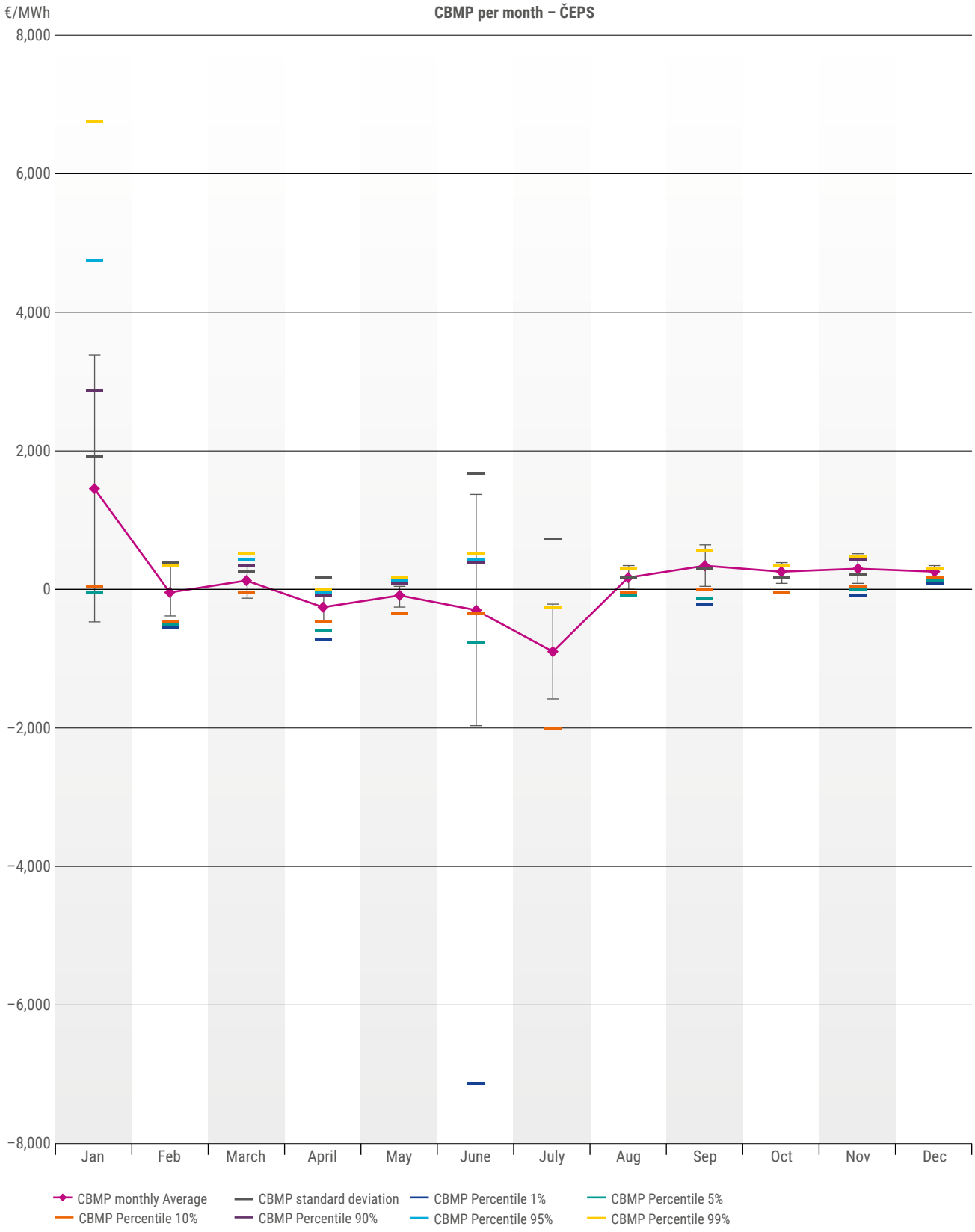



Figure 95: KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – ČEPS (€/MWh)

## KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Elia (€/MWh)

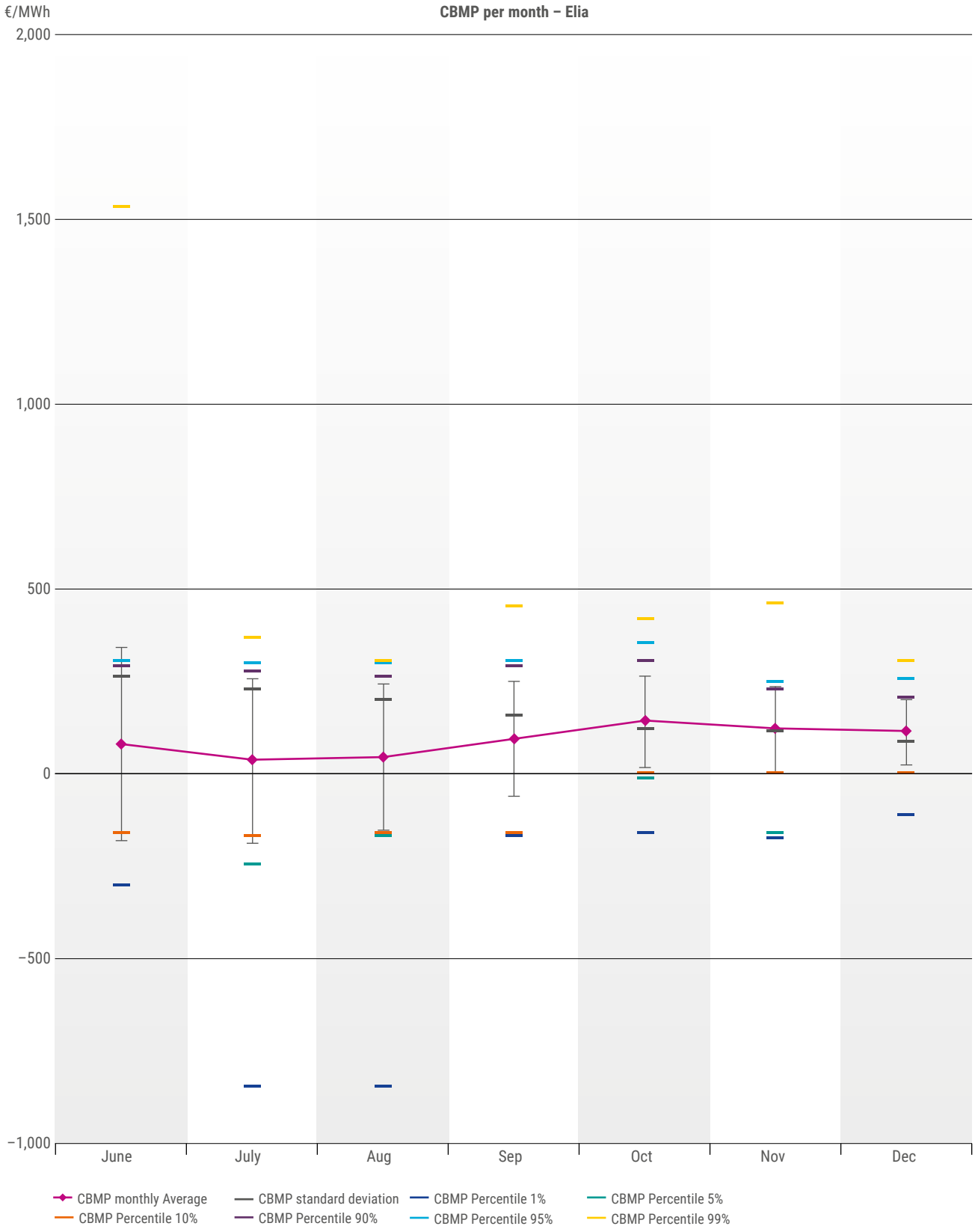



Figure 96: KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Elia (€/MWh)

## KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Elering (€/MWh)

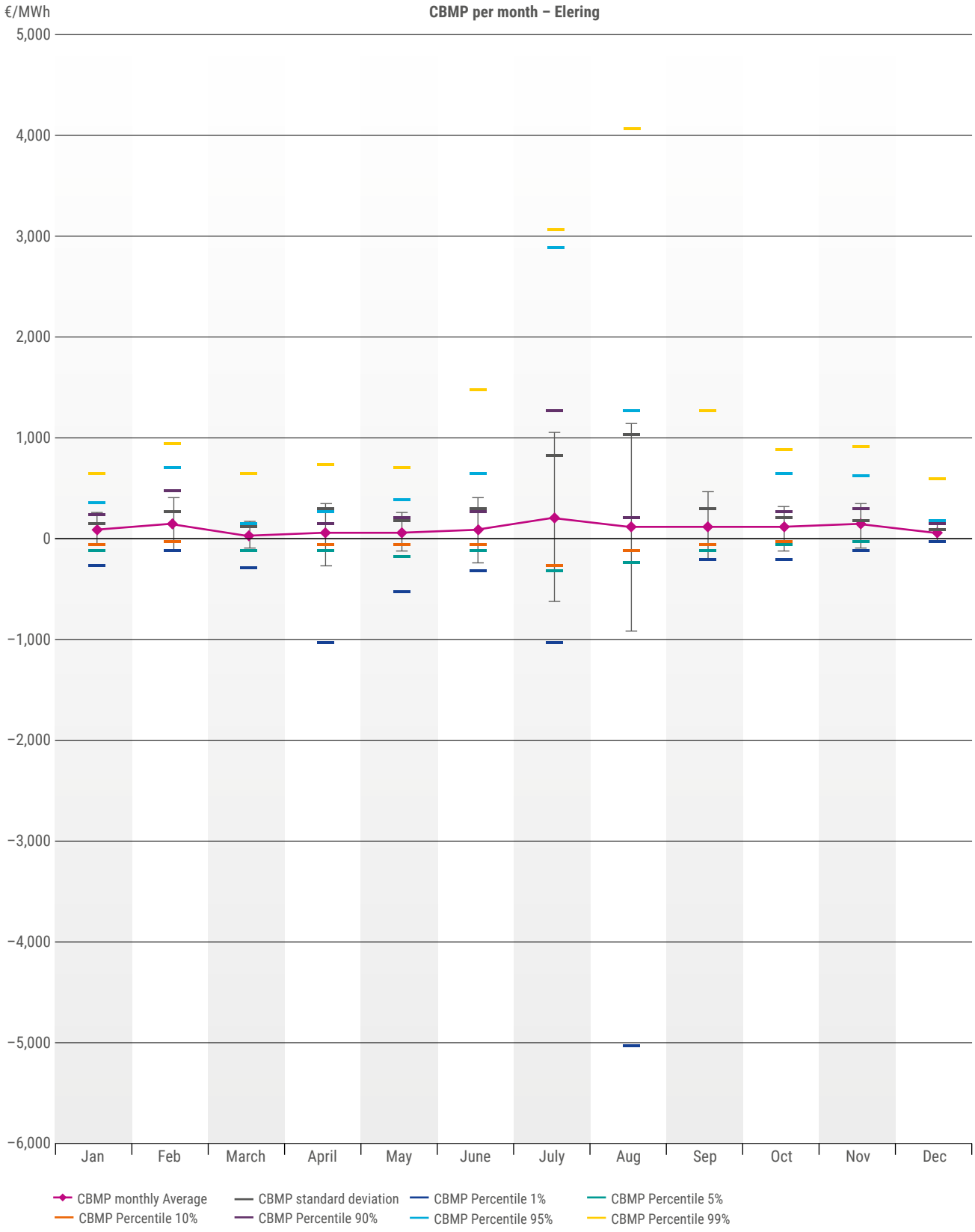



Figure 97: KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Elering (€/MWh)

## KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – German TSOs (€/MWh)

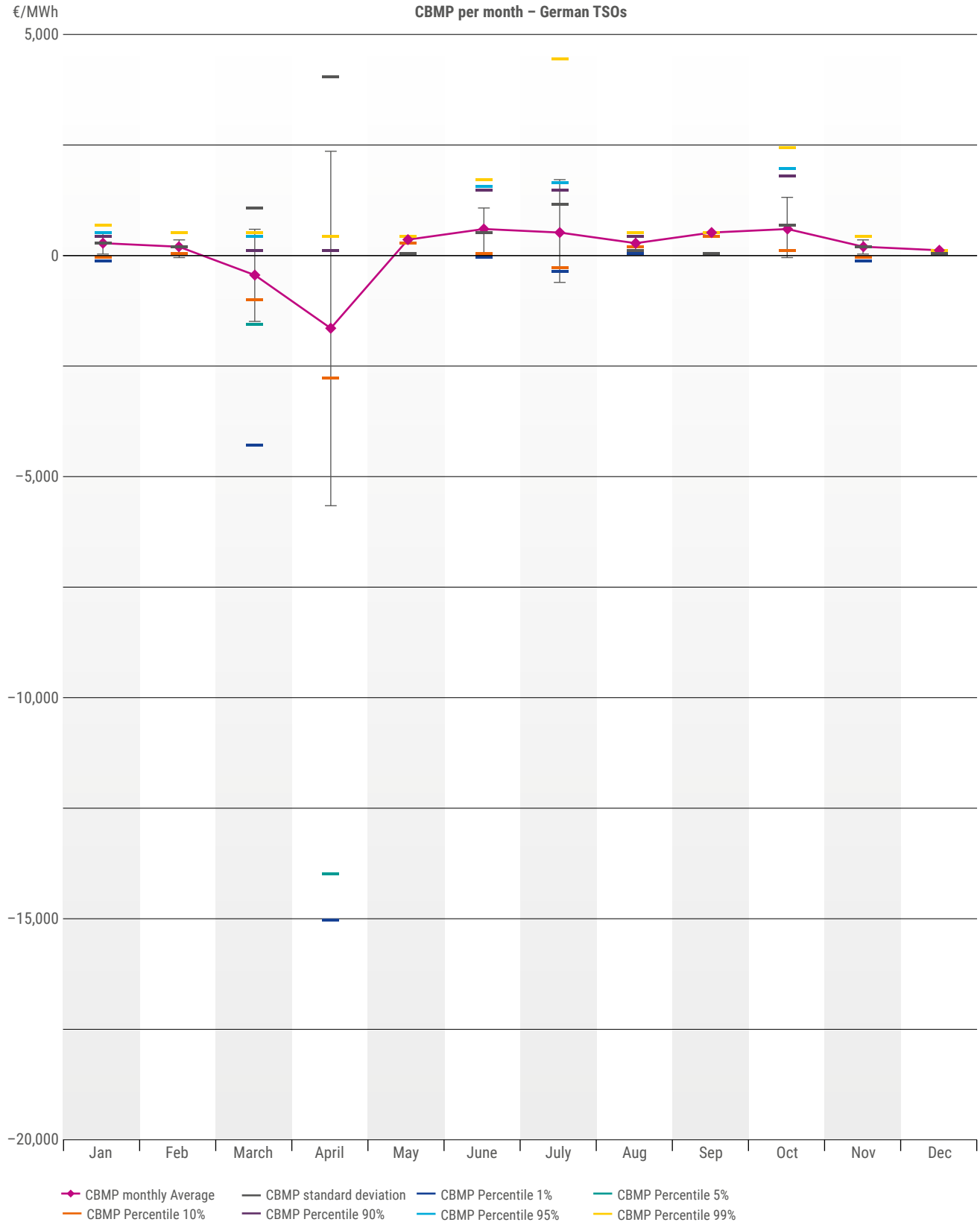



Figure 98: KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – German TSOs (€/MWh)

## KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Litgrid (€/MWh)

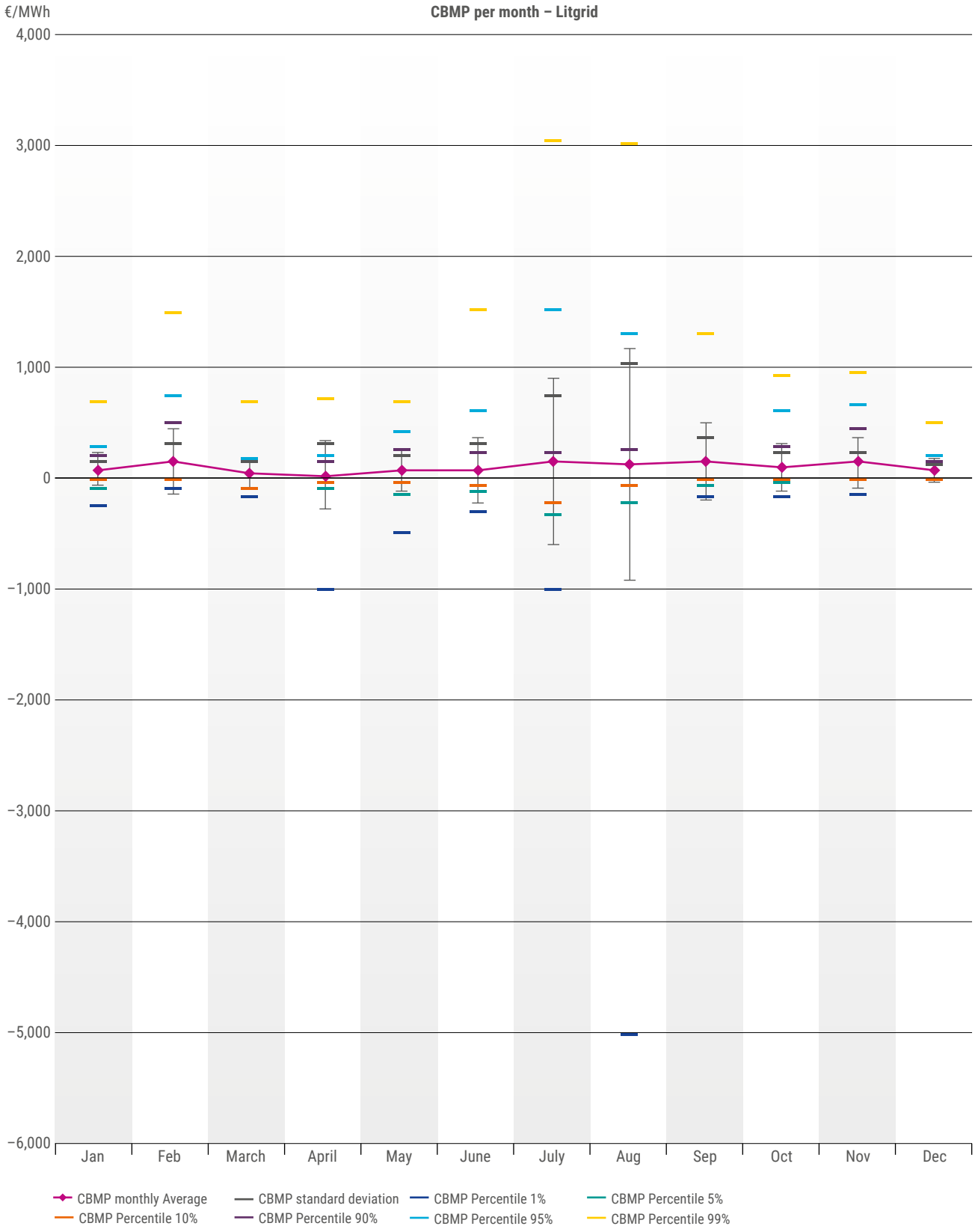



Figure 99: KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – Litgrid (€/MWh)

## KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – REE (€/MWh)

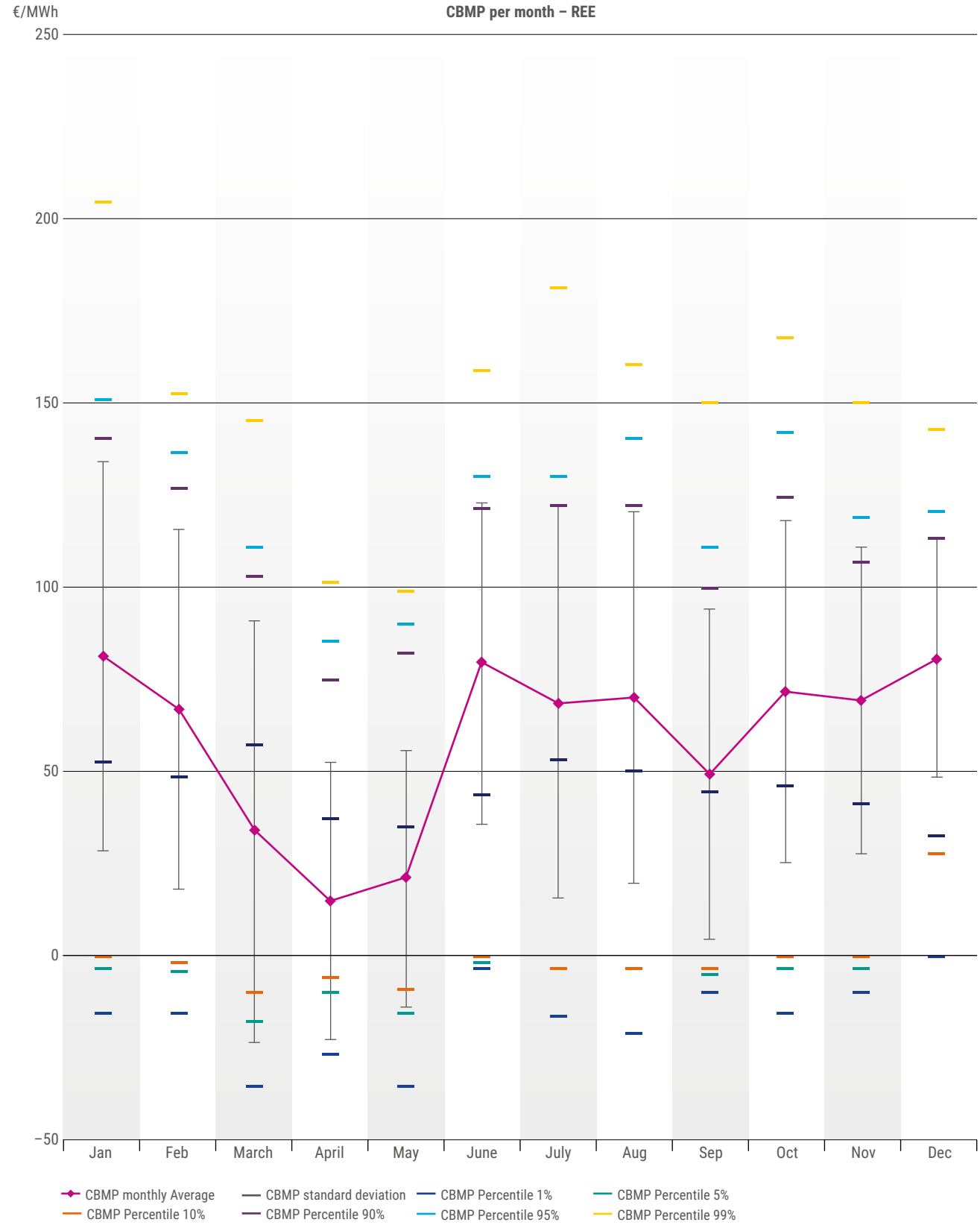



Figure 100: KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – REE (€/MWh)

## KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – REN (€/MWh)

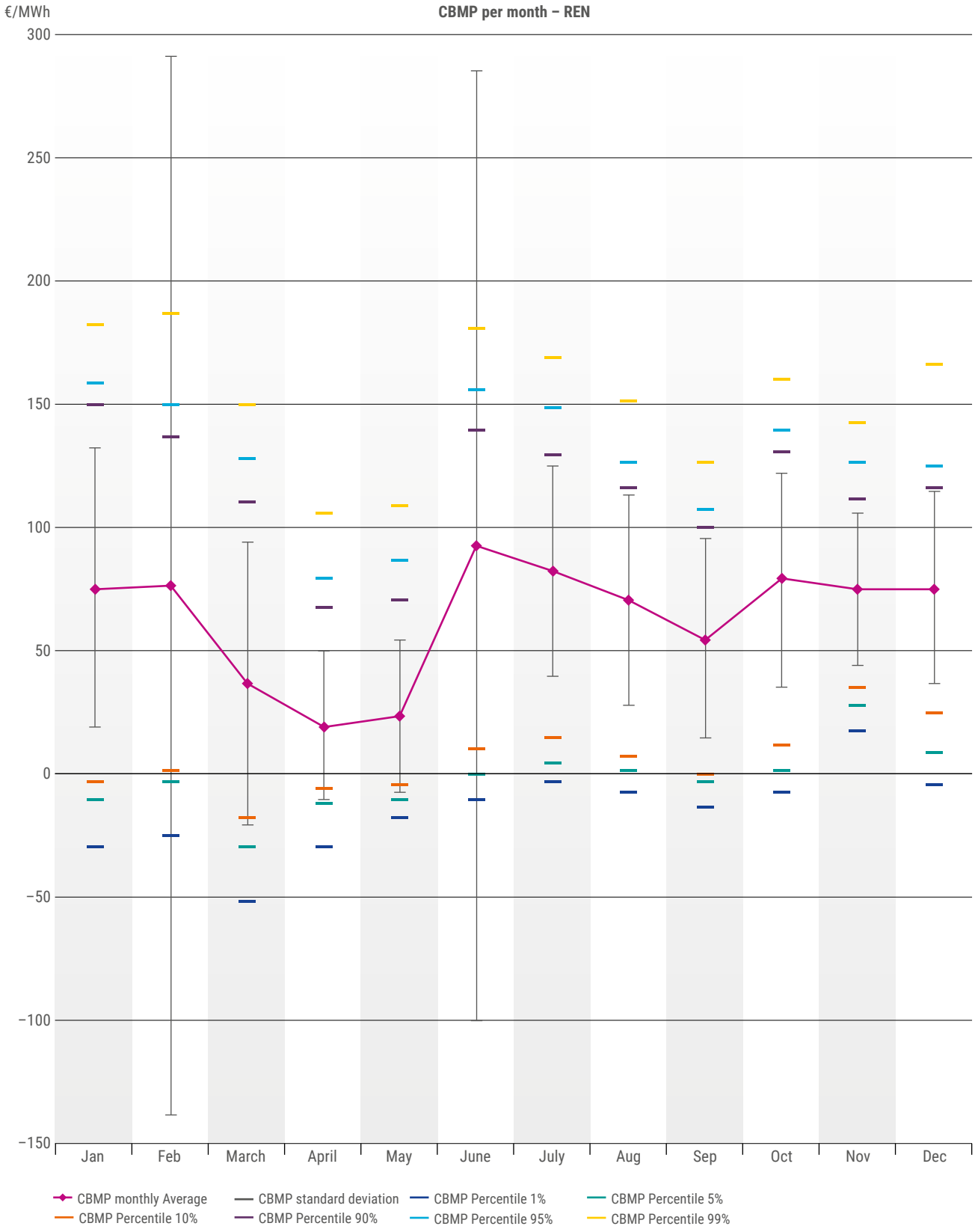



Figure 101: KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – REN (€/MWh)

## KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – SEPS (€/MWh)

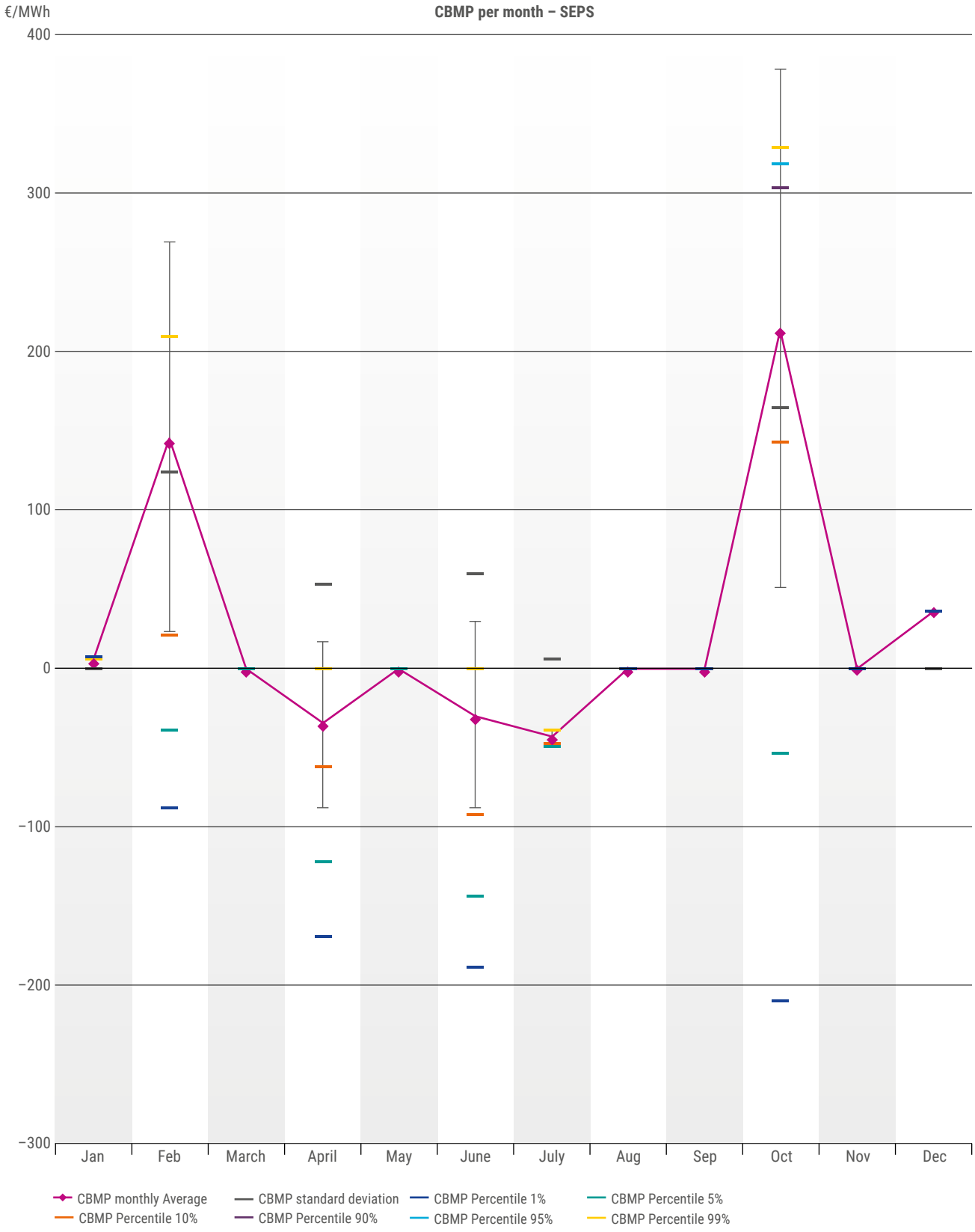



Figure 102: KPI 6.4.5: mFRR platform: monthly average and standard deviation values and distribution of the CBMP per month – SEPS (€/MWh)

## KPI 6.4.5: RR platform: monthly average and standard deviation values and distribution of the CBMP per month – REE (€/MWh)

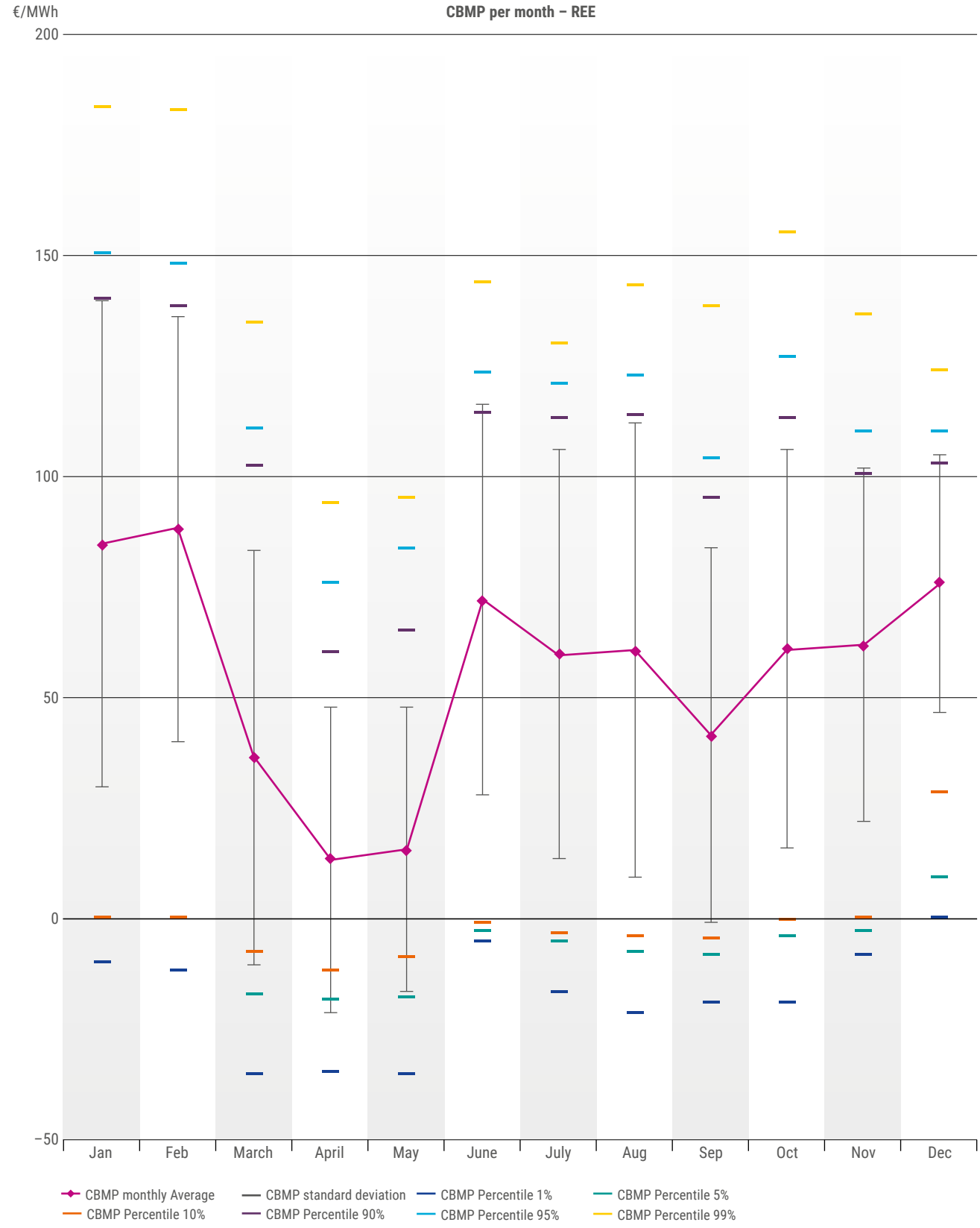



Figure 103: KPI 6.4.5: RR platform: monthly average and standard deviation values and distribution of the CBMP per month – REE (€/MWh)

## KPI 6.4.5: RR platform: monthly average and standard deviation values and distribution of the CBMP per month – REN (€/MWh)

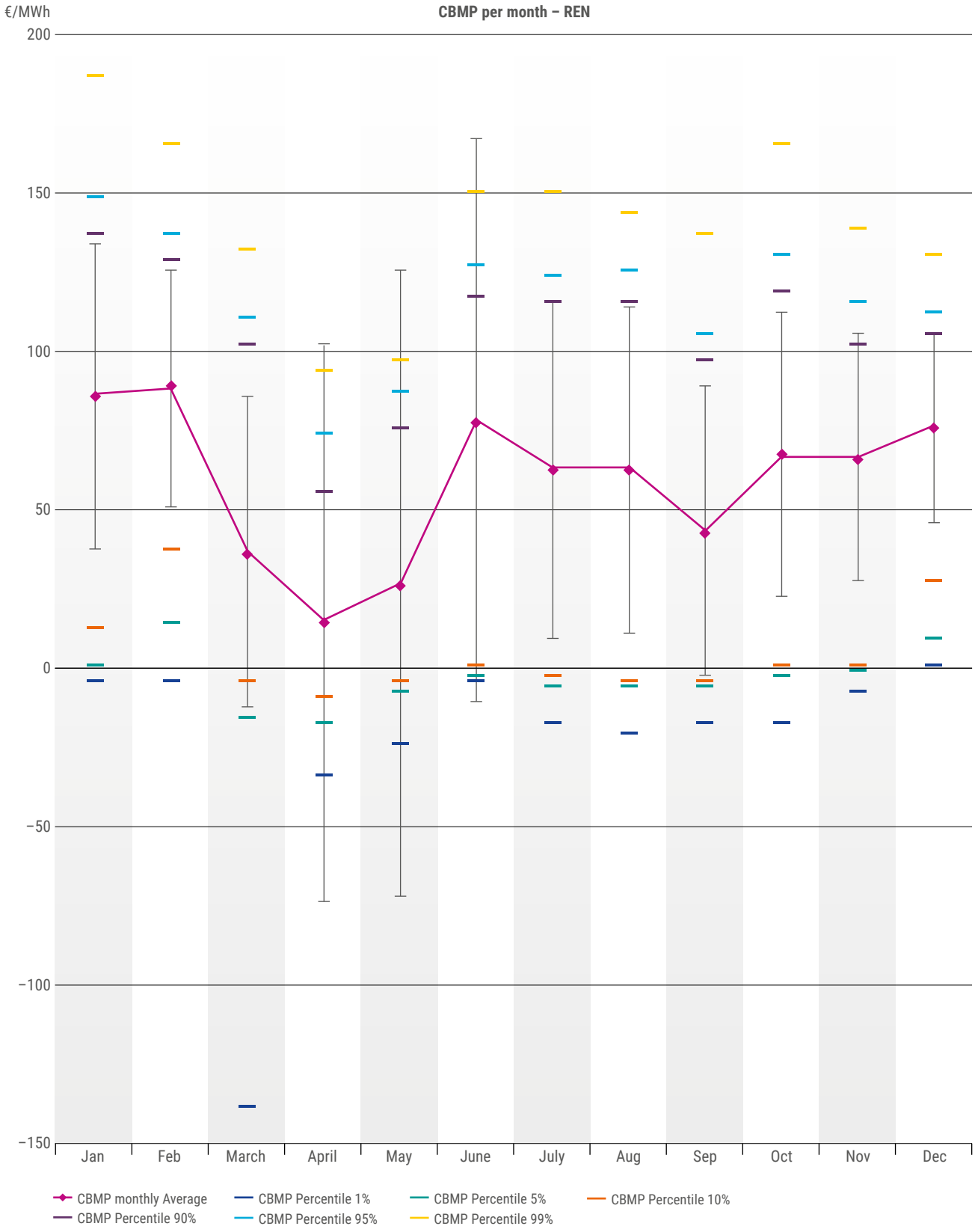



Figure 104: KPI 6.4.5: RR platform: monthly average and standard deviation values and distribution of the CBMP per month – REN (€/MWh)

## KPI 6.4.5: RR platform: monthly average and standard deviation values and distribution ofthe CBMP per month – RTE (€/MWh)

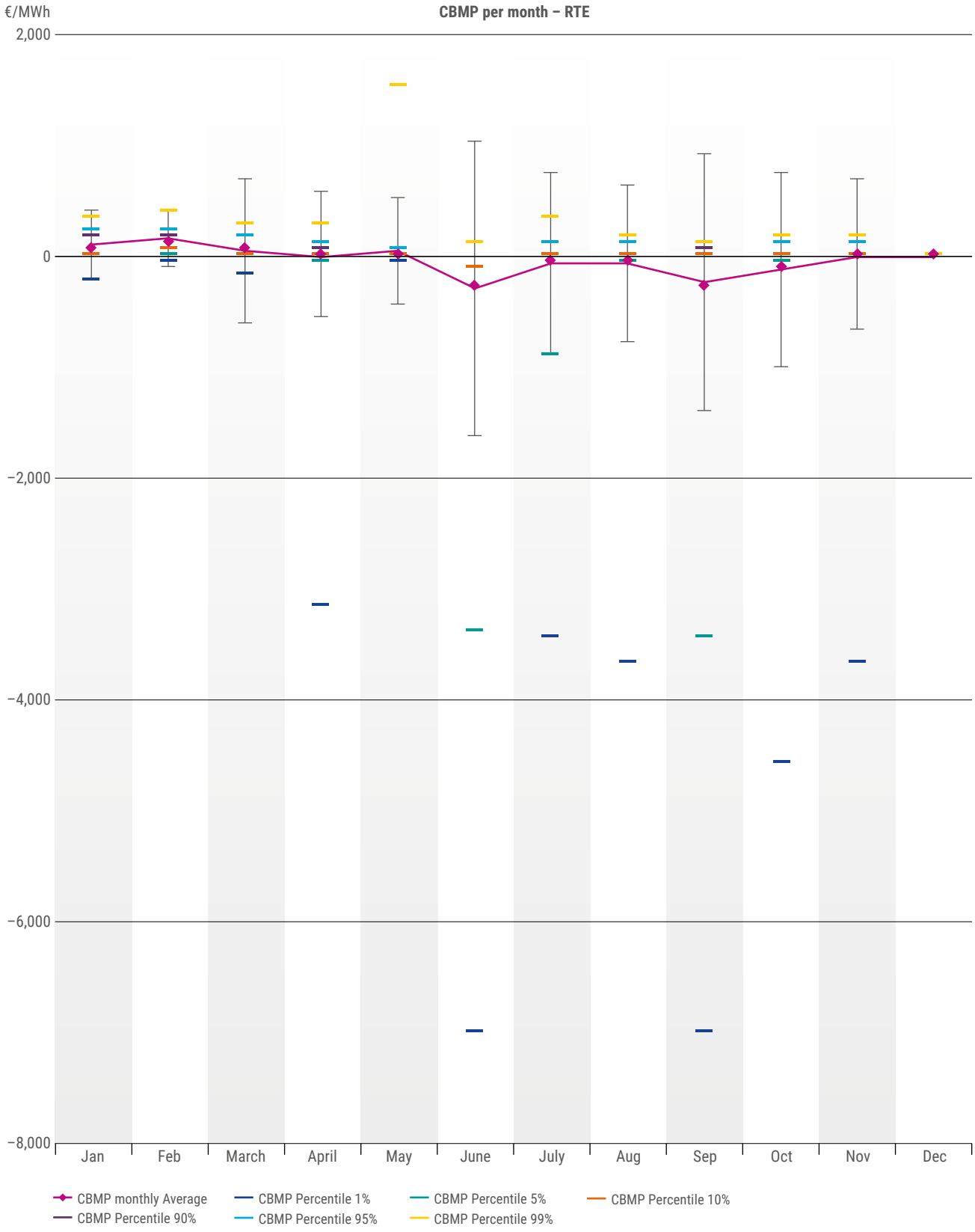



Figure 105: KPI 6.4.5: RR platform: monthly average and standard deviation values and distribution of the CBMP per month – RTE (€/MWh)

## KPI 6.4.5: RR platform: monthly average and standard deviation values and distribution of the CBMP per month – Swissgrid (€/MWh)

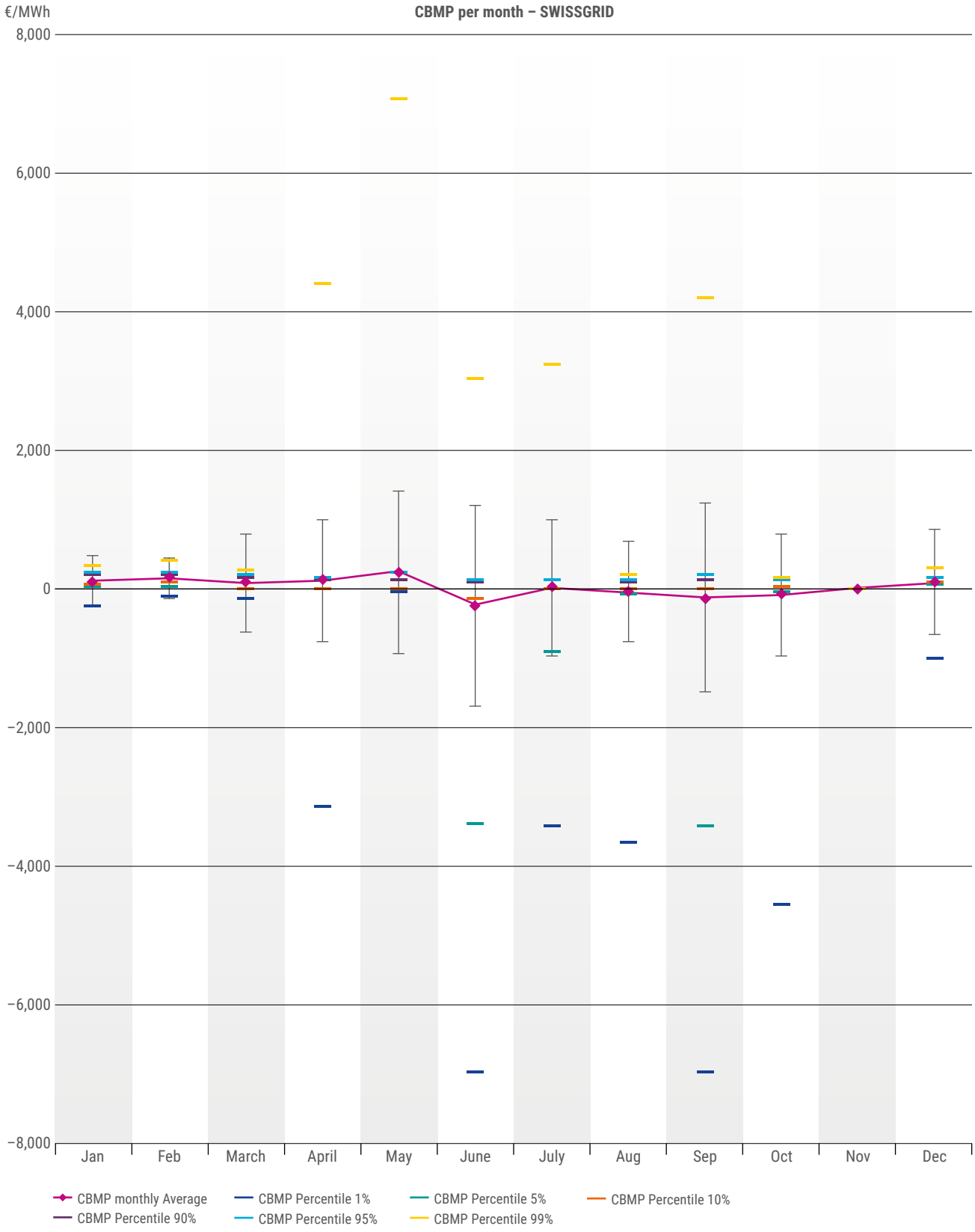



Figure 106: KPI 6.4.5: RR platform: monthly average and standard deviation values and distribution of the CBMP per month – Swissgrid (€/MWh)

## KPI 6.4.6: aFRR platform: monthly average value of the available CZC per BZB and direction (MW/MTU)


Figure 107: KPI 6.4.6: aFRR platform: monthly average value of the available CZC per BZB and direction (MW/MTU)

## KPI 6.4.6: aFRR platform: monthly average value of the used CZC per BZB and direction (MW)

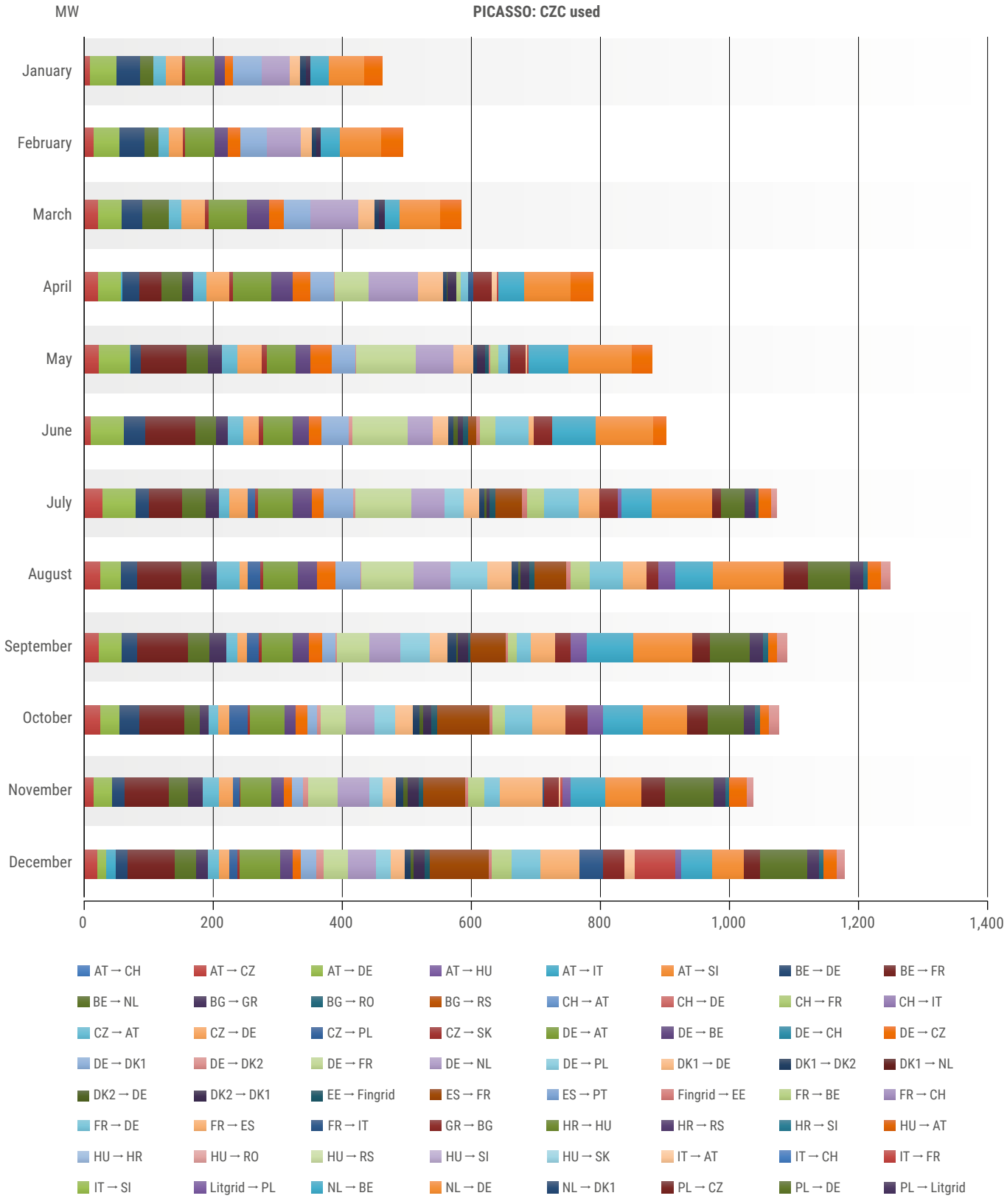



Figure 108: KPI 6.4.6: aFRR platform: monthly average value of the used CZC per BZB and direction (MW)

## KPI 5.4.6: mFRR platform: monthly average value of the available CZC per BZB and direction (MW)

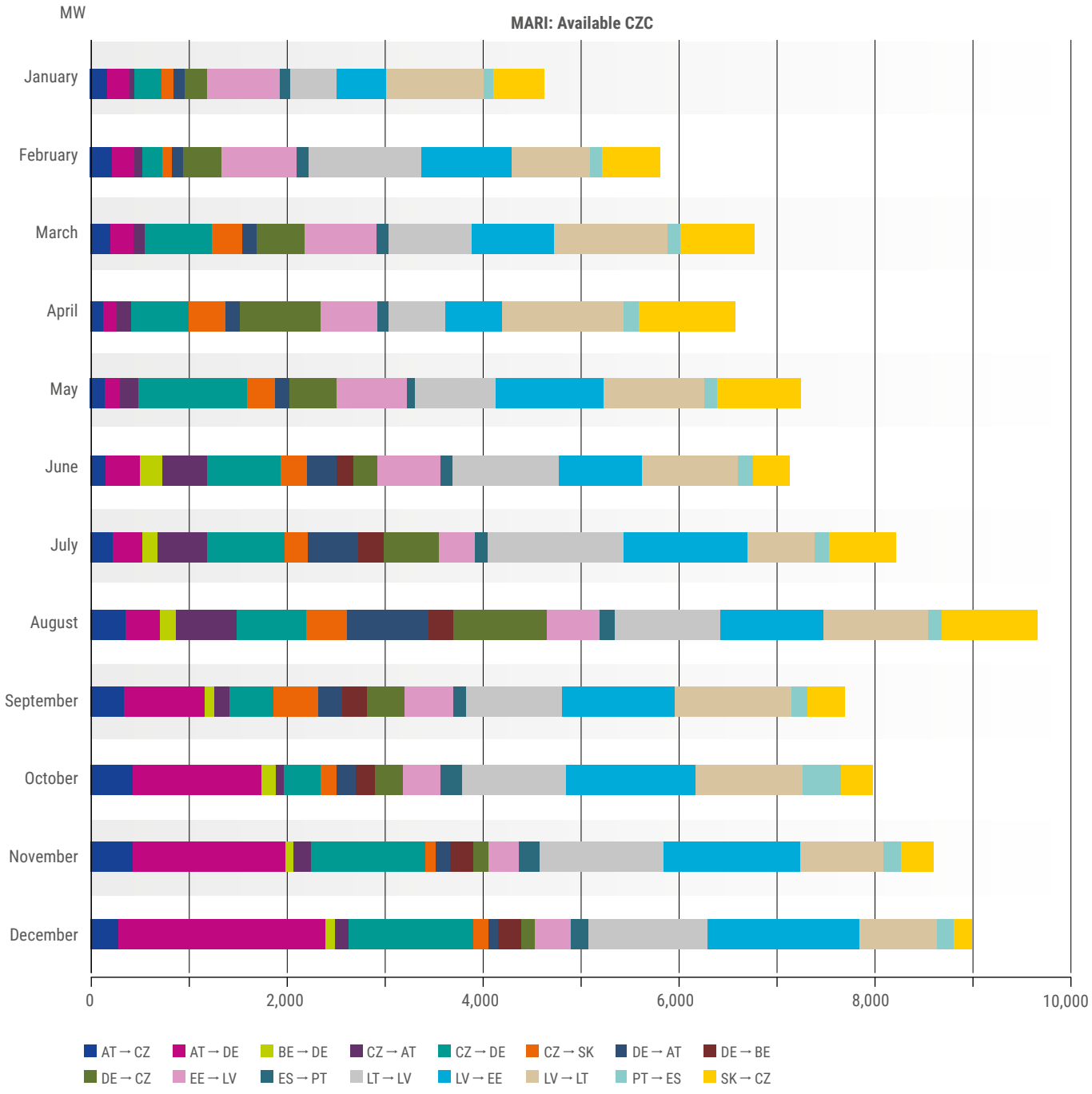



Figure 109: KPI 5.4.6: mFRR platform: monthly average value of the available CZC per BZB and direction (MW)

## KPI 6.4.6: mFRR platform: monthly average value of the used CZC per BZB and direction (MW)

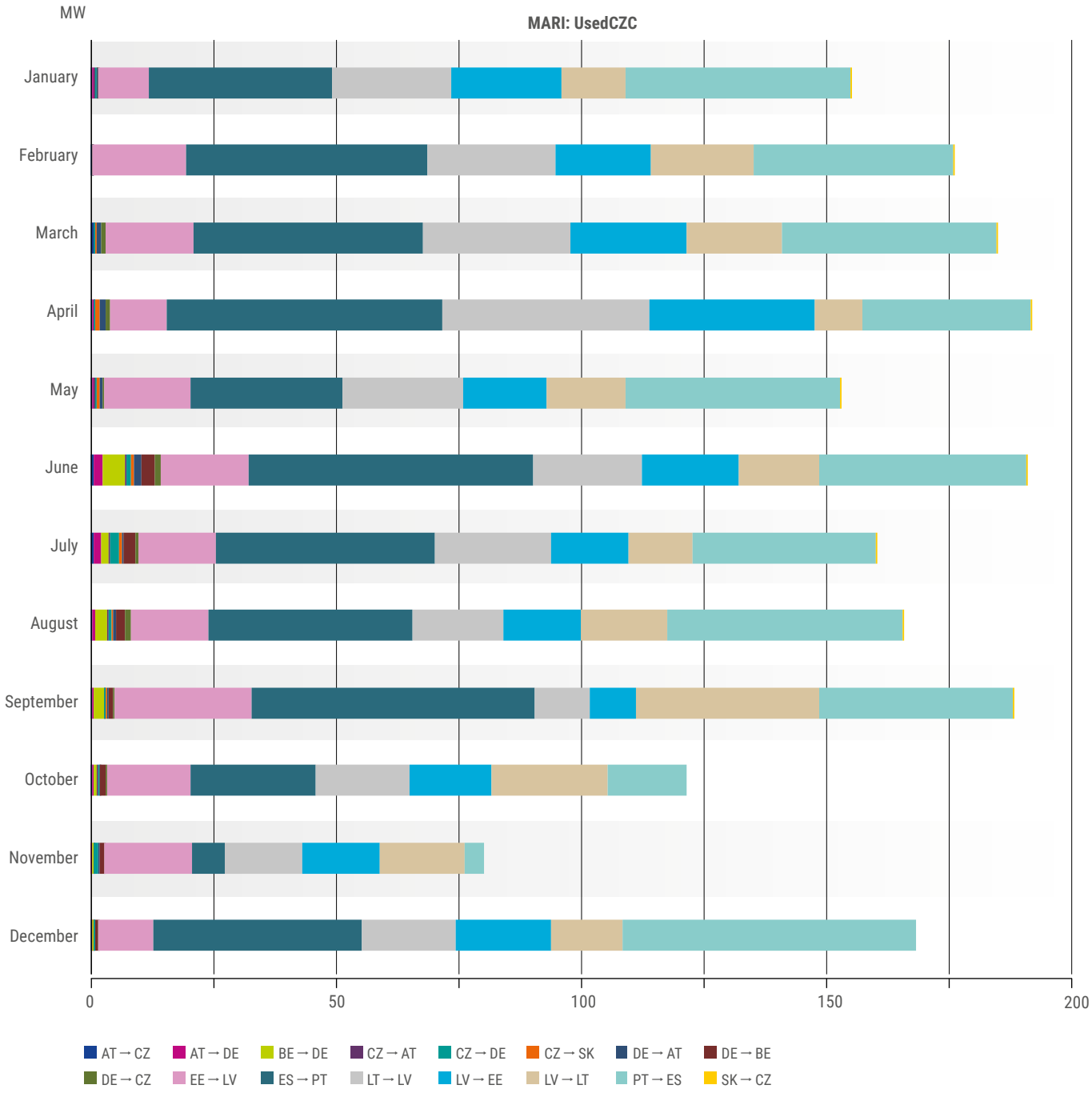



Figure 110: KPI 6.4.6: mFRR platform: monthly average value of the used CZC per BZB and direction (MW)

## KPI 6.4.6: RR platform: monthly average value of the available CZC per BZB and direction (MW)[16]

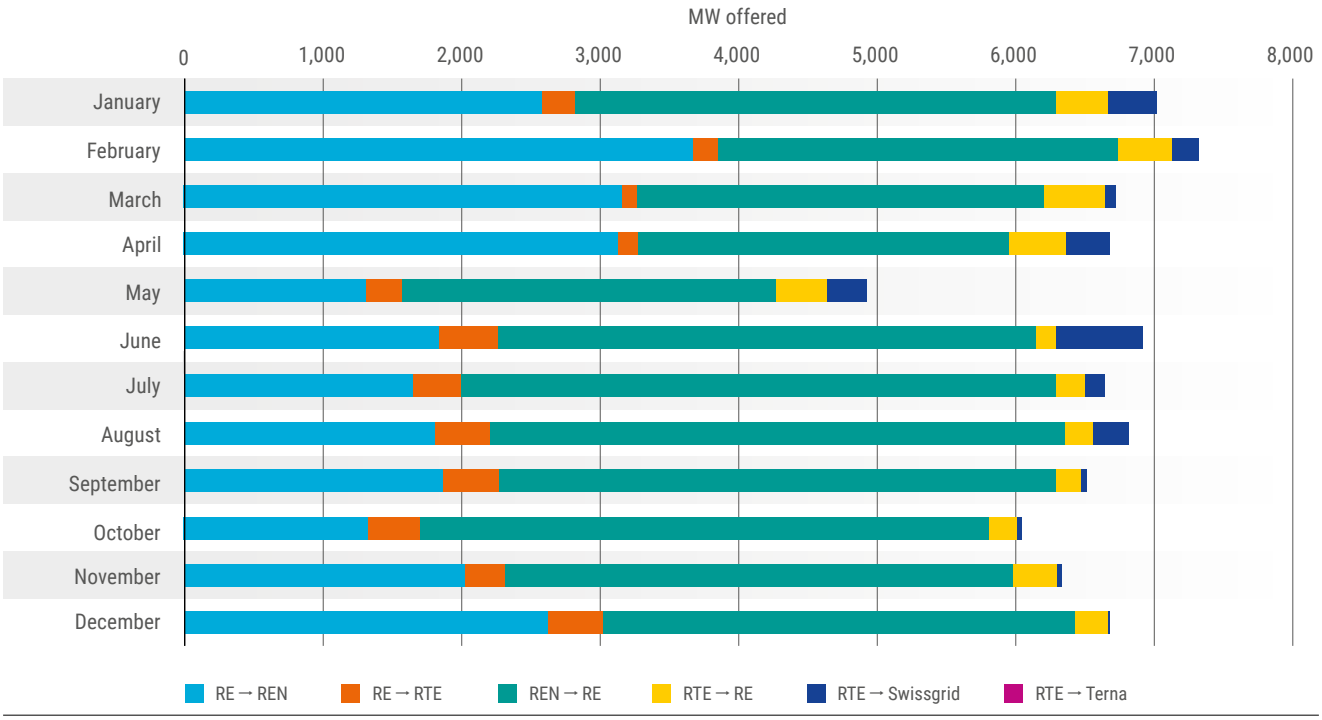



Figure 111: KPI 6.4.6: RR platform: monthly average value of the available CZC per BZB and direction (MW)

## KPI 6.4.6: RR platform: monthly average value of the used CZC per BZB and direction (MW)

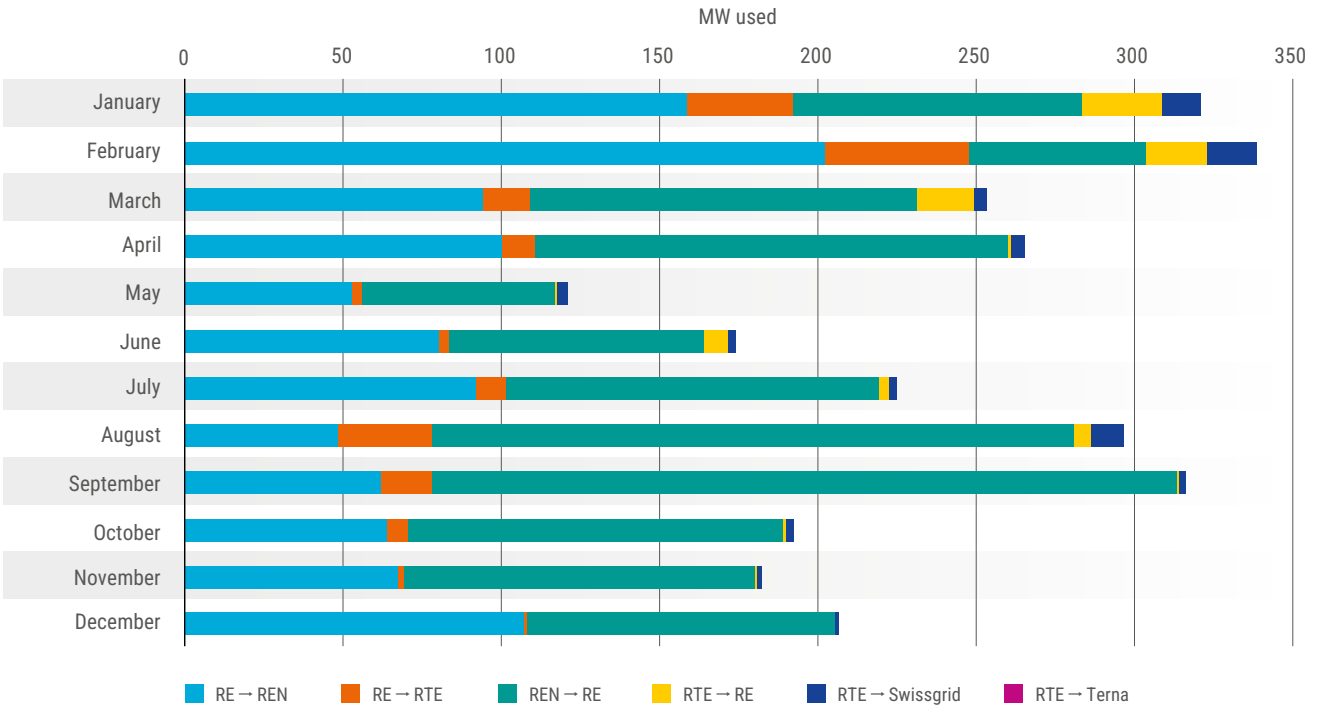



Figure 112: KPI 6.4.6: RR platform: monthly average value of the used CZC per BZB and direction (MW)

16 The maximum RR flow on the France–Spain border is limited by RTE to maintain power system reliability. RR flows are limited to a maximum of 300 MW in the direction of the scheduled flows and a maximum of 500 MW in the opposite direction of the scheduled flows.

## KPI 6.4.7: Monthly average value of the number of uncongested areas per platform

| Average value of uncongested LFC areas | | | |
|---|---|---|---|
| | **PICASSO** | **MARI** | **TERRE** |
| **January** | 3.85 (of 8) | 8.96 (of 9) | 3.78 (of 4) |
| **February** | 4.3 (of 9) | 8.98 (of 9) | 3.86 (of 4) |
| **March** | 5,5 (of 12) | 8.99 (of 9) | 3.95 (of 4) |
| **April** | 6.9 (of 14) | 8.95 (of 9) | 3.70 (of 4) |
| **May** | 6.3 (of 13) | 8.98 (of 9) | 3.78 (of 4) |
| **June** | 6.8 (of 13) | 9.89 (of 10) | 3.88 (of 4) |
| **July** | 6.6 (of 14) | 9.91 (of 10) | 3.93 (of 4) |
| **August** | 5.9 (of 15) | 9.84 (of 10) | 3.87 (of 4) |
| **September** | 6.8 (of 14) | 9.87 (of 10) | 3.94 (of 4) |
| **October** | 6.8 (of 14) | 9.90 (of 10) | 3.95 (of 4) |
| **November** | 6.9 (of 14) | 9.89 (of 10) | 3.94 (of 4) |
| **December** | 7.1 (of 15) | 8.96 (of 10) | 3.98 (of 4) |

Table 12: KPI 6.4.7: Monthly average value of the number of uncongested areas per platform

## KPI 6.4.8: Number of occurrences (% of MTU) of unsatisfied inelastic need/TSO and its volume (MWh)

Please note that countries that have 0 MWh of unsatisfied inelastic need are not represented in the chart below.

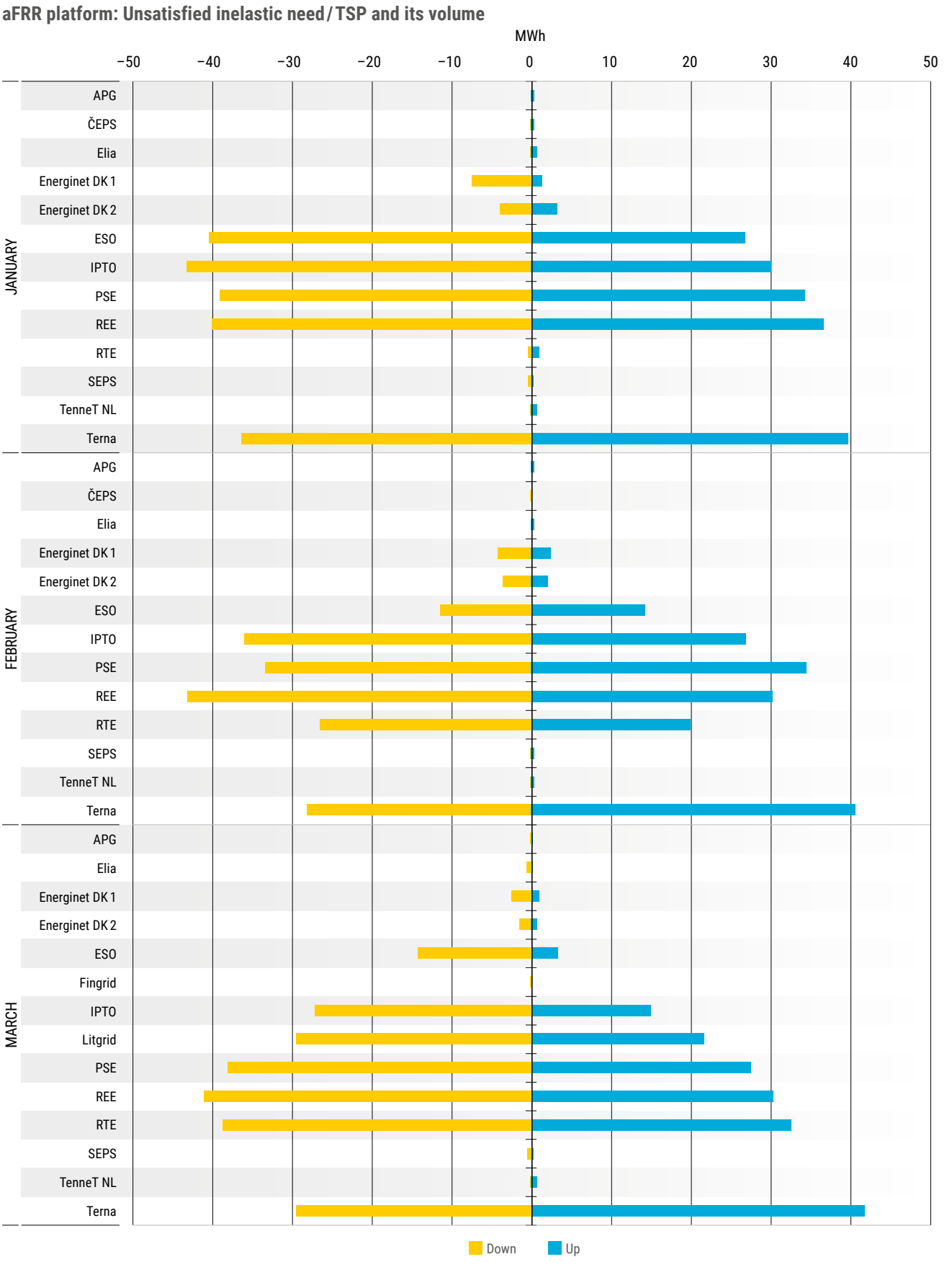



Figure 113: KPI 6.4.8: Number of occurrences (% of MTU) of unsatisfied inelastic need/TSO and its volume (MWh)

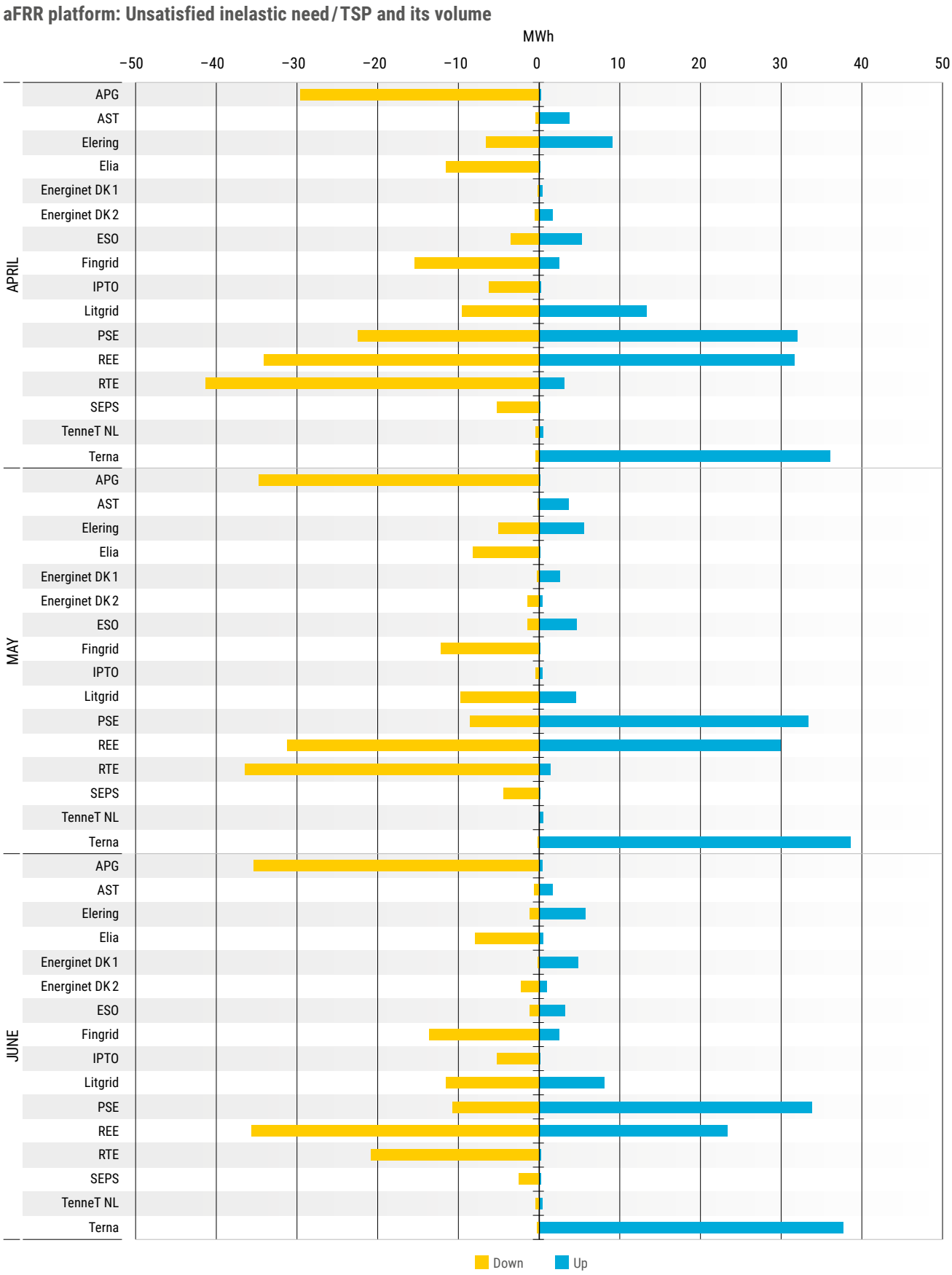



Figure 114: KPI 6.4.8: Number of occurrences (% of MTU) of unsatisfied inelastic need/TSO and its volume (MWh)

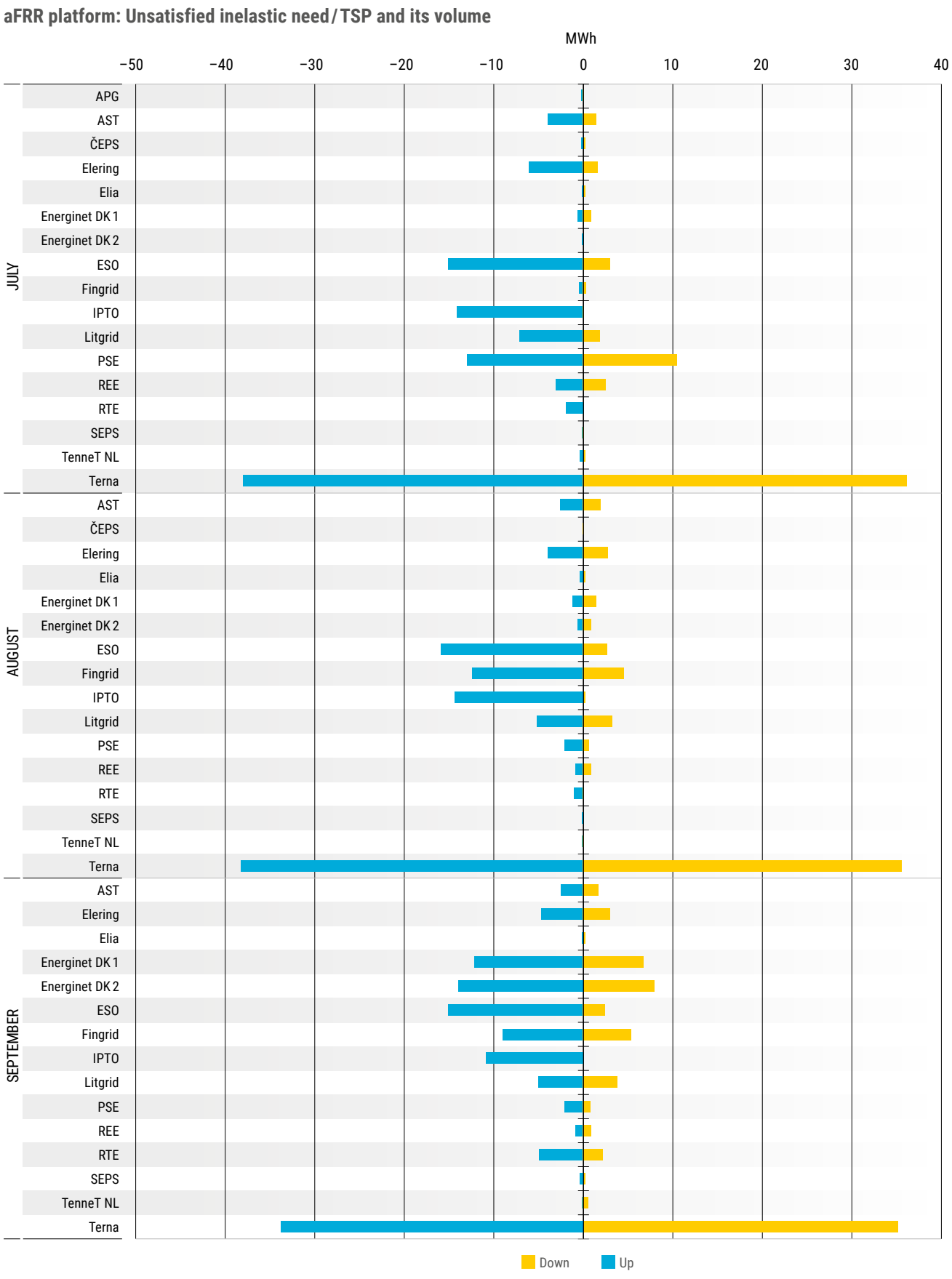



Figure 115: KPI 6.4.8: Number of occurrences (% of MTU) of unsatisfied inelastic need/TSO and its volume (MWh)

## 6.5 Possible inefficiencies and distortions in balancing markets[17]

| | |
|---|---|
| **Definition** | **This indicator assesses the following data for each balancing platform and month:**<br>› CZC available to and used by the balancing energy platform. Each balancing energy platform must report four values per BZB: the CZC initially available per border and direction (considering the remaining capacity after the consecutive previous processes affecting each border, namely: 1) the last intraday market, 2) the TERRE/RR market, and 3) the MARI market), as well as the CZC used per border and direction. Monthly average values per MTU shall be calculated for each balancing energy platform and for each BZB in both directions.<br>› The average percentage of both submitted and activated standard balancing energy bids per product and direction, with prices higher than 50 %, 75 %, 90 %, 95 %, and 99 % of the upper or lower transitory price limit.<br>› The VWAP (€/MWh) of the 5 % most expensive submitted standard energy bids for each European balancing platform per direction and participating TSO.<br>As this indicator is already published in quarterly reports under the pricing methodology, TSOs will reference the quarterly reports of the previous year in the Market and Balancing Reports. |
| **Legal reference** | Article 59 (4)(f) of the EB Regulation[18] |
| **Time reference** | Yearly with monthly granularity |

Table 13: Indicator 5.6. on efficiency losses due to specific products.

Please refer to quarterly pricing reports located on the **ENTSO-E website.**

## 6.6 Efficiency losses due to specific products

| | |
|---|---|
| **Definition** | TSOs consider that specific products may only be used locally when approved by the relevant NRA in accordance with the conditions specified by Article 26 (1)(f) of the EB Regulation; therefore, there is no significant loss to be reported on. |
| **Legal reference** | Article 59 (4)(g) of the EB Regulation |
| **Time reference** | Not applicable |

Table 14: Indicator 5.6. on efficiency losses due to specific products.

## 6.7 Volume of activated balancing energy used for balancing purposes, from standard and specific products

| | |
|---|---|
| **Definition** | This indicator[19] displays:<br>› The yearly activated volume of balancing energy used for balancing purposes per BZ, process (if applicable per product type), and direction (GWh). This will be displayed in a single graph for all products (aFRR, mFRR, and RR).<br>› Regarding the yearly VWAP of the activated balancing energy per BZ, process (if available, per product type), and direction (€/MWh), the new PI 3.9 will centralise all VWAP prices for both energy and reserve. |
| **Legal reference** | Article 59 (4)(h) of the EB Regulation |
| **Time reference** | Yearly |
| **Clarifications on Transparency Platform data** | Data for Greece also includes re-dispatch activations. |

Table 15: Indicator 5.7. on the volume of balancing energy used for balancing purposes (GWh).

17 The annual and bi-annual reports will include links to the quarterly reports arising from the pricing methodology, where a higher level of analysis of price incidents is accomplished.

18 Following the go-live of the approved implementation frameworks for the European platforms pursuant to Articles 19 (5), 20 (6), 21 (6), and 22 (5) of the EB Regulation. Further changes shall be implemented in accordance with Article 59 (9) of the EB Regulation.

19 These parameters reflect the perspective of the connected BSPs supplying the TSO; for TSO–TSO exchanges, they do not reflect the fulfilment of TSO demand.

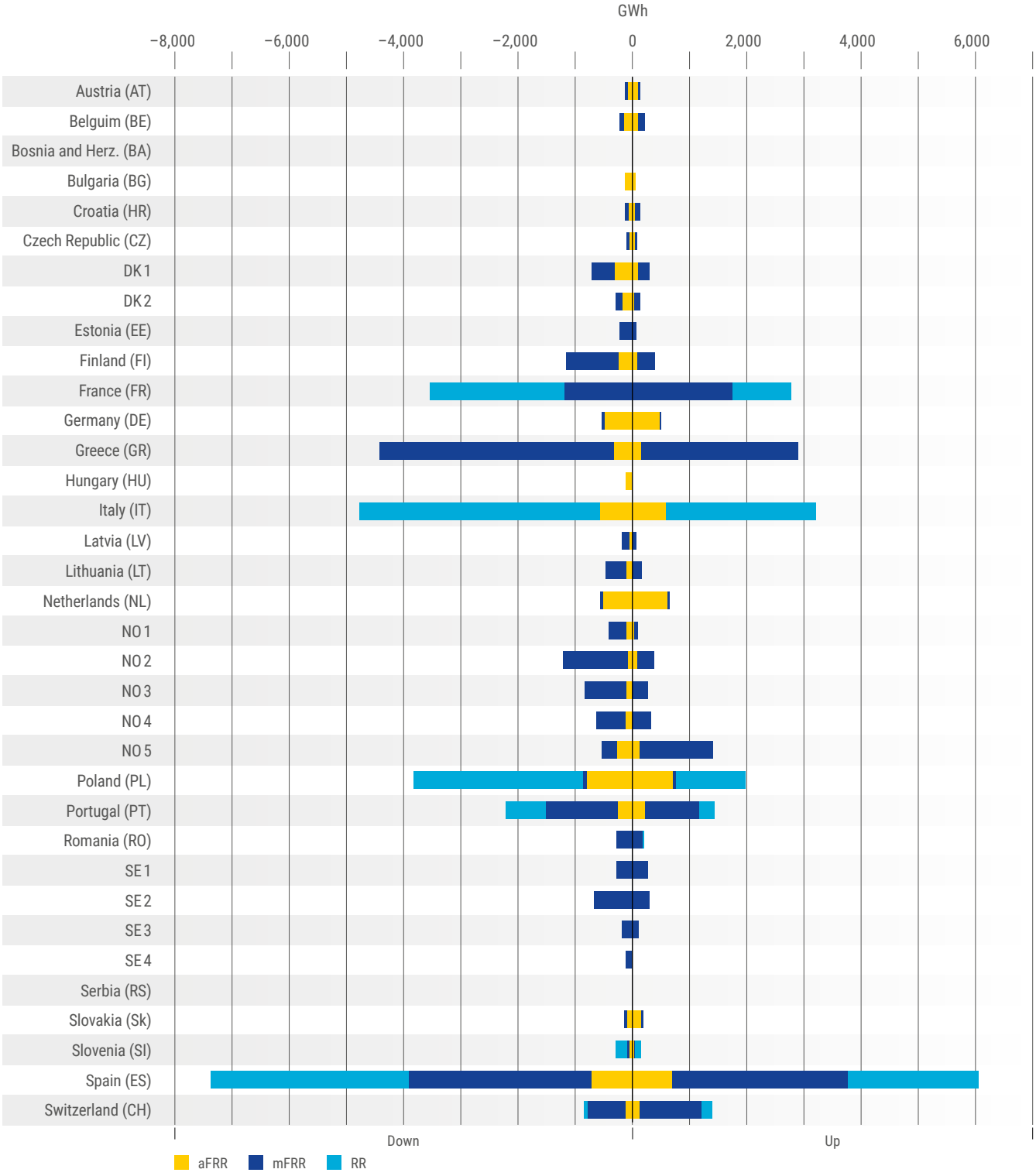



Figure 116: Indicator 5.7. on the volume of balancing energy used for balancing purposes (GWh).

# 6.8 Imbalance prices and system imbalances

| | |
|---|---|
| **Definition** | This indicator is based on imbalance prices and system imbalances. It indicates whether dual pricing has been applied by reflecting the average imbalance prices per BRP imbalance direction (shortage/surplus).<br>This PI includes the following:<br>1 // Average price for BRP shortage across all ISPs<br>2 // Average price for BRP surplus across all ISPs<br>3 // Percentage of ISPs where price shortage and surplus are unequal (incidence of dual prices)<br>4 // Percentage of ISPs with positive and negative system imbalance, respectively[20]<br>Some points to consider for this indicator:<br>› If there are no IPSs with dual pricing, the average imbalance prices across all ISPs for shortage and surplus are equal.<br>› The percentage of ISPs with dual pricing is given as a separate sub-indicator.<br>› The average price (or prices) across all ISPs is (are) indicative of the value of imbalance for a BRP.<br>› The spread of the average imbalance prices over those ISPs where the system imbalance is short (item 4) or long (item 5) indicates:<br>a) The volatility of the imbalance prices<br>b) The incentive for BRPs to avoid imbalances that aggravate system imbalance in order to support system balance<br>› The percentage of ISPs with negative/positive system imbalances is given as a separate sub-indicator and reflects whether the system was predominantly short or long. Positive or negative system imbalance parameter should reflect the BZ. |
| **Legal reference** | Article 59 (4)(i) of the EB Regulation |
| **Time reference** | Yearly |

Table 16: Indicator 5.8. on imbalance prices and system imbalances.

20 The percentage of positive and negative system imbalance will be presented jointly in a graph for indicator 3.8.4.

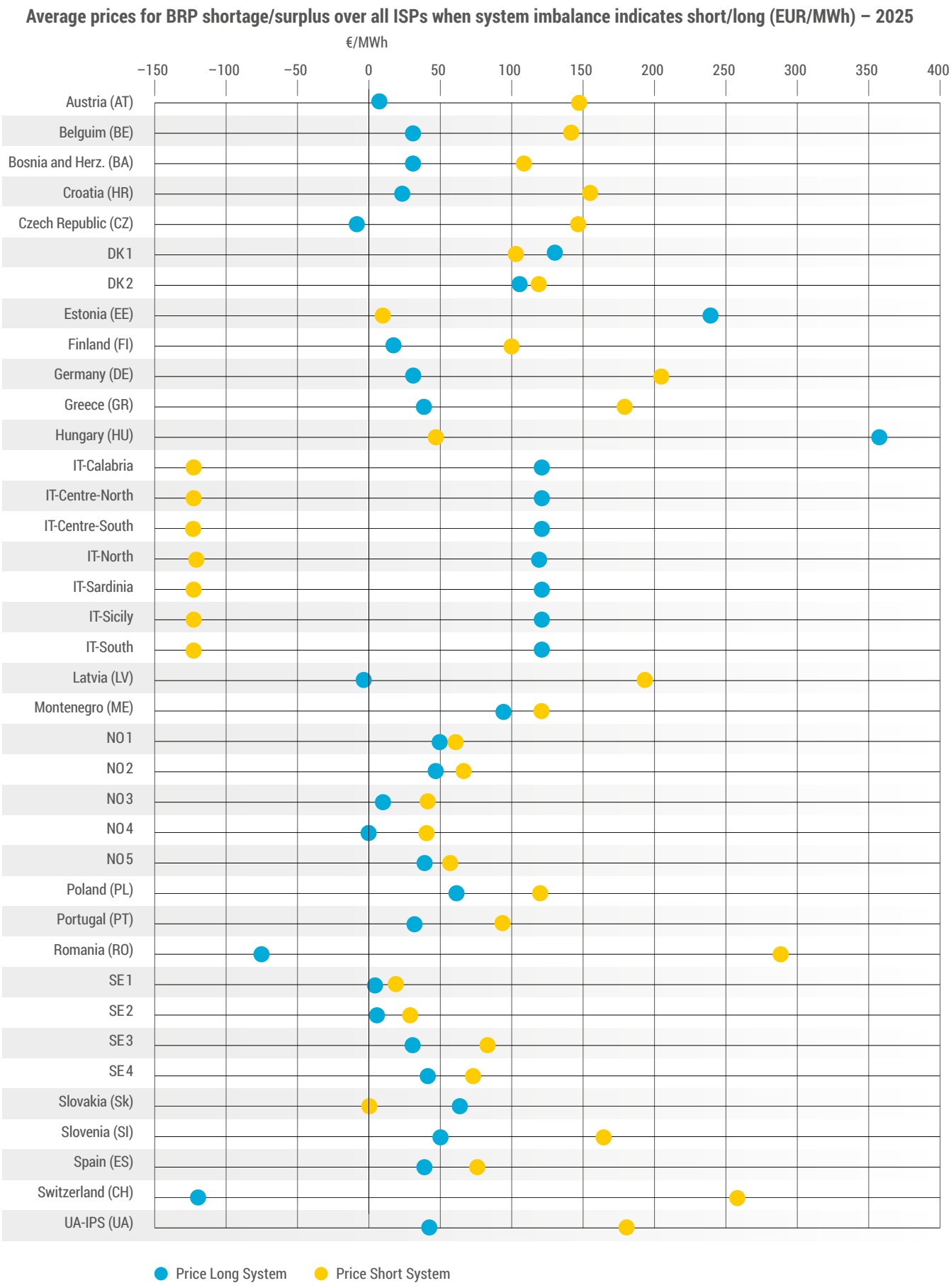



Figure 117: Average prices for BRP shortage/surplus over all ISPs when system imbalance indicates short/long (EUR/MWh) – 2025


Figure 118: Percentage of ISPs where price shortage and surplus are unequal (incidence of dual pricing) – 2025

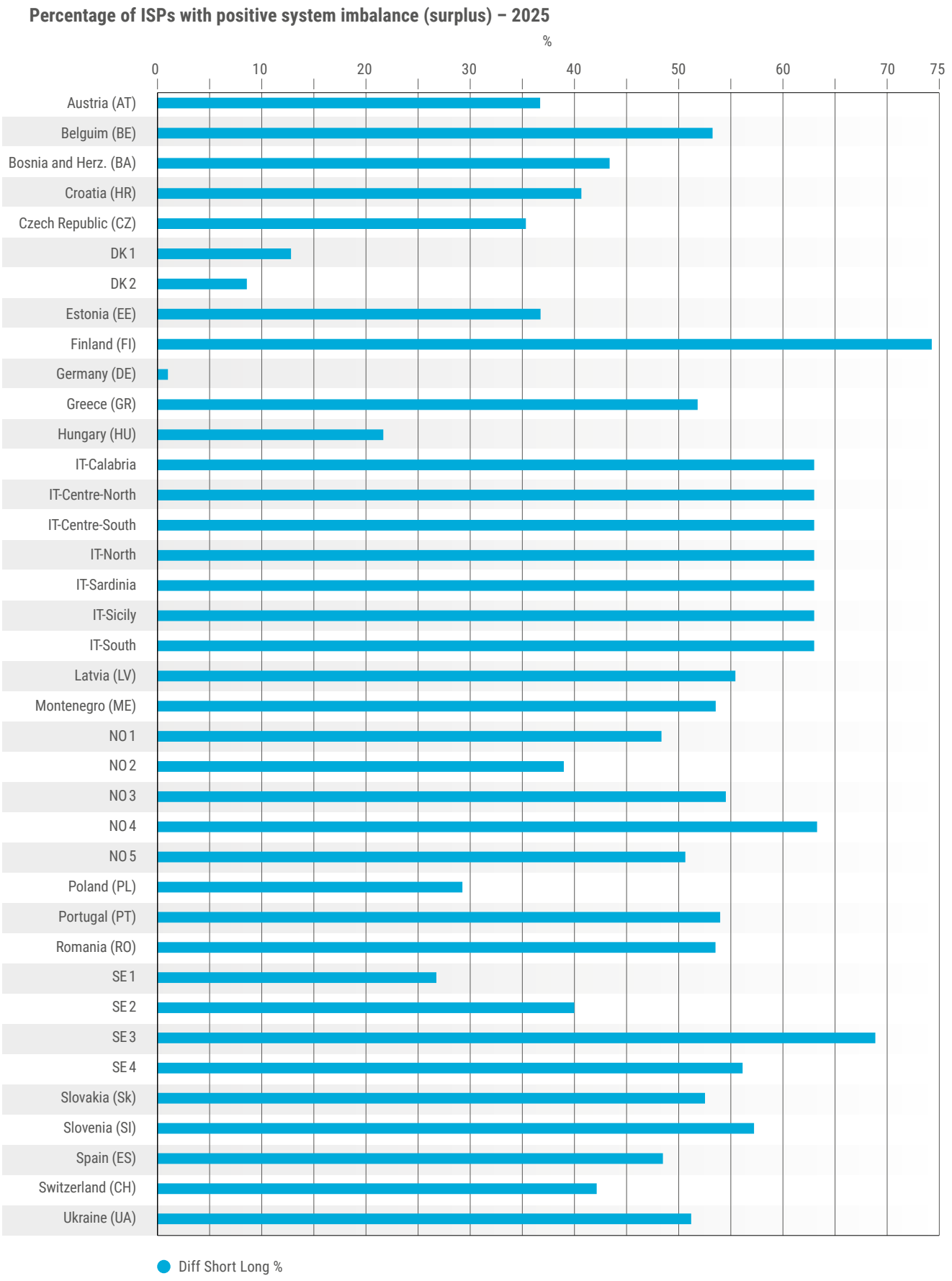



Figure 119: Percentage of ISPs with positive system imbalance (surplus) – 2025

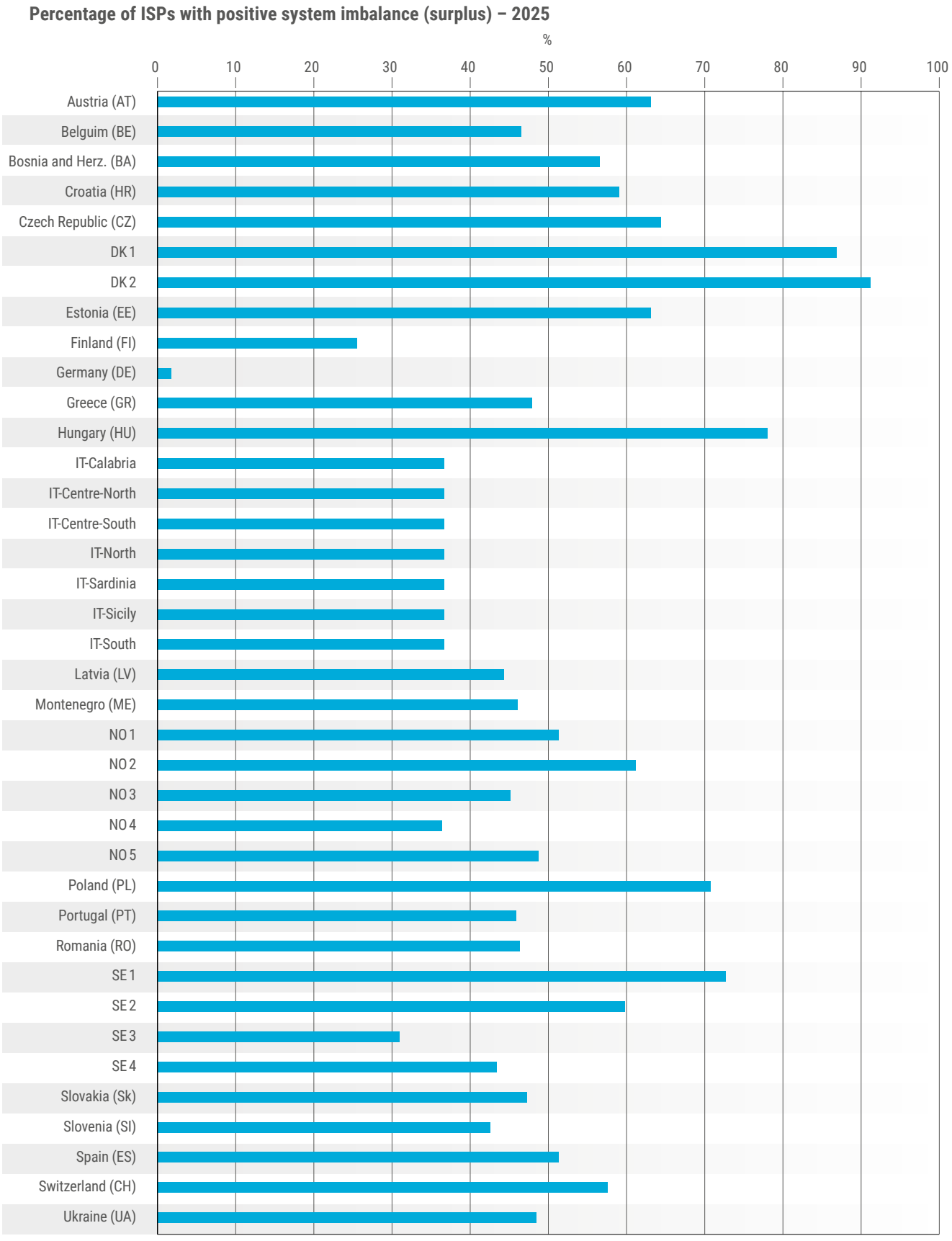



Figure 120: Percentage of ISPs with positive system imbalance (surplus) – 2025

# 6.9 Evolution of balancing service prices over previous years

| | |
|---|---|
| **Definition** | **This indicator** shows the evolution of annual average prices for balancing services over the past three years (whenever data are available).<br>This PI includes the following:<br>1 // Evolution of weighted average balancing energy prices on European balancing energy platforms (**standard products only**)<br>2 // Evolution of weighted average balancing energy prices for each TSO and, where available, per BZ (**including specific products**)<br>3 // Evolution of weighted average balancing capacity procurement prices, aligning these prices with a capacity procurement time of one hour. |
| **Legal reference** | Article 59 (4)(j) of the EB Regulation |
| **Time reference** | Yearly |

Table 17: Evolution of balancing service prices over the previous three years (€/MW).

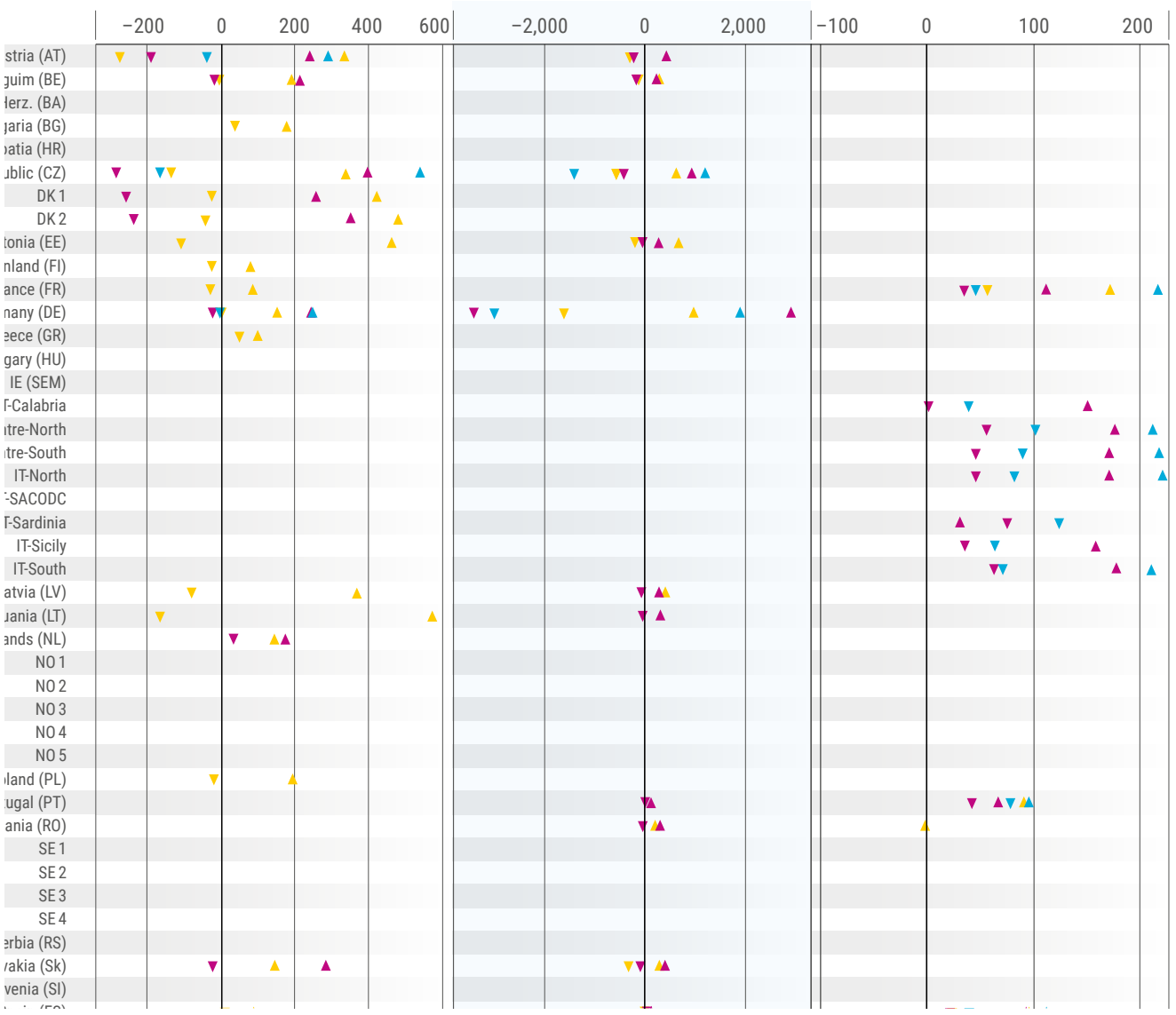



Figure 121: Evolution of weighted average balancing capacity procurement prices, aligning these prices with a capacity procurement time of one hour.

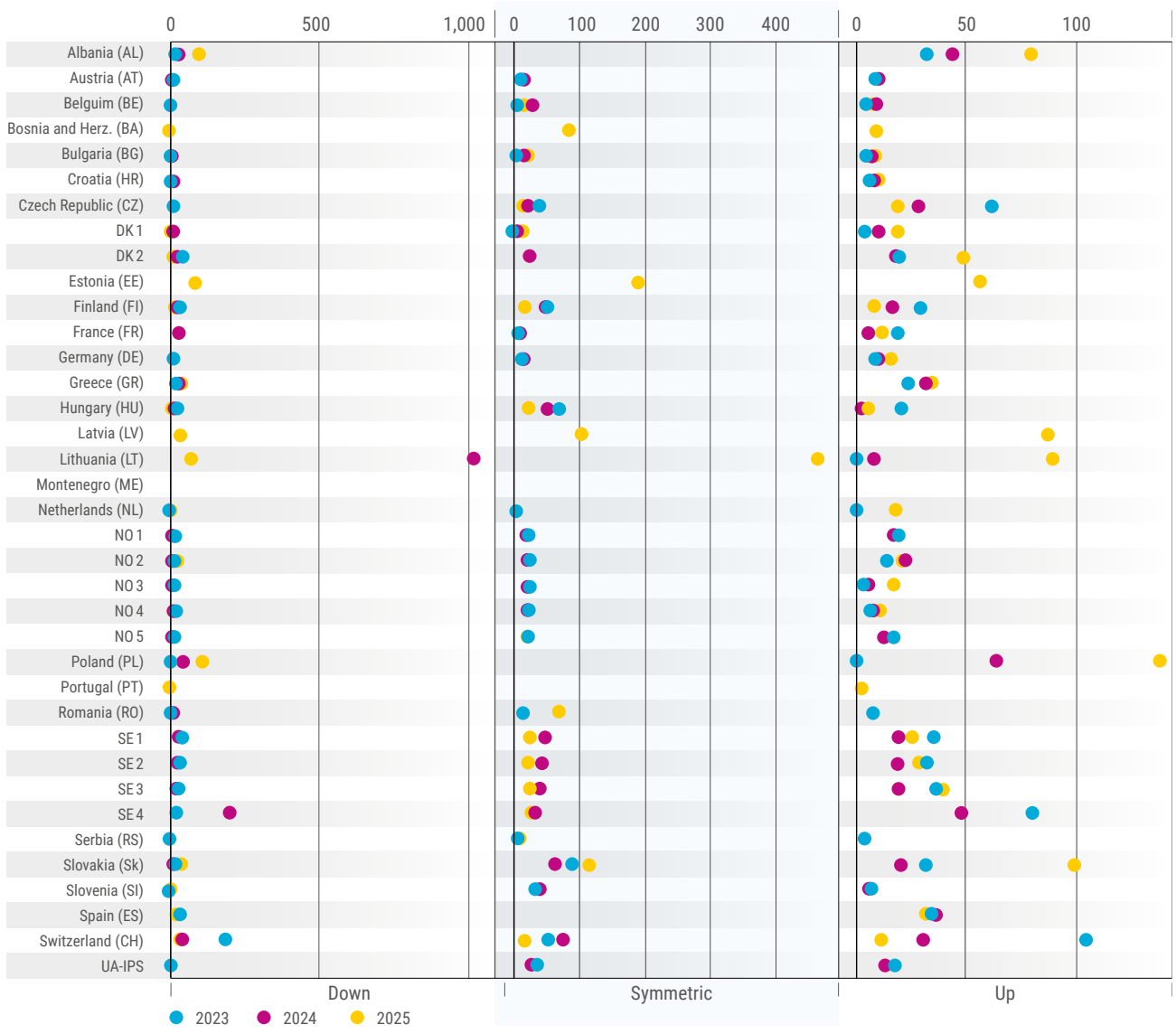



Figure 122: Evolution of weighted average balancing capacity procurement prices, aligning these prices with a capacity procurement time of one hour.

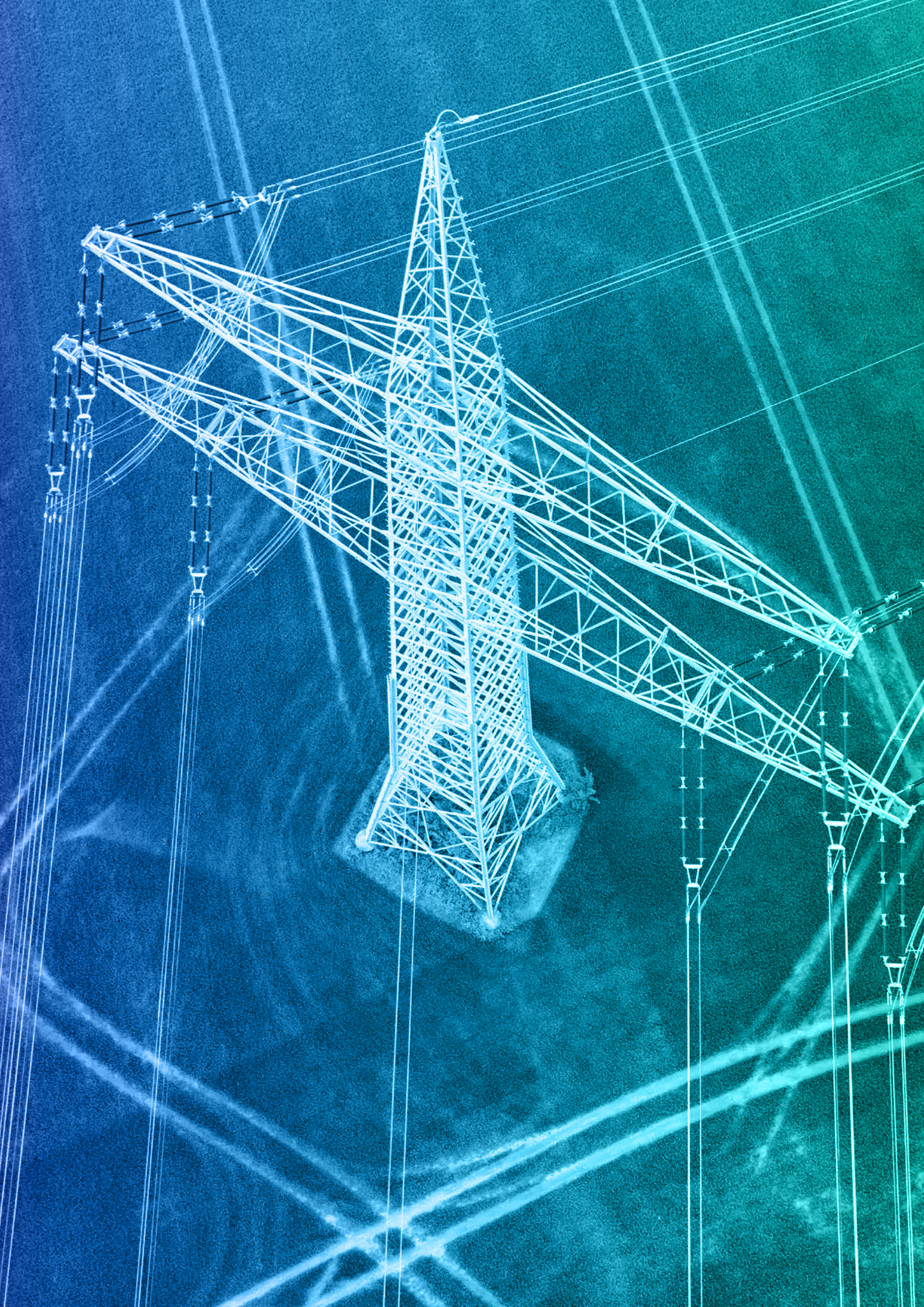
# 6.10 Comparison of expected and realised costs and benefits from all allocations of cross-zonal capacity for balancing purposes

| | |
|---|---|
| **Definition** | This indicator compares the expected benefits with the realised benefits (or losses) for each application of a CZC allocation methodology, based on forecast values (whether for balancing capacity bids or day-ahead energy market bids).[21]<br><br>This PI includes:<br>› For market-based application (Article 41 (1) of the EB Regulation), compute the social welfare by considering the forecasted day-ahead energy bids and real reserve capacity bids. |
| **Legal reference** | Article 59 (4)(k) of the EB Regulation |
| **Time reference** | Yearly |

Table 18: Indicator 5.10. on the comparison of expected and realised costs and benefits from all allocations of CZC for balancing purposes.

Please note that due to delays on the Nordic Report, this data will become available on this website.

21 Once the CZC allocation methodology and RCC procurement methodology enter into force, PI 3.10 will be provided by RCCs.



# 7 Executive summaries of TSOs

## 7.1 Austria (Austrian Power Grid AG)

### 1 // Introduction

Austrian Power Grid AG (hereinafter referred to as "APG") is one of two TSOs in Austria. The other TSO is Vorarlberger Übertragungsnetz GmbH (hereinafter referred to as "VUEN"), which is responsible for the westernmost federal state of Austria only.

APG is the LFC block operator of the APG LFC block, which covers the geographical area of Austria as part of the CE SA. Since VUEN assigned the obligation of organising its LFC area to APG, and both LFC areas were merged into one based on the Austrian Electricity Act, the APG LFC block is equal to the LFC area, scheduling area, and monitoring area covering the entire country. For the sake of simplicity, APG reports on behalf of both Austrian TSOs.

All relevant documents, including the national balancing report and all T&C of APG, are published on the APG website. The rules and requirements to become a BSP according to Articles 18(5)–(7) of the Electricity Balancing Guideline (EBGL) are defined within the T&Cs for BSPs (German: "Modalitäten für Regelreserveanbieter").

**APG applies a self-dispatching model.**

The dimensioning of FRR is based on 15-minute average values of the LFC block imbalance (in accordance with Article 3 of the System Operation Guideline (SOGL), over a 12-month period, and applies the 99 % criterion as well as the frequency restoration control error (FRCE) ranges in accordance with Article 128 of the SOGL. In the event of substantial changes in general boundary conditions, FRR dimensioning will be adjusted accordingly.

In addition to the statistical approach, the tripping of the largest power plant and load within the APG LFC block are considered as reference incidents. The chosen approach resulted in the following optimal dimensioning:

- aFRR: +225/−225 MW
- mFRR: +255/−170 MW

The separation of FRR into aFRR and mFRR at APG is based on the recommended empirical approach in the Synchronous Area Framework Agreement (SAFA). Applying the ENTSO-E quality criteria, the described dimensioning has proven sufficient.

A common market for FCR procurement and exchange is operated together with the TSOs from Germany, Belgium, Denmark, the Netherlands, France, Switzerland, Slovenia, and Czechia. It is organised as a TSO–TSO model.

APG is an operational member of the IGCC. In 2016, APG and the German TSOs established a joint activation of aFRR, which was the early adoption of the requirements of the EBGL regulation concerning the exchange of balancing energy. In December 2019, this cooperation was extended to mFRR. Thus, APG and the German TSOs have already activated all FRR energy based on a common merit order, provided that sufficient cross-border capacity is available. In February 2020, APG and the German TSOs further extended their cooperation and established a common procurement of aFRR balancing capacity.

As of June 2022, APG is an operational member of PICASSO, pursuant to Article 21 of the EBGL, which represents the implementation project establishing the European aFRR balancing energy platform. APG also participates in MARI, the European implementation project for establishing the European mFRR platform, and has been an operational member since June 2023.

For aFRR balancing capacity, Austria and Germany have continuously procured aFRR jointly under the German–Austrian balancing capacity cooperation established in 2020. Since September 2025, Czechia has been a member of the balancing capacity cooperation, which is now named ALPACA. For the founding of ALPACA, markets were harmonised and a probabilistic methodology pursuant to Article 33(6) of the EB Regulation was implemented on the Austria–Czechia and Germany–Czechia borders.

Since no specific products are defined in Austria, no corresponding cost–benefit analysis is applied.

The settlement process takes into account the general principles of Article 44 of the EBGL. Imbalance settlement is designed to reflect the real-time value of energy, as both balancing and wholesale market prices are considered in imbalance settlement prices. BSPs are provided incentives to be generally in balance or support the system, especially in more extensive situations, so the imbalance situation is reflected in the imbalance prices. Financial neutrality is assured based on national legislation and complemented by the installation of an additional settlement mechanism.

An additional settlement mechanism, separate from the imbalance settlement, is in place to settle the procurement costs of balancing capacity (e.g. administrative costs and other costs related to balancing), in accordance with Article 44(3) of the EBGL. In Austrian national legislation, procurement costs of balancing capacity for FCR, aFRR, and positive mFRR are regulated, and costs are settled accordingly. An additional settlement mechanism was introduced to settle the costs of negative mFRR, as the regulation of these costs in the Austrian national legislation was no longer consistent with the EBGL.

In general, there are 20 BSPs in Austria. Table below shows an overview of the BSPs in the respective markets, including the range of available reserve capacity. As the reserve is often offered in multiple markets simultaneously, and great shares are traded via the wholesale market, the resulting maximal power band can only be regarded as theoretical.

| Reserve type | Number of BSPs | Number of BRPs | Maximal (theoretical) power band | Pre-qualified technical units |
|---|---|---|---|---|
| **FCR** | 9 | N/A | ± 1,041 MW | 226 (2.3 %) |
| **aFRR** | 17 | N/A | +5,368/−5,774 MW | 534 (+17.1 %) |
| **mFRR** | 15 | N/A | +6,828/−7,449 MW | 605 (+9 %) |

The number of technical units pre-qualified to provide balancing reserve for aFRR and mFRR increased compared to 2024, rising by 17.1 % for aFRR, 9 % for mFRR, and 2.9 % for FCR. These units include, among others, stand-alone batteries. Batteries as BSPs are obliged to include in their technical concept a strategy for providing reserves throughout the entire product period. To date, the largest pre-qualified battery has a capacity of 20 MWh and is capable of activating 12 MW within four seconds in both positive and negative directions.

## 2 // Progress and timeline for joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

Table 19 lists the balancing energy cooperations, including their status and timeline, and Table 20 lists the status of balancing capacity cooperations.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | N/A | N/A |
| **aFRR platform** | Connected to PICASSO since 22 June 2022 | N/A |
| **mFRR platform** | Connected to MARI since 22 June 2023 | N/A |
| **IN-Platform** | Connected to IGCC since 2014 | N/A |

Table 19: European balancing energy platforms.

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **ALPACA cooperation** | Austria, Germany, and Czechia, connected since September 2025 | In operation |
| **German–Austrian aFRR reserve capacity cooperation** | Austria and Germany connected since February 2020 | In operation |
| **FCR cooperation** | Connected since April 2015 | In operation |

Table 20: Balancing capacity cooperations.

The following content can be included in Section 2 on a voluntary basis.

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, renewable energy sources (RES), and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | Pre-qualification is technology-neutral. RES and DR are already included. No additional changes have been necessary. |
| **Q2: Did you carry out regulatory and IT developments to adopt standard energy products (aFRR, mFRR, RR, balancing energy products) in your system?** | **No** |
| 2.1 // If response to Q2 is "no", why? | These changes were already applied when joining the platforms. |
| 2.2 // If response to Q2 is "yes", what were the main results? | N/A |
| **Q3: Do you procure a standard product for balancing capacity?** | **Yes** |
| **Q4: What are the main characteristics?** | **Platform-specific characteristics for standard products** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **Yes** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | Austria is part of several initiatives. |
| **Q6: Are you already involved in a BCC as a member or observer?** | **Operational member in German–Austrian aFRR BC cooperation and member in ALPACA cooperation** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the EB Regulation implementation over the last two calendar years, and further developments foreseen for the future

The changes and amendments over the last two calendar years of T&Cs applicable for BSPs and BRPs in accordance with the EBGL are presented in the Table below.

| **Evolution of T&Cs for BSPs** | |
|---|---|
| **Content** | Approved (March 2022) |
| Content | Approved (February 2025) |
| **Content** | Approved (August 2025) |
| **Evolution of T&Cs for BRPs** | |
| Content | N/A |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1// If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | N/A |
| **Q2: Has your TSO made use of additional components pursuant to ISHM Article 9 (6) as of 1 January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Implemented |
| 2.2 // Incentivising component? | Implemented |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f)

This chapter contains the results of the analysis as per Article 60(2)(a)–(f) EBGL. Furthermore, an assessment of sharing/exchange for reserves is conducted.

### a // Specific products according to Article 26 EBGL

There were no specific products available, procured, or used in the APG control area.

### b // Analysis of dimensioning of reserve capacity (2025)

General approach: Dimensioning of control reserves is based on 15-minute average values of the LFC block imbalance (according to Article 3 SOGL). The calculation analyses the LFC block imbalance values for the 12-month period and determines whether these imbalances were covered by the dimensioned FRR for at least 99 % of the time and if the FRCE ranges in accordance with Article 128 SOGL were met.

If non-fulfilment or any substantial changes in the general boundary conditions are expected, the dimensioning of the FRR will be adjusted accordingly. In addition to the statistical approach, the outage of the largest power plant and the loss of the largest load within the APG LFC block are considered reference incidents, and therefore define the minimum FRR requirement.

The conclusion for the current dimensioning can be seen in Table 19, including a shift from mFRR to aFRR.

| Product | Positive | Negative |
|---|---|---|
| **aFRR** | 225 | -225 |
| **mFRR** | 255 | -170 |
| **Total FRR** | 480 | -395 |

Table 21: FRR dimensioning in APG from 2024 onwards.

Apart from FRR, the amount of FCR to be procured by APG is determined in accordance with the agreed process within the RG Continental Europe; see also SAFA, LFCR policy. Thus, APG is not responsible for the dimensioning of FCR. The current dimension for FCR procurement for the Austria LFC area is 65 (2024) MW and 75 MW (2025) symmetrically.

### c // Analysis of optimal provision of reserve capacity

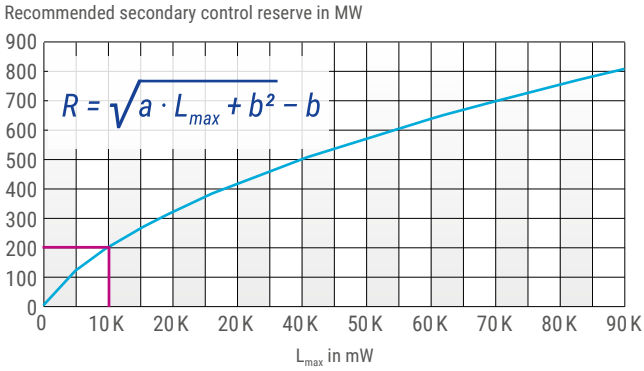



Figure 123: Empirical approach in the SAFA.

To determine the optimal separation of FRR in aFRR and mFRR, APG uses the recommended empirical approach in SAFA, LFCR policy ("aFRR minimum amount recommendation") based on a reference load of 10 GW. Additionally, to avoid high price peaks for imbalance settlement, mFRR dimensioning was partly transferred to aFRR.

Since the dimensioning of aFRR cannot take into account fluctuating maximum load values, the reference load was determined to be slightly below the yearly maximum, which is deemed a reasonable compromise. Experience has shown sufficient performance of imbalance compensation.

## d // Cost–benefit analysis of specific products

Not applicable (see a.)

### 1 // Opportunities for exchange/sharing of reserves

Cross-border procurement of aFRR balancing capacity has been implemented since February 2020 between Austria and Germany. Experience shows that coordinated cross-border procurement improves the efficiency of balancing capacity procurement. While the joint procurement of aFRR between Austria and Germany remains based on the DE-AT-BCC, the joint procurement on the Austria–Czechia and Germany–Czechia borders is based on a probabilistic methodology in accordance with Article 33 (6) of the EB Regulation. Reserve sharing has also been assessed, but experience shows that it would currently be too risky, mainly due to transmission capacity constraints and the possibility of simultaneous reserve exhaustion among cooperation partners. Therefore, while the exchange of balancing capacity has proven beneficial, reserve sharing has not been pursued further.

### 2 // Procurement without exchange/sharing of reserves

For mFRR balancing capacity, APG currently procures the required capacity nationally, more specifically, without the exchange of balancing capacity or the sharing of reserves. This reflects the current implementation status, under which APG is already operational in MARI since June 2023 for the cross-border exchange of mFRR balancing energy, while mFRR balancing capacity continues to be procured through national daily tenders in the APG control area. Possible future steps towards cross-border exchange of balancing capacity or sharing of reserves would require additional implementation, in particular with regard to CZC allocation arrangements. In this context, European developments such as HCZCAM and the COBRA project are relevant, as they provide the framework and algorithmic basis for market-based CZC allocation for both aFRR and mFRR.

### 3 // Efficiency of activation optimisation for FRR balancing energy

The demand for balancing energy of aFRR and mFRR is expressed as MWh per day. On average over the examined period, 95% of total FRR demand was covered by aFRR, while only 5% was covered by mFRR. Balancing energy demand over time is presented in Figure 124.

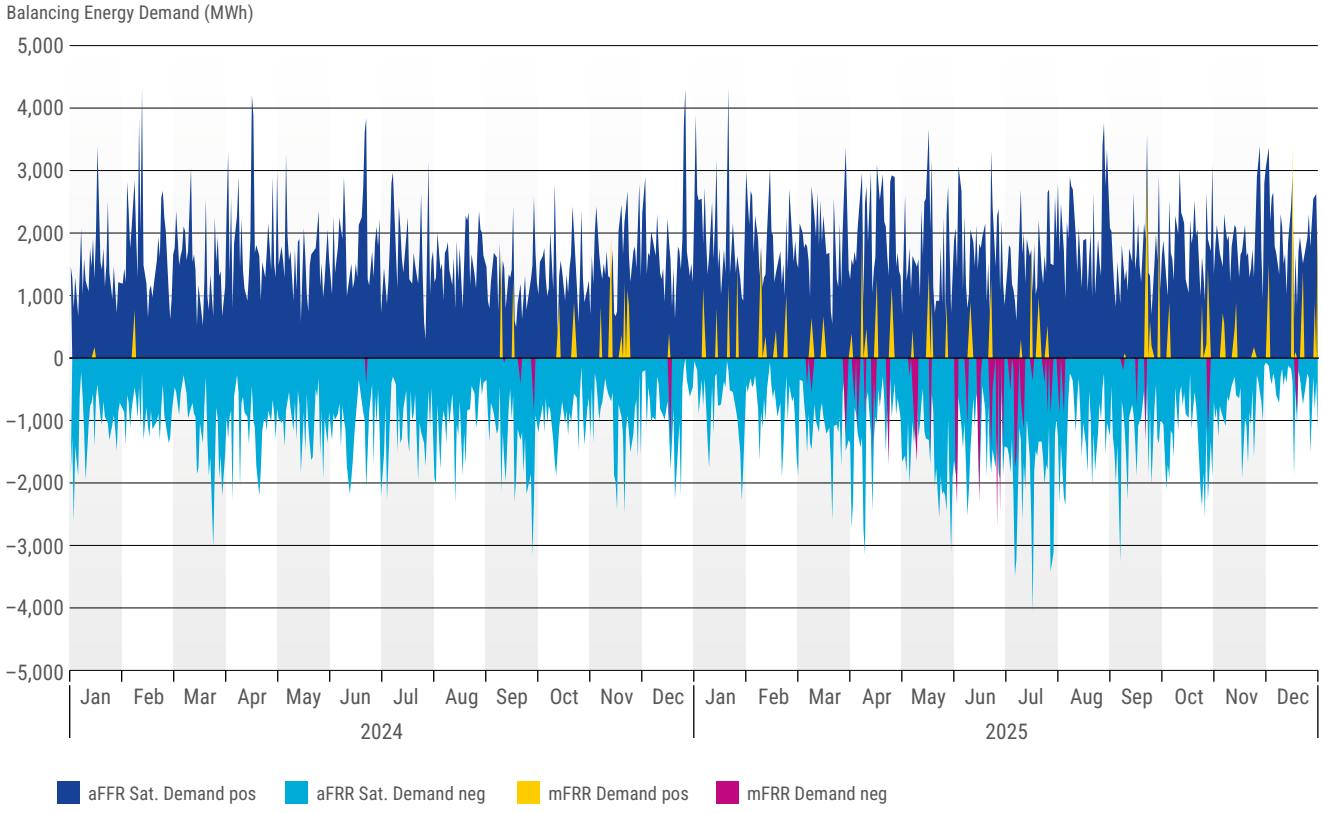



Figure 124: aFRR and mFRR demand in Austria for 2024–2025 in MWh per day.

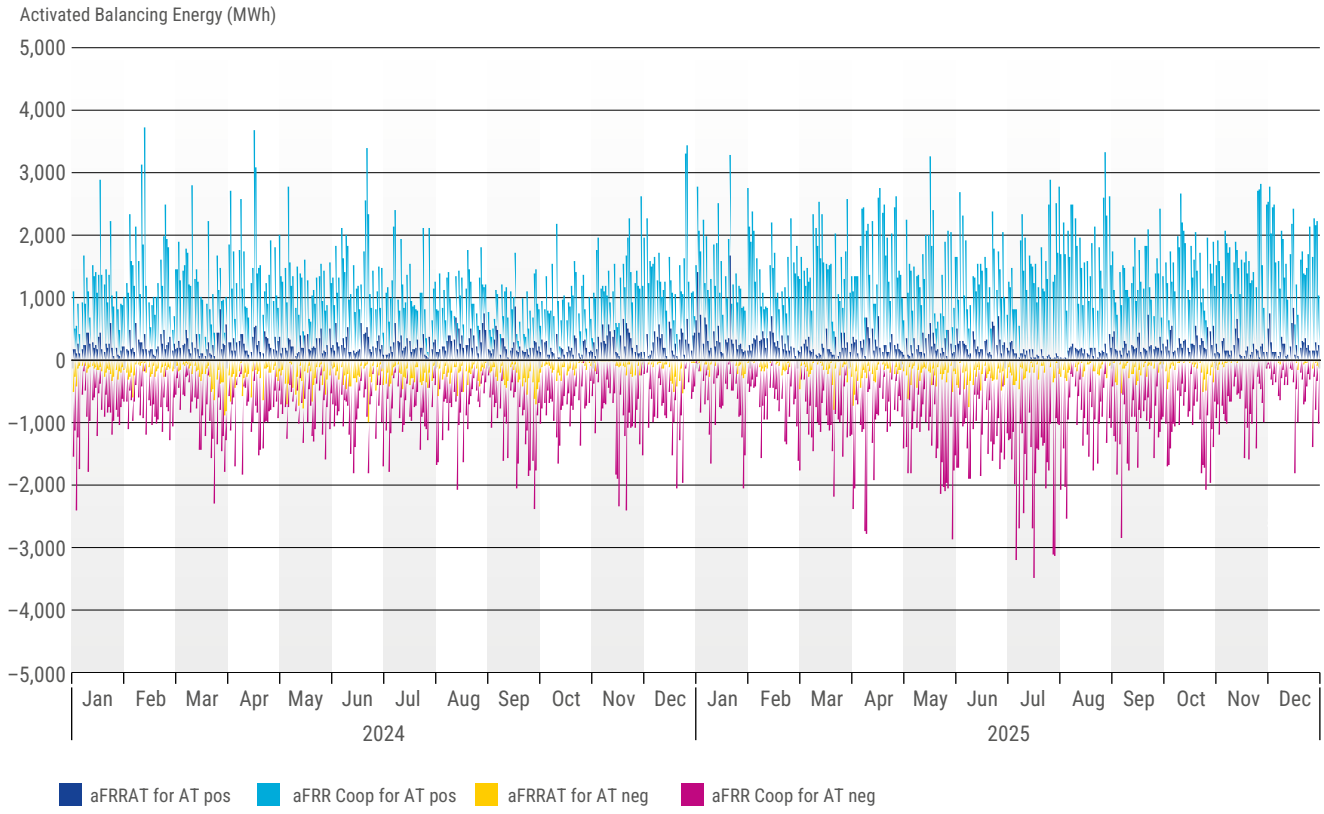



Figure 125: Activation of aFRR balancing energy to cover Austrian demand for 2024–2025, provided through local activations and imports from PICASSO, in MWh per day.

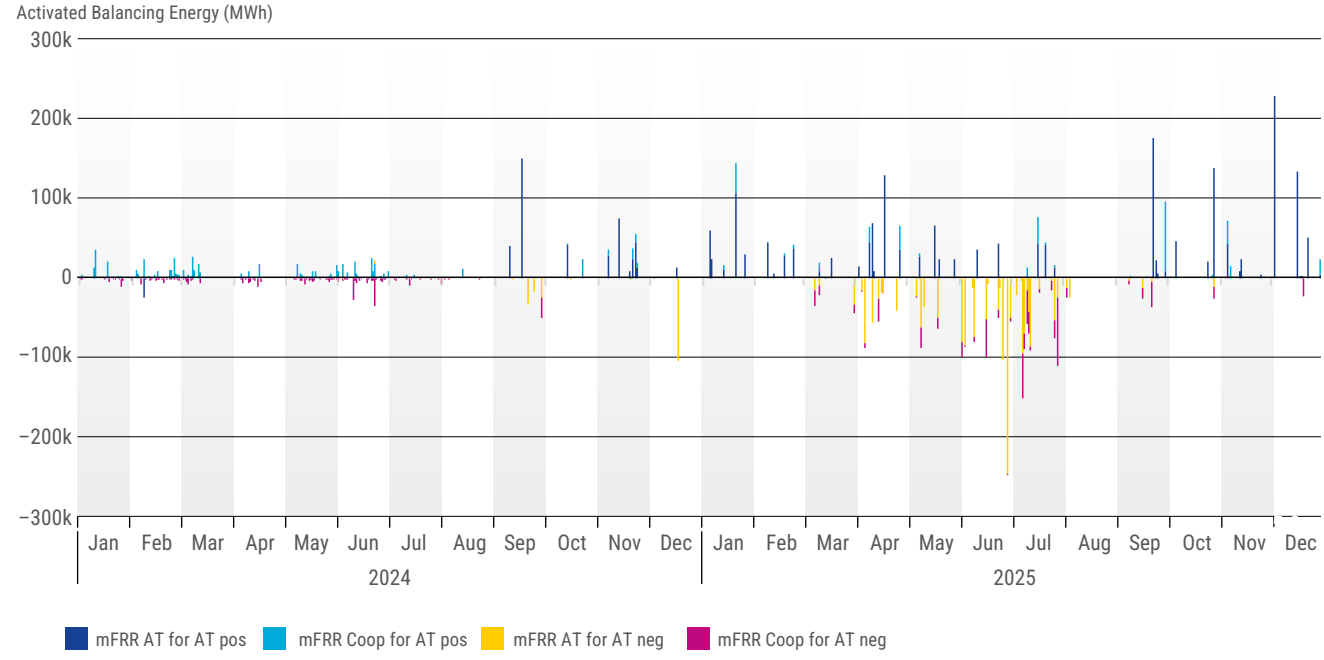



Figure 126: Activation of mFRR balancing energy to cover the Austrian demand for 2024–2025, provided through local activations and imports from MARI, in MWh per day.

Balancing energy cooperations helped increase the efficiency of Austrian balancing energy activations. Within the entire examined period, APG was already part of IGCC, PICASSO, and MARI. PICASSO reduces the overall aFRR balancing energy demand by performing implicit netting and optimises the costs for aFRR activations through the cross-border exchange of balancing energy. IGCC provides additional aFRR netting with countries that are not yet part of PICASSO. MARI optimises mFRR activations through the cross-border exchange of balancing energy.

The aFRR demand can be satisfied in three ways. It can be netted, covered by local activations, or covered by imported activations from other PICASSO members. Figure 125 presents the shares of locally activated balancing energy and imported balancing energy for the upward and downward directions, respectively.

Compared to aFRR demand, mFRR activations only occur on rare occasions. Figure 126 presents the shares of local mFRR activations and imported activations from other MARI members. As there is no additional netting cooperation for mFRR, netting of mFRR demands can only occur implicitly within MARI.

#### 4 // Assessment of sharing/exchange of reserves

As of September 2025, APG jointly procures aFRR balancing capacity with Germany and Czechia within the ALPACA cooperation. Therefore, APG can import or export aFRR balancing capacity on the Austria–Czechia and Austria–Germany borders, subject to procurement results and cross-border security limits. In the first months of operation, the initial results indicate mostly exports but also imports of both positive and negative aFRR balancing capacity by APG. Further monitoring will help assess whether this pattern continues over time.

| | aFRR+ (MW*h) | | | aFRR- (MW*h) | | |
|---|---|---|---|---|---|---|
| **4-hour block** | **Procured locally** | **Import** | **Export** | **Procured locally** | **Import** | **Export** |
| **0–4** | 224 | 1 | 61 | 203 | 22 | 18 |
| **4–8** | 218 | 7 | 57 | 205 | 20 | 23 |
| **8–12** | 211 | 14 | 50 | 218 | 7 | 47 |
| **12–16** | 213 | 12 | 49 | 217 | 8 | 43 |
| **16–20** | 212 | 13 | 50 | 212 | 13 | 45 |
| **20–24** | 223 | 2 | 63 | 211 | 14 | 34 |

Table 22: Average monthly procured balancing capacity in the Austrian control area, including import and export volumes.

# 7.2 Baltic: Lithuania, Latvia, and Estonia (Litgrid AB, AS Augstsprieguma tīkls, and Elering AS)

## 1 // Introduction

The TSOs of the Baltic countries have prepared a common report.

Litgrid AB (hereafter Litgrid) is the Lithuanian TSO, AS Augstsprieguma tīkls (hereafter AST) is the Latvian TSO, and Elering AS (hereafter Elering) is the Estonian TSO. All three are part of an SA with separate scheduling areas, monitoring areas, and BZs (EE, LV, and LT). Pursuant to Article 2(4) of the SOGL, Baltic TSOs were exempted from defining their LFC blocks. After full synchronisation with the CE SA on 9 February 2025, they have implemented such agreements. Each controls a scheduling area and a monitoring area covering the entire country.

Since 1 January 2018, Litgrid, AST, and Elering (hereinafter commonly referred to as the Baltic TSOs) have operated a common balance control with the aim of minimising the Baltic ACE towards zero. To support this, the Baltic TSOs established a common balancing energy market, based on Baltic mFRR energy products, and harmonised imbalance settlement rules, including a common imbalance pricing methodology. These provisions were in force until the Baltic TSOs joined the mFRR energy exchange platform, MARI, on 10 October 2024, therefore switching to operation in three control areas.

Since the previous executive summary, the Baltic TSOs have joined the European platforms for mFRR and aFRR reserves, MARI and PICASSO, and operate a common capacity market – the BBCM.

Each Baltic TSO employs a self-dispatch model. For balancing purposes, only standard FCR, aFRR, and mFRR energy and capacity products are used. The report on balancing can be found on the three TSOs' websites:

- Link to Litgrid's website is **here**.
- Link to AST's website is **here**.
- Link to Elering's website is **here**.

In Lithuania, there were a total of eight active BSPs during the report period. Litgrid's standard T&Cs for BSPs can be found **here**. During the report period, there were 33 BRPs. Litgrid's standard T&Cs for BRPs can be found **here**.

In Latvia, there was a total of 11 active BSPs during the report period. AST's standard T&Cs for BSPs can be found **here**. During the report period, there were a total of 24 BRPs. AST's standard T&Cs for BRPs can be found **here**.

In Estonia, there were a total of 23 BSPs during the report period, two of which offer the service based on demand-side response (DSR). Elering's standard T&Cs for BSPs can be found **here**. During the report period, there were a total of 16 BRPs. Elering's standard T&Cs for BRPs can be found **here**.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO if needed to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | No plans to access | N/A |
| **aFRR platform** | Operating<br>Litgrid AB: 5 March 2025 | N/A |
| **mFRR platform** | Operating<br>Litgrid AB: 8 October 2024 | N/A |
| **IN-Platform** | Operating | N/A |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **BBCM** | Member | Complete, first auction 4 February 2025 for 5 February delivery day |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1:Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Litgrid AB: Yes**<br>**AST: Yes**<br>**Elering: Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | **Litgrid AB:** Demand, RES, and storage, as well as any other technologies, already have access to balancing markets, with the majority of regulatory and IT developments carried out in 2024 in anticipation of European balancing platform accession. In 2025, regulatory amendments to the Lithuanian Electricity Law clarified that multiple aggregation models are permissible for aggregators. The Lithuanian PSO is currently revising aggregation rules to incorporate three different aggregation models, allow for dedicated measurement devices, and introduce a new baseline methodology more appropriate for RES and storage technologies.<br>**AST:** Regulatory and IT developments are the same as for any other technology, applied at the BSP level, in line with the principle of technological neutrality. Developments include joining platforms and the introduction of capacity markets.<br>**Elering:** Elering drafted the T&Cs for providing balancing services for demand response and enabled standardised activated balancing energy reporting for aggregators via the Estfeed data hub. Furthermore, the baseline methodology principles were drafted and consulted with market participants. |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.2 // If response to Q2 is "yes", what were the main results? | **Litgrid AB:** The standard mFRR balancing energy product was fully implemented as of October 2024; the standard aFRR balancing energy product was fully implemented as of December 2024.<br>**AST:** The standard aFRR product was implemented in accordance with EB Regulation Article 21, and the standard mFRR product was implemented in accordance with EB Regulation Article 20.<br>**Elering:** The standard aFRR and mFRR products were fully implemented as of April 2025. |
| **Q3: Do you procure a standard product for balancing capacity?** | **All: Yes** |
| **Q4: What are the main characteristics?** | **In line with standard aFRR and mFRR balancing capacity products in accordance with the SBCP methodology, following EB Regulation Article 25 (2)**<br>**FCR according to RfG, symmetrical product.**<br>**Various bid linkage types allowed in BBCM.** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **All: Yes** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | Before implementing the market-based allocation for exchange and sharing of reserves, the Baltic TSOs estimated the annual welfare gain of the allocation process, which yielded an estimated net benefit of € 470 million per year. |
| **Q6: Are you already involved in a BCC as a member or observer?** | **All: Member** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years and further evolutions foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| **Content** | **Litgrid AB:** Approved on 13 February 2024, changes related to balancing capacity (FCR, aFRR, mFRR) and balancing energy (aFRR and mFRR) standard products.<br>**AST:** MARI-related updates: 6 September 2024; FCR product introduction related updates: 2 December 2024; PICASSO- and BBCM-related updates: 28 December 2024.<br>**Elering:** Approved on 4 October 2024. |
| **Evolution of the T&Cs for BRP** | |
| **Content (see below)** | **Litgrid AB:** Approved on 15 February 2024<br>**AST:** Approved on 2 December 2024<br>**Elering:** Approved on 3 February 2025 |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | N/A |
| **Q2: Has your TSO made use of additional components pursuant to the ISHM, Article 9 (6) as of 1 January 2024?** | **All: Yes** |
| 2.1 // Scarcity component? | **AST:** Not considered<br>**Litgrid:** Not considered<br>**Elering:** Not considered |
| 2.2 // Incentivising component? | **AST:** Not considered<br>**Litgrid:** Not considered<br>**Elering:** Implemented since 9 February 2025 |
| 2.3 // Component related to financial neutrality of the TSO? | **AST:** Yes<br>**Litgrid:** Yes<br>**Elering:** Abolished since 9 February 2025 |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

**Dimensioning and balancing capacity procurement in accordance with Articles 60(2)(b), 60(2)(c), 60(2)(e), and 60(2)(f)**

› **BEFORE Baltic TSOs' synchronisation with the CE SA on 9 February 2025**

Pursuant to Article 2(4) of the SOGL, the Baltic TSOs were exempted from the SOGL provisions related to dimensioning of FCR, FRR, and RR. Baltic power systems operated in the Integrated Power System/Unified Power System (IPS/UPS) SA; therefore, dimensioning principles for active power reserves were defined in mutual agreements within the IPS/UPS SA and national legislation.

The Baltic TSOs, according to agreements with TSOs and network owners of the common SA (Belarus, Russia, Estonia, Latvia, and Lithuania) (hereinafter "BRELL"), were mutually responsible for maintaining 100 MW of normative emergency reserve capacity.

Depending on national legislation, each Baltic TSO separately applied national requirements for the dimensioning of active power reserves.

### Litgrid

Standard upward mFRR balancing capacity product was implemented, procured with the first delivery date of 1 January 2022, and continued to be procured in a local auction until 4 February 2025. Dimensioning for this capacity took into account the largest dimensioning incident, forecasted availability in upward mFRR balancing energy market, emergency reduction of RES generation, overloads of cross-border tie lines, and the amounts of procured tertiary reserve.

### AST

AST had not introduced or procured balancing capacity in the pre-synchronisation period.

### Elering

Elering had not introduced or procured balancing capacity in the pre-synchronisation period.

### Specific products in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d)

As neither standard nor specific balancing energy was implemented during the report period, no cost–benefit analysis or analysis on volumes, availability, procurement, usage, and justification of usage of specific products were made for the report period.

During the report period, the Baltic TSOs were operating in the common Baltic balancing market (**Baltic CoBA**). The Baltic CoBA has two defined balancing energy products:

**1 // Baltic standard mFRR (Baltic mFRR) product for balancing**

**2 // Specific emergency mFRR (Baltic ER mFRR) products:**

- Normative emergency capacity reserve (**NERC**)
- Emergency capacity reserve (**ERC**)

NERC is introduced as a mandatory reserve capacity to cover the Baltic TSOs' obligations under the BRELL Agreement. ERC is introduced separately by each Baltic TSO to ensure the operational security of their respective power systems. All Baltic balancing energy products are incompatible with standard energy products, as defined in EBGL Articles 25 and 2(36).

› **AFTER the Baltic TSOs' synchronisation with the CE SA on 9 February 2025**

## Dimensioning

Balancing capacity market for the needs of the Baltic LFC block is organised via the BBCM. Its go-live date was 4 February 2025. Common procurement of balancing capacity allows the Baltic TSOs to exchange and share balancing capacity reserves within the Baltic LFC block.

In order to maintain safe and effective operation within the Baltic LFC block, FRRs are dimensioned and ensured in accordance with the requirements of the SOGL and SAFA, considering historic imbalances and outage rates of HVDC and large power plants. The Baltic TSOs have developed FRR capacity dimensioning methodology and principles for coordinated actions within the LFC block to reduce FRCE, which can be found **here**.

FCR capacity is dimensioned for Baltic LFC areas at the SA level in accordance with principles set out in the SAFA for Continental Europe and the proposal by all CE TSOs for the dimensioning rules for FCR in accordance with Article 153(2) of the SOGL, available **here**.

The Baltic TSOs do not explicitly dimension mFRR, but instead the total volume of FRR (aFRR + mFRR capacity) required in the LFC block or an individual area. Volumes of dimensioned reserves for the analysed period are shown in the table below.

| | Baltic LFC Block | Estonia | Latvia | Lithuania |
|---|---|---|---|---|
| **FCR** | **23** | **7** | **7** | **9** |
| **aFRR up** | 38–76 | 21–50 | 14–50 | 26–52 |
| **aFRR down** | 38–78 | 20–50 | 14–50 | 26–52 |
| **FRR up** | 422–786 | 186–650 | 113–454 | 328–700 |
| **FRR down** | 259–582 | 150–369 | 63–147 | 237–577 |

### Assessment of sharing/exchange of reserves

The three Baltic TSOs jointly procure balancing capacity according to the established Baltic LFC block dimensioning methodology, which allows extensive use of sharing of reserves between the Baltic TSOs. Up to 50 % of available CZC between the Baltic BZs (up to 70 % in the case of scarcity) can be allocated for the exchange of balancing capacity and sharing of reserves on Baltic internal BZs. This makes the BBCM extremely integrated and efficient.

Further developments in the sharing/exchange of reserves are not actively investigated at this time.

## Specific products in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d)

The Baltic TSOs do not use specific products after synchronisation with CE SA.

# 7.3 Belgium (Elia Transmission Belgium SA/NV)

## 1 // Introduction

**1 // Link to the national TSO report on balancing (from which the current executive summary is provided).**

**2 // Link to the current version of the national T&Cs (English version, if available)**

The current version of the T&Cs for balancing products can be found on **Elia's website**.

**3 // Geographical scope:** SA(s), LFC block(s), LFC area(s), scheduling area(s) = imbalance area(s), BZ(s) = imbalance price area(s), TSO(s).

- SA: CE
- LFC block: Control block Belgium/Elia
- LFC area: Control block Belgium/Elia
- Scheduling area/imbalance area: Belgium
- BZ/imbalance price area: Belgium
- TSO: Elia Transmission Belgium

**4 // General information about market design and reserve dimensioning:** central/self-dispatch model, types of reserve used to balance the system and dimensioning, specific requirements defined in the T&Cs for BSP/BRP[22] according to Articles 18(5)–(7) (information or requirement on unused capacity, requirements with regard to the BRP position, etc.).

- The Belgian system is based on a self-dispatch model.
- The types of reserves used to balance the system are FCR and FRR (aFRR and mFRR).
- BSPs have the obligation, for units of more than 25 MW, to offer TSOs the available upward and downward power as balancing energy bids.

**5 // General information about market size:** number of BSP(s), BRP(s), information about historical/new market players, DSR/RES/batteries participation.

- Number of BSPs active in Belgium: 13 (December 2025), 14 (December 2024)
- Number of BRPs active in Belgium: 162 (December 2025), 137 (December 2024)
- Historical/new market players: The increasing number of BRPs is mainly explained by the growing number of BRP traders, with no substantial increase in the number of BRPs with physical positions. The increase in the number of BSPs (nine in 2023) is driven by the growing variety of technologies and voltage levels participating in balancing services (see below). The opening of capacity and energy products to different technologies and voltage levels provides opportunities for more specialised BSPs (e.g. LV/MV-only) to gain market share.
- DSR/RES/batteries participation: Elia opened all capacity and energy products for all technologies. These technologies are known to participate in several products, for example: batteries are observed to participate in providing FCR and aFRR balancing capacity, wind power is observed to provide non-contracted balancing energy bids in mFRR and contracted aFRR bids downward, and DSR is observed to participate in mFRR balancing capacity.

| [MW] | FCR | aFRR | mFRR |
|---|---|---|---|
| **DSR** | **0** | **0** | **340** |
| **Batteries** | 194 | 293 | 200 |
| **Other** | 299 | 3,216 | 4,337 |

Table 23: Pre-qualified volumes in MW for participation in FCR, aFRR, and mFRR balancing capacity in December 2025

22 Including the rules for suspension and restoration of market activities, in accordance with Article 36 of the EB Regulation, and the rules for settlement in case of market suspension pursuant to Article 39 of Regulation (EU) 2017/2196 once approved, in accordance with Article 4 of the EB Regulation.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | Not applicable | Not applicable |
| **aFRR platform** | Connected to the platform since 26 November 2024 | Not applicable |
| **mFRR platform** | Connected to the platform since 21 May 2025 | Not applicable |
| **IN-Platform** | Elia is an active participating TSO | Not applicable |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **FCR cooperation** | Participating TSO | Not applicable |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| **Evolution of the T&Cs for BSP** | |
|---|---|
| **Evolution** | Status (not submitted, submitted, approved) and timeline |
| T&Cs for BSP FCR were amended in May 2025 and October 2025, with modifications related to the additional properties for FCR as introduced in the SAFA, including the implementation of the reserve mode and system split requirements. Other amendments relate to the settlement and invoice processes, real-time communication requirements, the implementation of continuous monitoring, the introduction of a mandatory declarative baseline, modifications to the pre-qualification test, and the method of determining FCR supplied in case of combined delivery of FCR and aFRR services. | Approved |
| The next modifications to the T&Cs for BSP FCR will include changes related to the pre-qualification process. | Not submitted |
| T&Cs for BSP aFRR were amended in July 2024, with modifications necessary to access the PICASSO platform, facilitate the participation of low voltage assets, move the aFRR capacity auction to D-1, introduce the possibility of using a real-time baseline, enable future application of energy transfer for the aFRR market segment, and shorten the full activation time (FAT) to five minutes.<br>T&Cs for BSP aFRR were amended in October 2025, including modifications related to the settlement and invoice processes, as well as the method of determining aFRR supplied in case of combined delivery of FCR and aFRR services. | Approved |
| The next modifications to the T&Cs for BSP aFRR will include adjustments related to the capacity auction design, the monitoring and corresponding incentives, and the pre-qualification process. | Not submitted |
| T&Cs for BSP mFRR were amended in March 2024 to prepare for accession to the MARI platform. They relate in particular to the suppression of implicit bidding (all bids must be introduced by BSPs), the cross-border activation of mFRR energy and fallback processes, the suppression of a four-hour balancing capacity product with neutralisation time (ensuring compliance with the European methodology for standard products for balancing capacity), and the shortening of the FAT from 15 minutes to 12.5 minutes in accordance with the mFRRIF.<br>T&Cs for BSP mFRR were amended in October 2025, including modifications related to the settlement and invoice processes, facilitation of the participation of low voltage assets, enablement of the combined delivery of aFRR and mFRR services, and the organisation of the pre-qualification test. | Approved |
| The next modifications to the T&Cs for BSP mFRR will include adjustments related to the capacity auction design, the monitoring and corresponding incentives, and the pre-qualification process. | Not submitted |

| Evolution of the T&Cs for BRP | |
|---|---|
| Content (see below) | Status (not submitted, submitted, approved) and timeline |
| T&Cs for BRP were amended in 2025, including adjustments related to the evolution of the SDAC and SIDC processes, modifications to enable multiple BRPs behind one meter, the introduction of the self-billing process, the introduction of BRP perimeter correction in case of activation of technical measures, and a process update for external inconsistencies. | Approved |
| The next modification of the T&Cs for BRP includes adjustments to the invoicing and settlement processes, as well as financial guarantees. | Submitted |
| A further amendment planned for 2026 will include a revision of the imbalance price formula and foresee a correction of the BRP perimeter in case of flexible connection agreements. | Not submitted |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | Not applicable |
| **Q2: Has your TSO made use of additional components pursuant to Article 9 (6) of the ISHM as of 1 January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Implemented |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2024?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### 1 // Dimensioning and balancing capacity procurement in accordance with Articles 60(2)(b), 60(2)(c), 60(2)(e), and 60(2)(f)

› **Summary analysis of the dimensioning of reserve capacity, including the justification and explanation for the calculated reserve capacity requirements**

FCR is dimensioned according to Article 153 of the Commission Regulation (EU) 2017/1485 of 2 August 2017 establishing a guideline on electricity transmission system operation (SOGL) and as specified in the SA Operational Agreement.

Until 1 October 2024, the dimensioning methodology for reserve capacity needs was specified according to Elia's LFC block Operational Agreement, hereafter referred to as LFCBOA, approved by CREG on 14 July 2022 (B)2435, in which the method of determination of the aFRR needs is modified.

Elia dimensions the required reserve capacity on FRR on a daily basis in accordance with the minimum criteria set out in Article 157(2) SOGL on the basis of the maximum value resulting from:

**1 //** A dynamic **probabilistic methodology** in line with Article 157(2)b of the SOGL. It is based on a convolution of two distribution curves, one representing the prediction risk and another representing the forced outage risk. This methodology has been designed to cover 99.0% of the LFC block imbalance risk. After the convolution, the new distribution is decomposed into a distribution of potential positive and negative LFC block imbalances. This calculation is conducted for each quarter-hour of the next day, and the 99.0% percentile of each probability distribution curve determines the minimum positive and negative required reserve capacity.

**2 //** A dynamic **deterministic methodology** based on the dimensioning incident in line with Articles 157(2)e and 157(2)f of the SOGL. For each quarter-hour of the next day, Elia determines the required positive and negative FRR reserve capacity so that it is never less than the positive and negative dimensioning incident of the LFC block, as specified in Articles 3 and 157(2)d of the SOGL.

**3 //** A **minimum threshold** based on the historic LFC block imbalances in line with Articles 157(2)h and 157(2)i of the SOGL. For each quarter-hour of the next day, Elia determines the required positive and negative FRR reserve capacity such that it is sufficient to cover at least the positive and negative historical LFC block imbalances for 99.0% of the time, in line with Articles 157(2)h and 157(2)i of the SOGL.

Elia determines the required positive and negative mFRR reserve capacity each day before 7 a.m. for each four-hour period of the next day, as the difference between the required positive and negative FRR reserve capacity (dynamic) and aFRR reserve capacity (static).

Elia uses a "static" probabilistic method to determine aFRR needs symmetrically (positive and negative), based on a time series of two years of expected variations between quarter-hours of LFC block imbalances. The aFRR capacity needs are determined as the capacity that can cover 79% of the absolute variations of LFC block imbalances after IN. It is determined at 117 MW.

| Reserve capacity requirements | 2024 | | 2025 | |
|---|---|---|---|---|
| | positive | negative | positive | negative |
| FCR (symmetric) | 93 MW | | 86 MW | |
| FRR | 1,035 MW | 954 MW | 1,027 MW | 886 MW |
| aFRR | 115 MW | 115 MW | 103 MW | 106 MW |
| mFRR | 669 MW | 0 MW | 675 MW | 0 MW |

As of 1 October 2024, the dimensioning methodology for reserve capacity needs was specified according to Elia's LFCBOA, approved by CREG on 19 July 2023 (B)2538, in which the method of determination of the aFRR needs is modified, and modified as approved by CREG on 22 February 2024, (B)2748.

Elia dimensions the required aFRR reserve capacity daily, based on a dynamic probabilistic methodology. The results of this method are adapted using a feedback loop based on the performance of the Elia LFC block against the FRCE target parameters.

The probabilistic methodology is based on a forecast of the aFRR activation risk for every five-minute period of the following day. The prediction is based on a gradient tree boosting algorithm, which is a type of machine learning algorithm based on an ensemble of individual decision trees. Each decision tree represents "if–else statements" that are used to predict the aFRR activation risk. The algorithm is trained on a set of simulated aFRR activations (calculated based on historical observations of system imbalances and IN) and corresponding system conditions. The list of system conditions used for the training and prediction of the machine learning algorithms is the same as those for the dimensioning of FRR.

## Summary analysis of the optimal provision of reserve capacity, including justification for the volume of balancing capacity

As of 7 January 2021, the dimensioning methodology for the required balancing capacity was specified in Elia's LFC Means, approved by CREG on 17 December 2020 (B)2159, in which the balancing capacity requirements are determined (complementary to the LFCBOA, in which the reserve capacity needs are determined).

For positive mFRR, taking into account the guaranteed availability of mFRR balancing capacity products in combination with the sharing of reserves with other TSOs, balancing capacity is determined dynamically based on mFRR reserve capacity needs. This balancing capacity is covered with a minimum of 640 MW of "mFRR standard".

**1 //** As shared mFRR reserve capacity with neighbouring TSOs can only be activated in exceptional circumstances, taking into account service availability and remaining cross-border capacity, Elia can take into account 250 MW of FRR sharing to cover positive mFRR requirements.

**2 //** As non-contracted balancing energy bids have a limited availability, no capacity can be guaranteed with acceptable availability on an annual basis. For this reason, Elia cannot cover, even partially, its positive mFRR needs with non-contracted balancing energy offers.

The negative mFRR requirements are covered with non-contracted balancing energy bids and mFRR reserve sharing. Based on an analysis of the availability of non-contracted balancing energy bids and mFRR sharing (taking into account service availability and available cross-border capacity on continental borders), it was demonstrated that there was no need to procure balancing capacity. The coverage of needs with available resources is subject to an annual analysis.

Following the latest version of the LFC Means, approved on 22 December 2022 (B)2484, Elia may, from 1 November 2022 until 31 March 2023, temporarily reduce the contribution of positive shared capacity to 0 MW when it has received a "critical grid situation" communication from the relevant RCC regarding an adequacy issue in one or more countries with which Elia has a sharing agreement.

## Explanation and justification for the procurement of balancing capacity without the exchange of balancing capacity or sharing of reserves

While the previous section discussed opportunities for the exchange of balancing capacity for FCR and the sharing of mFRR, this section focuses on the exchange of balancing capacity and the sharing of reserves that are currently not implemented.

- As FCR is dimensioned on a regional basis by ENTSO-E, i. e. for Continental Europe, the sharing of FCR reserve capacity for Elia's LFC block is not applicable.
- Major evolutions in the Belgian aFRR capacity markets have led to a drastic decrease in historically high aFRR capacity prices. This evolution has two relevant consequences: 1) potential future benefits from cross-border exchange of balancing capacity are expected to be significantly lower, particularly as new forms of flexibility, such as battery energy storage systems (BESS) and decentralised flexibility, are expected to be present in all LFC blocks, making it uncertain whether the reservation of CZC can be justified; and 2) several improvements have been identified for the local FRR auction design, with these developments being prioritised.
- In Elia's view, the exchange of mFRR balancing capacity would have required the reservation of CZC for this purpose. This was not expected to be beneficial to the market, as it would have reduced day-ahead and intraday trading opportunities. It would also have required establishing complex processes with neighbouring TSOs to enable frequent activation of reserves contracted abroad.

## Assessment of sharing/exchange of reserves

Elia joined the FCR cooperation in 2016. The FCR cooperation has developed a common process for the procurement of FCR with other TSOs, thus increasing the competition between BSPs and reducing the overall cost of procurement. Since joining the FCR cooperation, Elia procures a significant portion of its FCR needs abroad.

The table represents the volume of FCR provided by Belgian BSPs and the volumes of FCR that Elia contracted abroad through the FCR cooperation. Since 1 July 2020, the FCR cooperation introduced a daily auction with a four-hour granularity product, and Elia has procured its total FCR demand in the FCR cooperation, ending the FCR/aFRR auction. Nevertheless, the FCR cooperation procurement rules ensure that the core share is satisfied locally. From the beginning of 2021 until 2025, the volumes procured locally in excess of the core share have been extremely limited. In 2025, Elia exported volumes of FCR during some Capacity Contracting Time Unit (CCTUs), hence in those CCTUs, Elia has fully procured locally. Specific information on the prices and volumes of the FCR cooperation can be found on the FCR cooperation website.

| | Volume of FCR provided by Belgian BSPs [MW] | Imported volumes of FCR [MW] | Volume of FCR provided by Belgian BSPs [MW] | Imported volumes of FCR [MW] |
|---|---|---|---|---|
| **January** | **28** | **65** | **28** | **58** |
| **February** | 28 | 65 | 29 | 57 |
| **March** | 27 | 63 | 38 | 48 |
| **April** | 28 | 65 | 48 | 38 |
| **May** | 30 | 63 | 48 | 38 |
| **June** | 33 | 60 | 50 | 36 |
| **July** | 30 | 63 | 47 | 39 |
| **August** | 29 | 64 | 60 | 26 |
| **September** | 28 | 65 | 57 | 29 |
| **October** | 30 | 63 | 61 | 25 |
| **November** | 31 | 62 | 50 | 36 |
| **December** | 30 | 63 | 50 | 36 |

In line with Article 32(1) of the EBGL, Elia takes into account the sharing of reserve capacity with neighbouring TSOs in the dimensioning of its balancing reserves.

Taking into account service availability constraints and the fact that the availability of cross-border capacity is not guaranteed, the 99% reliability rate for covering expected LFC block imbalances (as specified in Article 8 of the LFCBOA), and the results of an analysis of historic observations of available interconnection capacity at borders after the intraday time frame, Elia determined, following the latest version of the LFC Means approved on 22 December 2022 (B)2484:

- the positive sharing capacity included in the dimensioning to 250 MW
- the negative sharing capacity included in the dimensioning to 350 MW

### Specific products in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d)

No specific products were introduced by Elia.

# 7.4 Bulgaria (Electroenergien Sistemen Operator (ESO) EAD)

## 1 // Introduction

For the national TSO report on balancing, see here. For the current version of the national T&Cs, see here. The balancing market in Bulgaria was introduced in 2014, with a self-dispatch model and equal principles for the balancing of all transactions and all market participants.

The balancing market for electricity is organised on a market basis where all BSPs submit their bids for balancing services provision. BSPs are producers with dispatchable aggregates, RES, BESS, and DSR that have met the technical requirements of ESO. The specific pricing mechanism for determining the balancing energy price is stipulated in the methodology for determining the prices of balancing energy, approved by EWRC.

Daily auctions for balancing reserve are held for all ancillary services – primary frequency control reserve and automatic and manual secondary frequency control reserve for each subsequent day. The auctions for balancing energy are held within the day to form the MOLs for balancing energy for upward and downward regulation, with a 25-minute GCT before the delivery period. This allows BSPs to submit their offers very close to real time.

As of 1 May 2024, the implementation of a new methodology for determining the prices of balancing energy with the introduction of a single price has begun. The methodology was developed to harmonise the regulatory framework in Bulgaria with European regulations and directives in the field of energy, as well as to enable ESO to participate in the common European platforms for the exchange of balancing energy. It regulates the rules for determining the prices of balancing energy, and for each settlement period, the total imbalance in the electricity system of the Republic of Bulgaria is determined. In the case of a positive total imbalance, the electricity system is in surplus, and ESO determines a price for surplus. In the case of a negative total imbalance, the electricity system is in deficit, and ESO determines a price for the deficit.

The methodology reflects the consequences of ESO's successful accession to the common platform for aFRR (PICASSO project) as of 10 February 2025 and the upcoming accession to the common platform for mFRR (MARI project) in accordance with Regulation (EU) 2017/2195 of the European Commission of 23 November 2017, establishing guidelines for electricity balancing (Regulation (EU) 2017/2195), as the previous methodology only took into account the prices of activated sources for regulation in the national market area.

There are currently 69 active BRPs and 19 BSPs, with five of the BSPs serving as aggregators. As of mid-2024, a significant number of new BSPs started to participate in the ancillary services market in Bulgaria, using RES, BESS, and DSR technologies.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession |
|---|---|
| **aFRR Platform** | ESO is operational member of the platform |
| **mFRR Platform** | ESO is operational member of the platform. |
| **IN Platform** | ESO is operational member of the platform |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments for allowing Demand, RES and Storage to participate at European balancing platforms** | **Yes** |
| 1.1 // If response in Q1 is "no", why? | Open response. |
| 1.2 // If response in Q1 is "yes", what were the main results"? | A significant number of new BSPs which are using RES, BESS and DSR were registered to the ancillary services market. |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response in Q2 is "no", why? | Open response. |
| 2.2 // If response in Q2 is "yes", what were the main results? | Compatibility with the European balancing platforms and allowing BSPs from Bulgaria to participate to the common balancing services market. |
| **Q3: Do you procure a standard product for balancing capacity?** | **No** |
| **Q4: What are the main characteristics?** | **Open response.** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **Yes** |
| 5.1 // If response in Q6 is "no", why? | Open response. |
| 5.2 // If response in Q6 is "yes", what were the main results? | Selene RCC is working on this, but there is no results yet. |
| **Q6: Are you already involved in a BCC as a member or as an observer?** | **No** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the terms and conditions for BSP** | |
| **Content – removing price caps for delivered balancing energy from the BSPs, applying standard energy products for BSPs** | Status – approved |
| **Evolution of the terms and conditions for BRP** | |
| **Content (see below) – Implementing single pricing for imbalances** | Status – approved |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was 15-min Imbalance Settlement Period (ISP) implemented by 1 January 2024?** | **Implemented** |
| 1.1 // If response in Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | Date |
| **Q2: Has your TSO made use of additional components pursuant ISH Methodology Art 9 (6) as per 1 January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Implemented (it was implemented as of May 1st ,2024) |
| 2.2 // Incentivizing component? | Implemented (it was implemented as of May 1st ,2024) |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as per 1 January 2024?** | **Yes / No** |
| 3.1 // Condition (a) | Not considered (as of May 1st, 2024 only single imbalance pricing is used) |
| 3.2 // Condition (b) | Not considered (as of May 1st, 2024 only single imbalance pricing is used) |
| 3.3 // Condition (c) | Not considered (as of May 1st, 2024 only single imbalance pricing is used) |
| 3.4 // Condition (d) | Not considered (as of May 1st, 2024 only single imbalance pricing is used) |
| 3.5 // Condition (e) | Not considered (as of May 1st, 2024 only single imbalance pricing is used) |

## 4 // Summaries and main results of the analysis of articles 60(2)(a)–(f):

**Dimensioning and balancing capacity procurement in accordance with Articles 60(2)(b), 60(2)(c), 60(2)(e), and 60(2)(f)**

FCR size shall be determined according to Article 97, para. 4, subpara. 1 and 2 of the Bulgarian Grid Code, as well as in accordance with Article 153 of Commission Regulation (EU) 2017/1485 and B-2 of the SAFA for RG CE, concluded under Article 118 of the same Regulation.

The size of aFRR shall be determined under Article 98, para. 4, subpara. 1 of the Bulgarian Grid Code, as well as in accordance with Article 157 of Commission Regulation (EU) 2017/1485 and B-6-2-2-1-5 of SAFA for RG CE.

The size of mFRR shall be determined according to Article 157 of Commission Regulation (EU) 2017/1485.

In compliance with European regulations and in order to ensure full transparency and publicity, ESO EAD applies tender rules and uses an electronic platform to conduct daily electronic auctions, in accordance with Regulation (EU) 2017/1485, related to the provision of FCR, aFRR, and mFRR.

The register and the results of the tender procedures are publicly available on the ESO EAD website, with the volume of information complying with Commission Regulation (EU) No 543/2013 of 14 June 2013 on the submission and publication of data on electricity markets.

**Assessment of sharing/exchange of reserves**

Selene RCC is working on this, but there are no results yet.

# 7.5 Croatia (Croatian TSO Ltd.)

## 1 // Introduction

The Croatian TSO Plc. (HOPS) is the sole TSO in the Republic of Croatia and the owner of the entire Croatian transmission network. The national TSO balancing report can be seen **here**. The current version of the national T&Cs can be seen **here**.

HOPS is responsible for the organisation of the Croatian balancing market and is solely responsible for the Croatian LFC area, scheduling area, and monitoring area, covering the entire country. Together with two neighbouring TSOs, the Slovenian TSO (ELES Ltd.) and the Bosnian and Herzegovinian TSO (Nezavisni operator sistema u BiH – NOSBiH Ltd.), HOPS forms the Slovenia–Croatia–BiH (SHB) LFC block, where joint FRR dimensioning is performed. The Croatian LFC area is a part of the CE SA.

The geographical scope of HOPS includes:

- Continental Europe SA
- LFC block (SHB)
- Croatian LFC area (CTA/HR)
- Croatian scheduling area (SCA HR) = Croatian imbalance area (MBA HR)
- Croatian BZ (BZN HR) = imbalance price area HR
- TSO: Croatian TSO Plc. (HOPS)

Below is some information about market design and reserve dimensioning:

- Self-dispatch model
- Types of reserve used to balance the system: FCR, aFRR, and mFRR
- Dimensioning for 2024:
  - FCR = ±17 MW symmetrical product
  - aFRR = min 50 (max 65 MW) separated per positive (+) and negative (−) direction
  - mFRR = +230 MW per positive direction, −120 MW per negative direction.
- Dimensioning for 2025:
  - FCR = ±18 MW symmetrical product
  - aFRR = min 50 (max 65 MW) separated per positive (+) and negative (−) direction
  - mFRR = +230 MW per positive direction, −120 MW per negative direction

In 2024 and 2025, balancing services in Croatia were procured in a transparent and non-discriminatory manner through public tenders open to all pre-qualified BSPs, including individual network users and aggregators.

HOPS conducted the mFRR procurement process, and from October 2024 started aFRR– procurement (negative direction), followed by aFRR+ procurement (positive direction) from May 2025, according to the publicly available rules. Throughout this period, efforts continued to develop the market further and enhance its competitiveness and liquidity; however, the dominant provider, HEP-Proizvodnja Ltd., remained the main supplier for most services.

By 31 December 2025, the Croatian balancing market included:

- Four BSPs offering aFRR (one dominant BSP and four independent aggregators)
- Eight BSP offering mFRR (one dominant BSP, three DSR units, and four independent aggregators consisting mainly of RES and DSR units)
- 41 BRPs active in the electricity market

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | N/A | HOPS is not performing the RR process, thus is not a member of the TERRE project. |
| **aFRR platform** | After the legal deadline (23 July 2024) – expected accession in 2027 | Under Article 62 of the EB Regulation, the 15th session of the HERA management board on 23 July 2021 adopted a decision granting approval to HOPS for derogation from the obligations laid down in Article 21 of the EB Regulation for the period from 24 July 2022 to 24 July 2024.<br>Due to problems with local implementation, HOPS has not been able to connect on time. |
| **mFRR platform** | After the legal deadline (23 July 2024) – expected accession in 2027 | |
| **IN-Platform** | In full operation from 1 February 2019 | |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **FCR cooperation** | Observer TSO | After successful finalisation of the local implementation process HOPS – end of 2027 |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| **T&Cs for BSP** | T&C for BSPs (Pravila o uravnoteženju elektroenergetskog sustava, PoUEES 12/2023) were approved by HERA on 7 December 2023 and are effective from 1 January 2024. |
| **Evolution of the T&Cs for BRP** | |
| **T&Cs for BRPs** | PoUEES 12/2023 partly covers T&Cs for BRPs by setting imbalance settlement rules with single imbalance pricing for all BRPs, reflecting the cost of activated balancing energy in the respective settlement period. However, the T&Cs for BRPs, under Articles 18(6)(e), (i) and (j) of the EB Regulation, are defined in the local electricity market code (Pravila organiziranja tržišta električne energije (NN 107/2019; NN 36/2020)), issued by the Croatian market operator (HROTE). |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2024?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | N/A |
| **Q2: Has your TSO made use of additional components pursuant to Article 9(6) of the ISHM as of 1 January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Implemented |
| 2.3 // Component related to financial neutrality of the TSO? | Implemented |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2024?** | **Yes / No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Dimensioning and balancing capacity procurement in accordance with Articles 60(2)(b), 60(2)(c), 60(2)(e), and 60(2)(f)

The procedure for the dimensioning the aFRR and mFRR for the Croatian LFC area is performed in accordance with the provisions of the SOGL 2017/1485, the Croatian Grid Code (OG 10/2024), Annex 2 of local T&Cs for balancing (PoUEES, HOPS 12/2023), methodologies for determining the amount of tariff items for transmission of electricity, OG 104/2015, 84/2016, 84/2022) and the Operational Agreement of the SHB LFC Block.

For the dimensioning of the aFRR balancing capacity, an empirical approach was used to calculate the minimum amount of reserved capacity using empirical factors (a = 10, b = 150) and the maximum load in the system in MW. The value of the required balancing capacity is extrapolated to hourly and monthly values depending on the expected load within a calendar month. Minimum and maximum amounts of aFRR have been set at ±50 MW and ±65 MW.

Two generally accepted approaches were used to calculate the required amount of mFRR balancing capacity: probabilistic and deterministic. The deterministic approach takes into account the largest single outage in the Croatian LFC area. The probabilistic approach defines the need for balancing energy based on historical needs for balancing, considering the ACE open loop. These two approaches have been combined with other impact factors (for example, joint dimensioning in the SHB LFC Block, the national legislative framework, and the 10-year network development plan), mFRR capacity for both 2024 and 2025 was calculated as 230 MW for the upward direction and 120 MW for the downward direction.

### Assessment of sharing/exchange of reserves

Procurement of balancing capacity has been local; there were no exchanges of balancing capacity or common procurement applied, since HOPS does not participate operationally in any balancing capacity cooperation.

### Specific products in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d)

Specific products were not used in years 2024 and 2025; therefore, no information on procured or used specific product volumes is available.

# 7.6 Czech Republic (ČEPS a.s.)

## 1 // Introduction

In line with Article 60 of the EB Regulation, the **TSO report on balancing:**

*3. The report on balancing shall either be in English or at least contain an executive summary in English.*

The original report on balancing is available at **https://www.ceps.cz/cs/obstaravani-svr**.

ČEPS, a. s. (hereinafter referred to as "ČEPS") is the Czech Republic TSO. It is within the CE SA. As part of this, ČEPS is responsible for the LFC block, which is equivalent to the LFC area, scheduling area, and monitoring area covering the entire country. ČEPS is not a central dispatch TSO.

The rules for pricing and evaluation of balancing capacity bids and the subsequent evaluation of balancing services are set up in the T&Cs for BSPs. Settlement and invoicing occur after the balancing service evaluation period, followed by an appeal period. The actual version is available at **https://www.ceps.cz/cs/kodex-ps**, file: Kodex_PS_Část_II_od_1_1_25.pdf.

The rules for balancing energy evaluation are described in the T&Cs for BSPs. The volume and price of the positive and negative balancing energy are transmitted to the NEMO (OTE) by ČEPS within the terms defined in the Czech Market Rules: https://www.zakonyprolidi.cz/cs/2015-408.

ČEPS has adopted standard balancing capacity and energy products since 1 April 2022. ČEPS procures standard balancing capacity products and one specific balancing capacity product. Standard balancing capacity products are aFRR and mFRR. The specific balancing capacity product is mFRR5, which has a shorter FAT (five minutes) compared to the standard mFRR product. It has a minimum daily activation duration of four hours.

ČEPS establishes the volume of balancing capacity based on the requirements outlined in Commission Regulation (EU) 2017/1485 dated 2 August 2017, providing a framework guideline for the operation of electricity transmission systems. ČEPS determines its dimensioning needs every year. Dimensioning is performed six months before the start of procurement. Since 2021, ČEPS has employed a probabilistic determination of balancing capacity, resulting in varying needs for individual months and hours.

The volume of balancing capacity in the positive direction is determined by the size of the positive dimensioning incident representing the largest imbalance that may result from an instantaneous change of active power of a single-generation module. The volume thus determined is covered by standard and specific products of balancing capacity.

ČEPS also procures the minimum required volume of standard products of balancing capacity regarding the volume of balancing capacity in the positive direction to cover the historical record of LFC block imbalance 99 % of the time. The volume of balancing capacity in the negative direction covers the historical records of LFC block imbalances 99 % of the time. ČEPS also determines the minimum size of the procured aFRR in both directions, considering additional recommendations outlined in the SAFA Policy on Load-Frequency Control and Reserves, explicitly referring to section B-6-2-2-1-5. The determined minimum volume of aFRR is larger than the difference between the one-minute average ACEol and the 15-minute average ACEol of the LFC block.

All new or existing BSPs in the Czech Republic (CZ LFC block) shall have:

- A valid agreement on the terms of procurement and provision of balancing services (including T&Cs for BSPs)
- A valid certificate for the provision of balancing services – an independent certification authority performs pre-qualification according to the procedures defined in the T&Cs for BSPs
- Connection to the ČEPS control system and the protocol for successfully completing point-to-point and functional tests

The T&Cs for BSPs define the technical requirements for balancing services and describe the possibilities and conditions of aggregation. The consequences of non-compliance are described in the ČEPS T&Cs for BSPs. If the BSP fails to provide the balancing energy, the BSP will not receive payment for the balancing capacity in the relevant business period. If the activated reserves' aFRR or mFRR quality parameters are not respected, the activation is settled as unsuccessful or partially unsuccessful. In the case of mFRR, the total monthly payment for balancing capacity is reduced by 3.3 % for each failed activation. Subsequently, for each unsuccessful aFRR activation in a given month, the monthly capacity payment is reduced by 0.13 %, except for the unsuccessful activation with the lowest financial impact on the provider. If the BSP does not provide the balancing capacity in more than 10 % of the business hours, the BSP may be suspended from providing any balancing services, and the delivery issue must be fixed as soon as possible.

ČEPS performs weekly, daily, and intraday operational planning. BSPs must provide the data for operational planning according to the procedure set by the T&Cs for BSPs. BSPs are also obliged to update the data without undue delay according to the T&Cs for BSPs.

The time frame for the settlement of balancing energy with the BSP is determined by OTE. Evaluation and settlement of the balancing energy market is described in the business T&Cs for electricity issued by OTE.

BRPs are responsible for their imbalance, and they may transfer the imbalance responsibility to another BRP under contract. The Czech Market Rules further define imbalance responsibility, which is applied to each individual customer's connection/supply point, individual electricity point of delivery, or summary of delivery points. They also establish the obligation of the TSO or distribution system operator to cover system losses, either as a BSP itself or through the transfer of imbalance responsibility to another BRP.

The requirement that all BRPs bear financial responsibility for their imbalances, with such imbalances subject to clearing with the market operator, is prescribed by the Energy Act in Section 22(2) - Electricity Market Participants and PT in Section 18 – Liability for Imbalance.

The rules according to which BRPs may change their plans before and after the closure of intraday electricity trading capacity (as required by Articles 17(3) and 17(4) of the EB Regulation) are described in the Czech Market Rules: §7 – Intraday market and §11 – Settlement of the balancing energy market.

System imbalances are provided by OTE, which monitors the measured values of power, compares them with the contracted power, and, in case of a differential, calculates the system imbalance.

Information about unused generation capacity is used in the preparation of corrective measures in regional operation planning. Rules about providing this information are described in the ČEPS Business Portal. BSPs are not required to share offers of unused generation capacity with ČEPS; it is voluntary. ČEPS has no specific requirements for BSPs beyond the EB Regulation. An exemption from publishing information on offered prices of balancing energy or balancing capacity bids due to market abuse concerns, pursuant to Article 12(4), is not used. The dual pricing method for imbalance settlement is defined by the Market Rules in Annex 8.

The Czech balancing capacity market initially comprised 27 BSPs in 2022, increasing to 61 in 2025. ČEPS anticipates further growth in BSP numbers in the coming years. Currently, there are 222 BRPs. The historical market players have slightly reduced their balancing capacity portfolios following the implementation of standard products with shorter FATs. On the other hand, aggregators have emerged as significant new participants. DSR/RES/batteries are allowed to provide balancing capacity if they meet the conditions set out in the T&Cs for BSPs.

Alongside the evolution of the national market, ČEPS is actively participating in two cross-border initiatives: the FCRC and ALPACA. The FCRC project delivers the common market for procurement and exchange of FCR with daily auctions with four-hour symmetric products. The auction takes place every day and applies to the next delivery day. This regional project currently involves 12 TSOs from nine countries.

For aFRR balancing capacity, Czechia, together with Germany and Austria, developed a joint procurement optimisation algorithm using a probabilistic method to forecast the remaining CZCs for balancing purposes for the exchange of aFRR balancing capacity between Czechia and Austria and Czechia and Germany. The go-live of cross-border capacity procurement took place on 3 September 2025 (delivery day). This exchange is closely linked to the PICASSO project, which harmonises and facilitates the exchange of aFRR balancing energy.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession |
|---|---|
| **aFRR platform** | Connected since June 2022 |
| **mFRR platform** | Connected since October 2022 |
| **IN-Platform** | Connected since June 2012 |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **FCR cooperation** | Member | March 2023 |
| **ALPACA** | Member | September 2025 |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | DSR/RES/batteries are allowed to provide balancing capacity if they meet the conditions set out in the T&Cs for BSPs. Specifically, they must meet the minimum bid quantity of 1 MW, which can be achieved by aggregating multiple devices. Furthermore, batteries that are unable to sustain full delivery for two hours are required to provide a charging strategy |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.2 // If response to Q2 is "yes", what were the main results? | Standard products of balancing energy have been adopted since Q2 2022. |
| **Q3: Do you procure a standard product for balancing capacity?** | **Yes** |
| **Q4: What are the main characteristics?** | **All parameters are harmonised according to the EB Regulation. ČEPS is procuring a standard product for balancing capacity aFRR and mFRR.** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **Yes** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | ČEPS is a member of the APLACA cooperation. All ALPACA members went live on 3 September 2025 and procure cross-border balancing capacity in line with the defined probabilistic methodology. |
| **Q6: Are you already involved in a BCC as a member or observer?** | **Member** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| **Content** | EB Regulation implementation was concluded in 2022, followed by regular annual updates to the T&Cs. |
| **Evolution of the T&Cs for BRP** | |
| **Content (see below)** | The switch from a 60-minute ISP period to a 15- minute ISP period began on 1 July 2024. |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2024?** | **Exemption** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | 1 July 2024 |
| **Q2: Has your TSO made use of additional components pursuant to Article 9 (6) of the ISHM as of 1 January 2024?** | Yes |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Implemented |
| 2.3 // Component related to financial neutrality of the TSO? | Implemented |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2024?** | **Yes** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Implemented |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

ČEPS started using standard and specific products from 1 April 2022.

To ensure the secure operation of the CZ LFC block, it is necessary to ensure sufficient balancing capacity volume. The balancing capacity market and the composition of balancing capacity with standard and specific products reflect the long-term experience of the operation.

Currently, ČEPS uses the following balancing capacity:

- aFRR standard product – automatically activated within five minutes, activated according to the MOL of balancing energy bids.
- mFRR standard product – manually activated within 12.5 minutes, activated according to the MOL of balancing energy bids.
- mFRR5 specific product (only positive direction) – manually activated within five minutes, activated according to the MOL list of balancing energy bids.

Dimensioning of reserve capacity is based on the calculation of historical data, following requirements determined by SOGL and SAFA recommendations, as mentioned in the introduction:

- Calculated average balancing capacity requirement for 2024 was 141 MW for aFRR+ and 152 MW for aFRR. Calculated average balancing capacity requirement for 2025 was 146 MW for aFRR+ and 152 MW for aFRR.
- Calculated average balancing capacity requirement for 2024 was 195 MW for mFRR+ and 171 MW for mFRR−. Calculated average balancing capacity requirement for 2025 was 189 MW for mFRR+ and 172 MW for mFRR.
- The rest of the balancing capacity requirement is determined by the size of the positive dimensioning incident representing the largest imbalance (962 MW) and is procured as a price competition among aFRR+, mFRR+, and mFRR5 products.

Balancing capacity composition meets all requirements for the safe operation of the LFC block in the long term. The CZ LFC block has unique dimensional considerations due to the larger scale of nuclear power plants compared to most LFC blocks in the EU. Therefore, the mFRR5 service plays a crucial role in providing balancing capacity through non-rotating, fast-starting reserves, particularly gas turbine and hydropower plants.

The summary of procured volumes in 2024 and 2025, broken down by procurement type (day-ahead/long-term), shows the ratio and its evolution. Not only is a higher share of mFRR+ being procured instead of mFRR5, but ČEPS has also increased the total volumes bought in the day-ahead market from an overall share of 49 % to 67 %.

| Balancing capacity in positive direction (MW*h) | | | | |
|---|---|---|---|---|
| **Year** | **aFRR+** | **mFRR+** | **mFRR5** | **Total** |
| **2024** | 1,885,929 | 3,522,807 | 3,077,221 | 8,485,957 |
| **2025** | 2,065,264 | 4,410,222 | 1,958,061 | 8,433,547 |
| **Balancing capacity in positive direction (%)** | | | | |
| **Year** | **aFRR+** | **mFRR+** | **mFRR5** | **Total** |
| **2024** | 22.2 | 41.5 | 36.3 | 100 |
| **2025** | 24.5 | 52.3 | 23.2 | 100 |

| Long-term / Day-ahead comparison ratio (%) | | | | | | |
|---|---|---|---|---|---|---|
| **Year** | **Time horizon** | **aFRR+** | **mFRR+** | **mFRR5** | **Total LT (%)** | **Total DA (%)** |
| **2024** | LT | 13.6 | 13.3 | 24.9 | 51.8 | 48.2 |
| | DA | 8.6 | 28.1 | 11.5 | | |
| **2025** | LT | 9.3 | 15.8 | 7.6 | 32.7 | 67.3 |
| | DA | 15.1 | 36.5 | 15.6 | | |

Table 24: Summary of procured volumes in 2024 and 2025, broken down by procurement type.

Optimal provision of reserve capacity is supported by the following market mechanisms:

- Transfer of balancing capacity (enabling the initial BSP to transfer the balancing capacity to another)
- Incident reporting (enabling BSPs with technical issues and no transfer of balancing capacity to report the incident to the TSO; in this case, the TSO purchases additional reserve capacity to replace the unavailable one)
- Penalties for unsuccessful activation of reserve capacity

ČEPS has changed the aFRR activation scheme within the transition to the standard product of balancing energy from pro rata to merit order. The efficiency of the activation optimisation function for balancing energy is based on the price of balancing energy bids (MOL). ČEPS has appropriate market mechanisms that motivate BSPs to deliver balancing energy on time and with the required quality to minimise ACE.

ČEPS is connected to the European platforms for the exchange of balancing energy. ČEPS accessed the PICASSO platform on 1 June 2022 and the MARI platform on 5 October 2022.

- aFRR
  - In case of aFRR activation, units providing reserve are activated according to MOL and the price of balancing energy bids.
- mFRR
  - Activation is triggered when a certain percentage of the available aFRR has been activated to replace it, or if the price of aFRR exceeds the set limit.

FCR cooperation – procurement and exchange of FCR services: ČEPS can import or export FCR services through FCR cooperation. During the examined period of 2024 and 2025, imports accounted for the majority of procurement. Figure 127 shows the average monthly values of purchased reserves in the ČEPS area and abroad (imports). ČEPS has been connected to FCR cooperation since 1 March 2023.

ČEPS has been connected to the ALPACA platform since 3 September 2025, and procures aFRR balancing capacity through a joint procurement platform among Czechia, Austria, and Germany. Therefore, on the Czech–Austria and Czech–German borders, ČEPS can import or export aFRR balancing capacity based on price competition and consideration of cross-border security limits. During the first months of operation, ČEPS appears to have exported both positive and negative aFRR balancing capacity. Whether this trend persists will be assessed as part of future analysis.

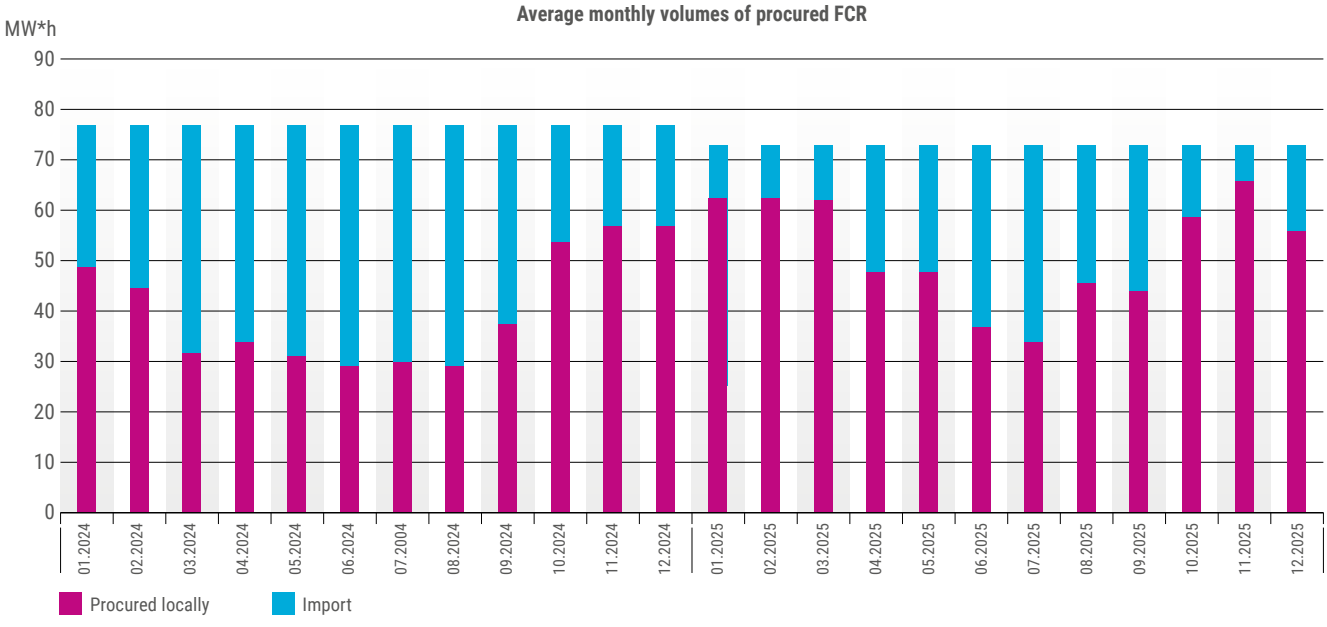



Figure 127: FCR share of import.

| | aFRR+ (MW*h) | | | aFRR- (MW*h) | | |
|---|---|---|---|---|---|---|
| **4-hour block** | **Procured locally** | **Import** | **Export** | **Procured locally** | **Import** | **Export** |
| **0–4** | 104 | 1 | 43 | 112 | 1 | 58 |
| **4–8** | 99 | 5 | 38 | 113 | 0 | 35 |
| **8–12** | 102 | 3 | 7 | 113 | 0 | 39 |
| **12–16** | 99 | 5 | 21 | 113 | 0 | 17 |
| **16–20** | 96 | 8 | 36 | 112 | 1 | 37 |
| **20–24** | 102 | 2 | 35 | 113 | 0 | 42 |

# 7.7 Denmark (Energinet Elsystemansvar A/S)

## 1 // Introduction

Energinet is the Danish TSO. The Danish power transmission system is geographically located in Northern Europe and connects the Nordic SA with the Continental European SA. Denmark has two monitoring, bidding, and scheduling areas: DK1 (west) and DK2 (east). DK1 is part of the German–Danish–Luxembourgish LFC block and thus a part of the Continental Europe SA. DK2 is part of the Nordic SA and the Nordic LFC block, along with Finland, Norway, and Sweden).

The detailed TSO report on balancing, according to Article 60 of the EB Regulation, is available **here**, and the link to the current version of the national T&Cs is **here**.

### Market size and market players

There are around 130 approved market players in the DK area, of which 77 are pure traders performing non-asset-based trading. Over the last two years, approximately 50 new market players have been approved and entered the market.

Over the past two years, Energinet has seen a growing interest in the pre-qualification of BESS systems, demand response (EVs), and heat pumps in the aFRR market, primarily due to Energinet connecting to PICASSO in October 2024. In total, Energinet has pre-qualified approximately 5 GW of mFRR up/down and 2 GW of aFRR up/down in DK1, while DK2 has approximately 2 GW of mFRR up/down pre-qualified and approximately 600 GW of aFRR up/down at the beginning of 2026. Updated pre-qualification numbers for all ancillary service products can be found on **Energinet's website**.

### Dimensioning of reserves

The Nordic TSOs have agreed on common principles for the dimensioning of FRR reserves for all the Nordic areas, including DK1. In general, the principles follow SO Regulation §157. However, rather than finding the maximum of the P99 of block imbalances and the reference incident within the block, each TSO must ensure reserves for the netted area imbalances, special regulation, and reserves to cover each LFC area reference incident. This approach yields higher FRR needs compared to SO Regulation compliance. However, the Nordic TSOs have developed a probabilistic optimisation algorithm that seeks to minimise the procurement of FRR reserves by utilising sharing possibilities hour by hour. This ensures a high security level at the lowest possible cost.

n 2025, Denmark implemented a method to procure dynamically, with Energinet predicting needs for the coming day on an hourly resolution based on forecasts of e. g. weather, consumption, ATC after spot-clearing, etc. The dynamic approach was implemented for mFRR in January 2025 and will be implemented for aFRR I DK1 in 2026.

FRR is procured through the common Nordic capacity markets for both aFRR and mFRR, as detailed below.

### Specific requirements for BSP/BRP

Specific requirements and other aspects of Articles 18 (5–7) are summarised in **Ancillary Services to be delivered in Denmark – Tender conditions**. Energinet does not require suppliers of balancing services to continuously present information about unused capacity, nor does it require them to offer unused capacity in the form of balancing resources or otherwise.

### Characteristics of DK1

In DK1, a self-dispatch model is applied. The types of reserves used to balance the system are FCR, aFRR, and mFRR.

DK1 participates in the European FCR cooperation. Thus, FCR is dimensioned and activated across CE. The DK1 contribution is calculated based on DK1's share of total generation and consumption.

At the end of 2024, aFRR was split from a combined capacity and activation product into two separate markets: balancing capacity and balancing energy. This change was implemented as part of Energinet joining the PICASSO platform. aFRR balancing capacity is procured in a local market in DK1.

For mFRR, the Nordic TSOs implemented an updated version of the common Nordic mFRR energy activation market in March 2025, which is used to activate mFRR across the Nordic region. The updates include the transition to a 15-minute MTU, algorithmic bid selection, and automated processes. Both DK1 and DK2 participate in this market, which is seen as a first step towards Nordic MARI integration, expected in 2027.

### Characteristics of DK2

The market design in the Nordic LFC block (and thus DK2) is based on the self-dispatch model. The type of reserves used in the Nordic SA to balance the system are FCR (FCR for disturbances, FCR-D, and FCR for normal operation, FCR-N), aFRR, mFRR, and FFR.

FCR reserves are used for frequency containment. FCR is divided into two reserve products, with FCR-D being asymmetrical and split into separate up/down products, and FCR-N being procured as an asymmetric product. FCR-N is for normal operation, FCR-D for disturbances and when frequency drops below 49.9 Hz or exceeds 50.1 Hz. FCR is procured in a common Swedish–Danish cooperation, allowing for exchange between the two countries.

In DK2, the procurement of aFRR was also split into two as part of the PICASSO accession: an aFRR balancing capacity market and an aFRR balancing energy market (PICASSO). DK2 is part of the Nordic aFRR balancing capacity market.

Furthermore, a FFR product is procured in the Nordic countries. The FFR product provides support in case of large disturbances, required in periods with low inertia in the system (below ~150 GWs). FFR need is forecasted on a continuous basis per hour for the coming day in the summer period (April–October).

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | N/A | N/A |
| **aFRR platform** | Accession 2024 | |
| **mFRR platform** | 2027 | No derogation |
| **IN-Platform** | Accession 2011 (DK1) | |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **Nordic aFRR capacity market (DK1 not included)** | Project implemented | December 2022 |
| **Nordic mFRR capacity market (Norway not included)** | Project implemented | November 2024 |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| **Evolution of the T&Cs for BSP** | |
|---|---|
| Content | Status (not submitted, submitted, approved) and timeline |
| **Evolution of the T&Cs for BRP** | |
| Balancing Main Agreement | Approved 18 December 2023 |
| T&Cs for Ancillary Service Providers | Approved 23 September 2025 |
| T&Cs for Pre-qualification – Ancillary Services | Approved 20 November 2025 |
| Other relevant balancing market information | Updated regularly |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | N/A |
| **Q2: Has your TSO made use of additional components pursuant to the ISHM, Article 9(6) as of 1 January 2026?** | **No** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Not considered |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | N/A |
| 3.2 // Condition (b) | N/A |
| 3.3 // Condition (c) | N/A |
| 3.4 // Condition (d) | N/A |
| 3.5 // Condition (e) | N/A |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Dimensioning – DK1

Energinet is in the DK1 part of the European FCR cooperation, and FCR is dimensioned and activated across CE. The DK1 contribution is calculated based on DK1's share of the total generation and consumption in CE.

In DK1, aFRR is dimensioned in accordance with the SAFA and to deliver SOGL-compliant FRCE values. Furthermore, it is part of the N-1 response, as detailed below. The amount of aFRR needed in DK1 for 2026 is determined as ±100 MW, but will transition to a more dynamic approach, where aFRR for upward needs is expected to be within a range of 80–150 MW per hour, and aFRR for downward needs is expected to be within a range of 20–80 MW per hour. The FRCE is defined as the unintended flow on DK1's only AC border connecting DK1 and TenneT DE, hence the ACE CL for DK1.

The amount of mFRR bought in DK1 is dimensioned to handle the worst-case N-1 incident and normal imbalances dimensioned from a dynamic approach. For DK1, the reference incident is a trip of the Viking Link cable at 1,400 MW. Due to a mutual agreement on the sharing of up to 700 MW in emergency incident reserve with TenneT, the demand is reduced to 700 MW. Normal imbalances are forecasted with the dynamic approach, and non-contracted bids are considered as well. All this results in mFRR needs ranging from 300 to 500 MW per hour.

### Reserve volumes in DK1

| Reserve product | Demand | Bought in LFC area |
|---|---|---|
| **FCR** | 29 | Approximately 10% in 2025 |
| **aFRR** | 100 | 100 |
| **mFRR** | 300–500 | 300–500 |

### Dimensioning – DK2

The Nordic region forecasts aFRR needs for each quarter and has forecast a requirement of 200–325 MW up/down for Q1 2026. The forecast sets a need for each hour of the day, which is then published to the market on a quarterly basis. Energinet is responsible for procuring 10% of Nordic aFRR up volume and 11% of Nordic aFRR down volume.

mFRR is dimensioned using the dynamic approach, considering the reference incident, normal imbalances, and non-contracted bids. The reference incident in DK2 is the Storebælt HVDC connecting DK1 and DK2 at 600 MW. The dynamic approach results in mFRR needs in a range of 200–400 MW.

Furthermore, a FFR product is procured in the Nordic countries. The FFR product provides support in case of large disturbances, required in periods with low inertia in the system (below ~150 GWs). The FFR need is forecasted on a continuous basis per hour for the coming day.

The market sizes for the different products are shown in the table below. The dimensioning is determined on a Nordic level and distributed among the four Nordic TSOs according to the national share of the total need, except for mFRR, which is dimensioned on a national level.

| Reserve product | Nordic volume | National share | National requirement |
|---|---|---|---|
| **FCR-N** | 600 | 3 % | 18 |
| **FCR-D Up** | 1,450 | 3 % | 44 |
| **FCR-D Down** | 1,400 | 3 % | 44 |
| **aFRR** | 200/325 | 10 %/11 % | 10/11 % of Nordic volume |
| **mFRR** | 200–400 | 200–400 | 200–400 |
| **FFR** | Forecasted need | 3 % | Depending on forecast, but typically in the range of 0–20 MW |

## Assessment of sharing/exchange of reserves

Energinet utilises exchange of balancing capacity in a Nordic mFRR market (Denmark, Finland, Sweden), which was launched in Q4 2024. Furthermore, DK2 participates in the exchange of aFRR balancing capacity as a member of the Nordic aFRR capacity market, which was implemented in December 2022 and comprised all four Nordic TSOs.

Sharing of reserves is utilised for mFRR between DK1 and DK2, as also described in the dimensioning portion. A sharing agreement is also in place between TenneT DE and Energinet in DK1. DK2 and SE4 have a sharing agreement that allows for up to 200 MW of specific products in DK2.

## Specific products in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d)

Energinet has an approved methodology allowing for mFRR reserves with a response time of up to 90 minutes. The maximum amount of the specific product is attached to a sharing agreement between DK2 and SE4, as mentioned above.

# 7.8 Finland (Fingrid Oyj)

## 1 // Introduction

The Finnish power transmission system is located geographically in Northern Europe and is part of the Nordic SA, which consists of the transmission systems of Finland, Sweden, Norway, and Eastern Denmark. This comprises the Nordic LFC block. There is only one scheduling area and one BZ in Fingrid's control area.

The market design is based on the self-dispatch model. The types of reserve used in the Nordic SA to balance the system are FCR and FRR. FCRs are reserves used for the containment of frequency. They are divided into three reserve products: FCR for normal operation (FCR-N), FCR for disturbances upwards (FCR-D Up), and FCR for disturbances downwards (FCR-D Down). FRRs are reserves whose purpose is to restore the frequency to the nominal value of 50.0 Hz and release the activated FCRs. The FRRs are divided into two reserve products: aFRR and mFRR. RR are not used in the Nordic SA.

The size of the reserve markets varies between these five reserve products, as demonstrated in the table below, which presents the demanded volume and number of BSPs by reserve product. Technology-neutrality is one of the core design principles of the reserve markets in Finland. Therefore, the resources are treated equally, and all types of technologies can participate in the reserve markets as long as the requirements are met. Currently, DSR and energy storage participate widely in Finnish reserve markets. In particular, the share of batteries out of all pre-qualified capacity has increased considerably in all FCR products and aFRR. The FCR-D Up market has shown particular potential for DSR, whereas all the FCR markets are well-suited for batteries. For instance, around 30 % of pre-qualified FCR-D Up capacity is from DSR, while batteries form over 60 % of FCR-N, 50 % of FCR-D Down, and 40 % of FCR-D Up pre-qualified capacities. Balancing energy bids for mFRR down from wind production increased significantly during the reporting period. Wind power's share of pre-qualified aFRR capacity also reached 14 % during the reporting period.

| Reserve product | Nordic volume | National share | National requirement | Number of BSPs |
|---|---|---|---|---|
| **FCR-N** | 600 MW | 21 % | 128 MW | Total FCR: 45 |
| **FCR-D Up** | Up to 1,450 MW | 21 % | Up to 309 MW | Total FCR: 45 |
| **FCR-D Down** | Up to 1,400 MW | 21 % | Up to 298 MW | Total FCR: 45 |
| **aFRR** | 250–325 MW | 20 % | Approximately 50 MW | 28 |
| **mFRR** | – | – | Up: 880–1,300 MW<br>Down: 400–650 MW | 87 |

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | N/A | N/A |
| **aFRR platform** | March 2025 | N/A |
| **mFRR platform** | Q1 2027 | Derogation granted until 24 July 2024 due to simultaneous joining of the Nordic SA |
| **IN-Platform** | N/A | N/A |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **Nordic aFRR CM** | Member | In operation |
| **Trilateral mFRR capacity market between Denmark, Finland, and Sweden** | Member | In operation |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | The T&Cs for the BSPs are technology-neutral and allow full participation from DSR, RES, and batteries. |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.2 // If response to Q2 is "yes", what were the main results? | The market management system has been developed to enable the adoption of standard energy products. |
| **Q3: Do you procure a standard product for balancing capacity?** | **Yes (aFRR) and No (mFRR)** |
| **Q4: What are the main characteristics?** | **aFRR balancing capacity product fulfils the characteristics of a standard product. mFRR balancing capacity has a longer FAT (15 minutes).** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **Yes, Nordic aFRR and trilateral mFRR capacity markets are in operation.** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | The exchange of balancing capacities creates socioeconomic benefits. |
| **Q6: Are you already involved in a BCC as a member or observer?** | **Operational member in Nordic aFRR CM and trilateral mFRR CM (Denmark, Sweden, Finland). Member in COBRA project** |

## 2 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| T&Cs for providers of FCR | Approved and valid from 10 February 2025, Link |
| T&Cs for providers of aFRR | Approved and valid from 5 June 2025, Link |
| T&Cs for providers of mFRR | Approved and valid from 19 March 2025, Link |
| **Evolution of the T&Cs for BRP** | |
| Appendix 1 part 1: Fingrid Oyj's general T&Cs concerning balance management | Approved 1 October 2025, Appendix 1 part 1 |
| Appendix 1 part 2: Fingrid Oyj's general T&Cs concerning imbalance settlement | Approved 25 April 2025, Appendix 1 part 2 |
| Appendix 2: Fee components and determination of fees | Approved 1 October 2025, Appendix 2 |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | – |
| **Q2: Has your TSO made use of additional components pursuant to Article 9(6) of the ISHM as of 1 January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Implemented |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

During the reporting period, the Nordic TSOs maintained three types of FCR products for the Nordic SA: FCR-N, FCR-D Up, and FCR-D Down. The Nordic TSOs have agreed that currently, the FCR-N volume for the entire synchronous system is 600 MW. The total capacity is distributed among the Nordic TSOs based on yearly updated shares. The share of a TSO is calculated based on the sum of annual electrical energy consumption and generation in the TSO's control area and in the SA. The required Nordic volume of FCR-D is 1,450 MW for up-regulation and 1,400 MW for down-regulation, corresponding to the reference incidents in the Nordic SA. The distribution of the FCR-D Up and FCR-D Down capacities between the Nordic TSOs is calculated similarly to the FCR-N.

The national requirements for mFRR up-regulation and down-regulation volumes are currently determined by the dimensioning incidents of the control area in question. In other words, the Nordic TSOs dimension the mFRR volumes for their own control area and determine the required distribution within their control area individually. aFRR is seen as an automatic complement to mFRR in the frequency restoration process. The Nordic TSOs determine the hours for which aFRR shall be procured and dimensioned on a quarterly basis for the next three months. The Nordic TSOs increased the daily procurement hours from 20 to cover all hours of the day starting from Q3 2024 and continued procuring aFRR for all hours of the day during the rest of the reporting period. By Q2 2026, the Nordics will procure 200–250 MW of aFRR up capacity and 250–325 MW aFRR down capacity, of which Fingrid's share is 20 %.

During the reporting period, the dimensioning rules as referred to in Articles 127, 157, and 160 of the SO Regulation were not in use in the Nordic LFC block. Therefore, Fingrid has not conducted analyses on optimal provision of reserve capacity following the procedure required by Article 32(1) of the EB Regulation.

Fingrid utilises the exchange of balancing capacity and the sharing of reserves whenever needed and cost-effective. During the reporting period, Fingrid purchased FCR-N and FCR-D from the domestic yearly and hourly markets as well as from Estonia and other Nordic countries through inter-TSO trades. Furthermore, Fingrid has purchased mFRR capacity (since October 2024) and energy (since March 2025) from the common Nordic and trilateral markets. Likewise, Fingrid has procured aFRR capacity from the common Nordic capacity markets since the common market's launch in December 2022. Fingrid's accession to PICASSO in March 2025 also enabled the exchange of aFRR energy starting in April 2025, as Elering became the first neighbouring country to join the platform.

# 7.9 France (Réseau de Transport d'Électricité)

## 1 // Introduction

Réseau de Transport d'Electricité (hereinafter referred to as "RTE") is the French TSO. It is part of the Continental Europe SA and manages its LFC block, which is equivalent to its LFC, scheduling, and monitoring areas.

Pursuant to Article 60(1) of the EB Regulation, RTE publishes a report on balancing covering the calendar years 2024 and 2025.

The French market is underpinned by the concept of BRPs, which are financially responsible for their imbalances. The French balancing model is based on the decentralised dispatch of power-generating units or demand-response facilities.

Closer to real time, the power system is proactively managed by RTE. The French balancing market relies on a unit-based scheduling process that provides the TSO with detailed forecast information about the status of the power system. To balance the French power system, RTE uses a dynamic system to calculate the available balancing capacity during the course of the day.

Supply–demand balance and network constraints are jointly managed. This results in integrated processes: an action performed for balancing purposes within the balancing market is also analysed against its impact on the grid.

Convinced of the benefits of establishing a European balancing market, RTE has been involved in almost all the European projects since the early phase. RTE joined the TERRE platform in December 2020. Over the last two years, these longstanding commitments have materialised with the golive of several major projects following the entry into force of the EB Regulation, which required substantial IT and operational changes within RTE, in particular:

- Reopening of the daily tender for the contracting of aFRR capacity in June 2024
- Transition to a 15-minute ISP in January 2025, followed by the introduction of 15-minute MTU products for SIDC and SDAC in the same year
- Connection to the PICASSO platform in April 2025
- Connection to the CMM in June 2025
- Introduction of 96 scheduling gates in January 2026, allowing market participants to resubmit their schedules and bids more frequently and closer to real time, in line with EB Regulation requirements and the growing share and variability of RES

RTE is also preparing its connection to the European MARI platform for the exchange of balancing energy from mFRR in April 2026. As a first step towards its connection to MARI, RTE began sharing its available transfer capabilities (ATCs) on the platform in July 2024.

The EMDR that entered into force in 2024 introduced the shortening of the cross-zonal ID GCT to 30 minutes before real time instead of one hour, to be implemented by January 2026, with possible derogations. This will affect the balancing window for proactive TSOs that rely on assets with long FATs, which will no longer be able to be activated in time. It also marked the end of the use of the TERRE platform, which was phased out in December 2025. RTE is directly impacted by this change and is currently working on adapting its balancing strategy, developing a pool of assets with compatible activation time, and adapting the grid and balancing joint management accordingly in order to meet the 2029 deadline granted by the derogation approved by the French regulator.

As of 1 March 2026, 302 BRPs are active in the French balancing market. In 2025, the average system imbalance is 180 MWh for an ISP with a positive imbalance and −159 MWh for a negative imbalance. On average, the system has a positive imbalance in 48% of ISPs and a negative imbalance in 52% of ISPs.

As for BSPs, 98 are active as of 1 March 2026, including producers connected to the transmission grid with a legal obligation to offer their available power on the balancing market, renewable energy producers, storage facility providers, and aggregators providing demand-side flexibility.

The French balancing market continues evolving to include technological specificities such as storage, renewables, and demand-side management, and will pursue its evolution towards an efficient integration of flexibility sources.

DSR can participate in all French balancing markets for the different time frames, and in 2025, demand-side management contributed to 5% of FCR, 4% of aFRR, and 14% of mFRR/RR procured volumes.

Battery participation for ancillary services has continued to grow. In FCR, the pre-qualified volume increased from 500 MW in 2023 to 727 MW on 1 January 2026, while in aFRR, it surged from 28 MW of pre-qualified aFRR volume at the end of 2023 to 340 MW on 1 January 2026.

n 2025, we observed a sharp increase in RES participation in the French balancing market following the entry into force of the DDADUE law, which mandates the participation of RES units above 10 MW in the French balancing market. This has unlocked potential corresponding to around 50 % of photovoltaics (PV) and wind sites being present on the French balancing market by January 2026. Overall, the installed capacity of RES sites registered for the French balancing market has increased sharply, reaching almost 15 GW by March 2026.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | Connected since December 2020<br>Disconnected in December 2025 | |
| **aFRR platform** | Connected since April 2025 | Delay in implementation and connection conditioned to high prices mitigation measures submitted to ACER's approval – granted |
| **mFRR platform** | April 2026 | Delay in implementation – granted |
| **IN-Platform** | Connected since February 2016 | |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **FCR cooperation** | Member | Connected since January 2017 |
| **ALPACA cooperation (exchange of aFRR capacity products)** | Observer | Since 2025 |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | No specific regulatory and IT developments have been conducted to allow demand response and storage facilities to participate in the PICASSO platforms, as these types of assets were already participating in our local aFRR energy market.<br>Nevertheless, the integration of RES in the French aFRR market is conditioned to an adaptation of our monitoring methodologies, which are currently not fully compatible with assets with a high production variability. A new monitoring methodology was introduced in the last version of our T&Cs, which entered into force on 1 January 2026. The new methodology will be implemented in Q2 2026, which will enable RES participation in the aFRR market. |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response in Q2 is "no", why? | N/A |
| 2.2 // If response to Q2 is "yes", what were the main results? | › Connection to TERRE platform in December 2020<br>› Connection to PICASSO platform in April 2025: all regulatory and IT developments have been carried out, including high price mitigation measures such as elastic demand.<br>› Connection to MARI platform expected in April 2026; all regulatory and IT developments have been carried out. Since July 2024, RTE has enabled ATC sharing, allowing mFRR exchange between the Iberian Peninsula and the Central European region of MARI. |
| **Q3: Do you procure a standard product for balancing capacity?** | **Yes – since June 2024, RTE has procured a standard product for aFRR capacity through a national tender.**<br>**No – RTE currently procures a specific product for upward mFRR via a national tender and will enable the procurement of a specific product for downward mFRR from 2026. RTE intends to switch to a standard mFRR capacity product in the upcoming years, provided there is sufficient liquidity expected in the capacity market.** |
| **Q4: What are the main characteristics?** | **N/A** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **Yes** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | RTE's R&D is currently leading studies to assess this potential. |
| **Q6: Are you already involved in a BCC as a member or observer?** | **Observer in ALPACA cooperation since 2025** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| Evolution of the T&Cs for BSP |
|---|
| **Content** |
| **Market Rules: Chapter 1 – Scheduling System**<br>› Direct shift from 24 to 96 scheduling gates to align with the 15-minute ISP (approved version applicable as of 1 April 2024).<br>› Introduction of a simplified provision for the transmission of aggregated forecast dispatch schedules by DSOs (approved and version applicable as of 1 January 2026)<br>**Market Rules: Chapter 2 – Balancing Mechanism**<br>› Adaptation of the participation framework for renewable energy facilities in accordance with the DDADUE2 and Finance 2025 laws (approved and version applicable as of 1 January 2026)<br>› Finalisation of the conditions for participation in scheduled activation on MARI platform (approved and version applicable as of 1 January 2026)<br>**Market Rules: Chapter 4 – Frequency Ancillary Services**<br>› Introduction of a new framework for participation in reserves for RES (approved and version applicable as of 2 December 2025)<br>› Simplification of qualification certification for similar assets (approved and version applicable as of 2 December 2025)<br>› Changes to the aFRR capacity tender with the removal of symmetrical bids and the introduction of a new pricing module (approved and version applicable as of 2 December 2025)<br>**mFRR-RR T&Cs**<br>› Adapt the system to the changeover to a 15-minute calculation interval, in line with the change in the ISP for BSP (approved and version applicable as of 1 January 2025)<br>› Replacement of the annual tender for mFRR–RR capacities by a periodic tender (approved and version applicable as of 22 January 2025)<br>› Introduction of a new contracted downward mFRR (approved and version applicable as of 22 January 2025)<br>› Introduction of a new contracted upward mFRR (approved and version applicable as of 1 April 2026)<br>**LFC Block Agreement**<br>› New parameters for the calculation of the requirements in aFRR (approved and version applicable as of 1 July 2025) |
| **Evolution of the T&Cs for BRP** |
| **Content** |
| **Market Rules: Chapter 3 – Balance Responsible Party System**<br>› Extension of the balancing perimeter correction to grid flexibilities (approved version applicable as of 1 April 2024)<br>› Several evolutions regarding financial securing of BRPs (approved version applicable as of 29 February 2024 and 2 December 2025)<br>**Market Rules: Chapter 5– NEBCO (DSR)**<br>› New framework for consumption shifts (upward and downward) linked to explicit demand response (approved and version **applicable as of 1 September 2025)**<br>› **Introduction of a new baselining/control method (approved and version applicable as of 23 July 2025)** |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | N/A |
| **Q2: Has your TSO made use of additional components pursuant to Article 9(6) of the ISHM as of 1 January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Not considered |
| 2.3 // Component related to financial neutrality of the TSO? | Implemented (with dedicated coefficient) |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered/Implemented/Proposed |
| 3.2 // Condition (b) | Not considered/Implemented/Proposed |
| 3.3 // Condition (c) | Not considered/Implemented/Proposed |
| 3.4 // Condition (d) | Not considered/Implemented/Proposed |
| 3.5 // Condition (e) | Not considered/Implemented/Proposed |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Procurement of balancing capacities

Over the course of the years 2024 and 2025:

- RTE has procured on a daily basis through FCR European tender:

| | 2024 | 2025 |
|---|---|---|
| **TSO needs (MW)** | 486 | 516 |
| **Total procurement cost (M€)** | 9 | 38 |
| **Average annual capacity price (k€/MW/y)** | 18 | 73 |

RTE has procured daily aFRR to French stakeholders:

| | 2024 | 2025 |
|---|---|---|
| **TSO needs (MW)** | 745 | 751 |
| **Total procurement cost (M€)** | 295 | 382 |
| **Average annual capacity price (k€/MW/y)** | 396 | 509 |

RTE has jointly procured mFRR and RR through an annual national tender and a daily tender:

| mFRR/RR | 2024 | 2025 |
|---|---|---|
| **TSO needs (MW)** | 1,500 | 1,500 |
| **Total procurement cost (M€)** | 27 | 24 |
| **Average annual capacity price (k€/MW/y)** | 18 | 1 |

RTE contributes to the European discussions about the opportunities for the exchange of balancing capacity, but considers that certain prerequisites must be met before joining such a cooperation for the procurement of balancing capacity:

- Resumption of the national tender for aFRR capacities (effective since June 2024)
- Connection to the PICASSO and MARI platforms
- Harmonisation of standard balancing capacity products within potential balancing capacity cooperations

In 2025, RTE joined ALPACA, a cross-border balancing capacity cooperation for aFRR, between Germany, Austria, and Czechia, as an observer, to explore the possibility of becoming an active member in the coming years.

### Balancing the French system in real time

As a proactive TSO, France relies predominantly on RR and mFRR products for overall system balancing, with a lower share of energy activated through aFRR. While RTE is connected to the TERRE and PICASSO-IGCC platforms, the majority of balancing volume is still activated in domestic balancing markets. This reflects the specific characteristics of the French historical generation mix, where many technologies are foreseen with longer FATs and delivery periods that are not fully compatible with standard products. As a result, the use of specific national products remains necessary to cover the full imbalance. This balancing philosophy ensures system security while improving cost efficiency by combining competitive reserves activated manually with standard aFRR.

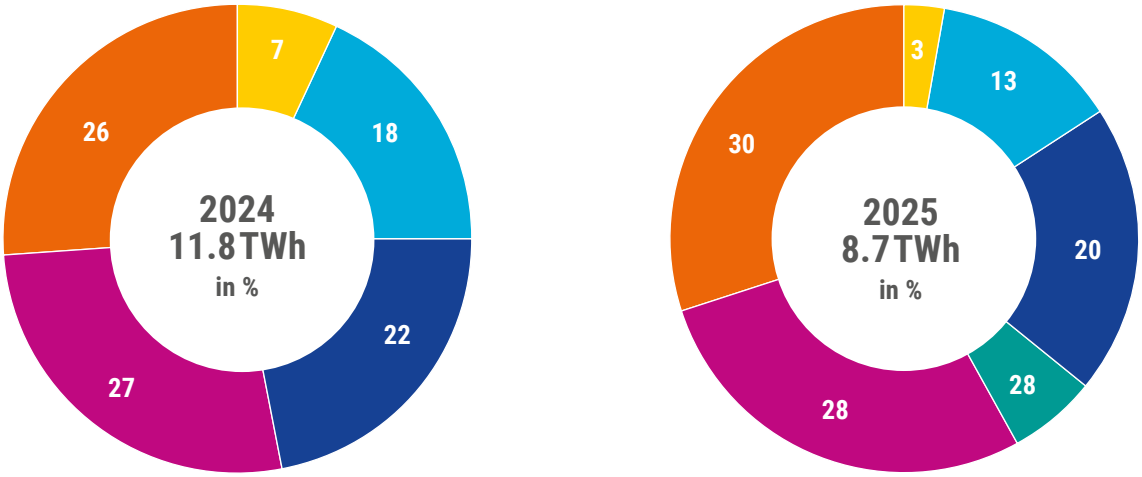



Figure 128: Share of activated balancing energy in 2024 and 2025.

Following RTE's connection to the PICASSO platform in April 2025, the share of imbalances covered by European platforms increased from 25% in 2024 to 35% in 2025. Despite the phase-out of the TERRE platform at the end of 2025, this share is expected to increase over the coming years thanks to RTE's planned connection to the MARI platform in 2026.

### Justification for using specific mFRR and RR energy products

Specific products activated in the French balancing market will remain necessary to balance the system, as standard MARI products alone cannot cover all short-term balancing needs. Market participants are expected to join the European platform progressively, which limits the available volume of standard products for some years. In addition, several assets have technical characteristics that are not compatible with the standard product definition. Continuous real-time activation of balancing energy remains essential for managing system contingencies, while the full use of direct-activation standard products by RTE in MARI will only be technically possible from 2028. Discontinuing specific products before sufficient standard volumes are available and fully usable would therefore jeopardise operational security.

Furthermore, although RTE will always prioritise the activation of standard products via MARI for each delivery period and is implementing measures to encourage assets to comply with standard product characteristics (including a new, faster mFRR reserve capacity product to foster a pool of MARI-compatible offers), specific products will remain necessary during a transition phase. They ensure that all balancing needs can be met, especially for assets that cannot technically participate in the standard market.

Lastly, the coexistence of standard and specific products does not create significant distortions in the balancing market. These products have distinct technical roles and different pricing mechanisms (pay-as-bid for specific products and pay-as-clear for standard products), while standard products are activated with priority in the MARI platform and give market participants access to broader activation opportunities beyond RTE's own needs. This setup naturally incentivises BSPs to favour the standard market, with specific products acting as a complementary tool to safeguard system security until a fully standardised framework is feasible.

# 7.10 Germany and Luxembourg (50Hertz Transmission GmbH, Amprion GmbH – CREOS Luxembourg S.A, TenneT TSO GmbH, and TransnetBW GmbH)

## 1 // Introduction

- Link to the National TSO report on balancing (from which the current executive summary is provided)
- Link to the current version of the national T&Cs

Germany, Luxembourg, and Denmark West form one LFC block (DE-DKW-LU), which is part of the Continental Europe SA. According to the National Energy Act, the German TSOs 50Hertz, Amprion, TenneT DE, and TransnetBW are each responsible for system operation in their LFC area. Creos is part of Amprion's LFC area, in accordance with Articles 120 and 143(4) of the SO Regulation, and has entrusted the procurement of balancing services to Amprion, as Creos does not have the necessary technical reserves to balance supply and demand in its grid. Denmark West has been part of the LFC area of TenneT DE, and became an independent LFC area in 2022. Within the DE-DKW-LU LFC block, exchange capacities are treated as unlimited. Moreover, a common balancing market was established, in which all BSPs can offer their available generation capacities to all TSOs on a common market-based principle.

Each German TSO is responsible for its scheduling area, which covers the respective LFC area. Together with the scheduling area from Creos, those five scheduling areas form a BZ, which also corresponds to an imbalance price area.

In Germany, a self-dispatch model is applied. The types of reserves used to balance the system are FCR, aFFR, and mFRR. While FCR is dimensioned and activated across Continental Europe, aFRR and mFRR are dimensioned and activated within the German LFC block. For FCR, the TSOs hold a share of the overall FCR requirement within Continental Europe, equal to the share of the overall electricity generation and withdrawal in the SA. Since December 2019, German TSOs have applied a dynamic dimensioning approach for aFRR and mFRR to adapt demand to the relevant situation on shorter notice.[23] The dimensioning procedure complies with the requirements of the SOGL, to apply a probabilistic approach and ensure quality criteria. In compliance with the SOGL, the data used when dimensioning contains at least one full year and ends no earlier than six months before the calculation date.

German TSOs drafted T&Cs for the BSPs according to all paragraphs of Article 18(5) of the EB Regulation and submitted them for approval to the German NRA. The T&Cs for BSPs were approved by the NRA in a stepwise approach until October 2022. In Germany, BSPs are not required to provide information on or offer unused generation capacity. Within the LFC areas, electricity suppliers and traders form balancing groups that pool their feed-ins, trades, and consumer demands.

Each balancing group is managed by a BRP. According to the provisions of Article 18(6) of the EB Regulation, the T&Cs for BRPs were revised by the TSOs and submitted to the NRA for approval, which took place in November 2023. The approved T&Cs for BRPs resulted in a new standard balancing group contract.

According to the latest published information, there are 29 BSPs pre-qualified in Germany for offering FCR, 32 for aFRR, and 28 for mFRR.24 Compared with the number of BSPs at the end of 2023, the number of BSPs for FCR increased by one, for aFRR by two, and for mFRR by seven.

The pre-qualified balancing capacity for FCR has increased by around 0.6 GW since the end of 2023, reaching 5.13 GW by the end of 2025. Positive aFRR amounts to 24.89 GW and negative aFRR to 25.82 GW at the end of 2025, each representing an increase of more than 2 GW compared to the end of 2023. Similarly, both positive and negative mFRR have increased by roughly 2.5 GW. The positive mFRR capacity now stands at 25.52 GW, while the negative mFRR capacity is 28.90 GW.

Not all pre-qualified BSPs, and thus not necessarily the total pre-qualified reserve capacities, are continuously active in the respective market.

BSPs may include technical units based in Luxembourg in their pool to participate in the German market for FCR. For this purpose, Creos and Amprion have developed a cooperation model. Access to the German FRR market for BSPs with units in Luxembourg is under development.

23 For a comprehensive description of the new dimensioning procedure, see Method for Dimensioning of the Demand for Automatic and Manual Frequency Restoration Reserve (aFRR and mFRR) [Link].

24 See List of pre-qualified BSPs [Link].

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | No accession | No RR product used in Germany |
| **aFRR platform** | Participating TSOs since June 2022 | N/A |
| **mFRR platform** | Participating TSOs since October 2022 | N/A |
| **IN-Platform** | Participating TSOs since May 2010 | N/A |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **Name and objective of the cooperation** | | |
| **FCR cooperation: common market for procurement and exchange of FCR** | Participating TSOs, project member | March 2012 |
| **German–Austrian aFRR capacity cooperation for a common procurement of aFRR balancing capacity and resulting activation of aFRR balancing energy** | Participating TSOs in bilateral cooperation | February 2020 |
| **ALPACA cooperation: application of the probabilistic approach for the exchange of aFRR capacity at the DE–CZ–AT border** | Project member | Successful go-live in September 2025 |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | Demand, RES, and storage units already participate in the German balancing market, and the corresponding bids are submitted by the German TSOs to the European platforms.<br>Pre-qualification criteria are largely technology-neutral and open to all technologies. Where no direct setpoint is available (e. g. PV, wind), specific requirements for alternative control and verification methods apply; additional rules exist for technologies with limited energy reservoirs (e. g. batteries, pumped storage).<br>FCR is currently dominated by batteries. Wind participates in mFRR, though still with limited volumes. Pre-qualification of wind for aFRR and of PV is ongoing, and initial steps have been taken to integrate EVs. |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.2 // If response to Q2 is "yes", what were the main results? | Introduction of 1 MW minimum bid size in 2021 and 15-minute products for aFRR and mFRR in 2022.<br>Additional IT changes required to connect to the MARI and PICASSO platforms in 2022. |
| **Q3: Do you procure a standard product for balancing capacity?** | **Yes** |
| **Q4: What are the main characteristics?** | **D-1 procurement, 1 MW bid size and granularity, four-hour product, fully divisible bids for aFRR and option between divisible and indivisible (up to 25 MW) bids for mFRR** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **Yes** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | Germany is part of several initiatives with neighbouring countries for the exchange of balancing capacity and the sharing of reserves. |
| **Q6: Are you already involved in a BCC as a member or observer?** | **Operational member in DE–AT aFRR BC cooperation and member in ALPACA cooperation** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| **Evolution of the T&Cs for BSP** | |
|---|---|
| **Content** | Submitted in 2018, the proposed T&Cs necessary to implement the EB Regulation's balancing market design and related processes were approved stepwise by the German NRA (Bundesnetzagentur) until October 2022 (reference: BK6-22-162). |
| **Evolution of the T&Cs for BRP** | |
| **Content (see below)** | Submitted in 2018, approved and entered into force in 2020. Latest update approved by Bundesnetzagentur in November 2023 (reference: BK6-23-102). |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | N/A |
| **Q2: Has your TSO made use of additional components pursuant to Article 9(6) of the ISHM as of 1 January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Implemented |
| 2.2 // Incentivising component? | Implemented |
| 2.3 // Component related to financial neutrality of the TSO? | No |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Dimensioning and balancing capacity procurement in accordance with Articles 60(2)(b), 60(2)(c), 60(2)(e), and 60(2)(f)

Reserve capacity is dimensioned in line with harmonised European requirements and nationally coordinated practices. For the Continental Europe SA, the FCR requirement is 3,000 MW during the reported period; Germany procures around 555–570 MW as its proportional share. FRR dimensioning applies the probabilistic methodology introduced in 2019, determining aFRR and mFRR requirements in rolling four-hour slices. The approach is designed to ensure sufficiency at least 99.975% of the time and to enable German TSOs to balance nationally caused imbalances independently, even when historical netting with neighbours reduces visible activations. Sharing of reserves with other LFC blocks to reduce procured capacity is currently not considered, as this measure is mainly used where the procured capacity is determined by the reference incident.

Among the German LFC areas, full exchange of balancing reserves is implemented for all balancing services. The German TSOs participate in the voluntary European FCR cooperation (EB Regulation Article 33(1)). Common procurement of aFRR capacity is implemented with the Austrian TSO; in addition, the trilateral aFRR capacity cooperation with Austria and Czechia (ALPACA) went live in the second half of 2025, with options for further TSOs to join to be considered after the go-live. The cooperation with Czechia applies a probabilistic approach pursuant to EB Regulation Article 33(6). Germany also contributes to implementing the market-based allocation methodology in the COBRA project.

Tenders for balancing capacity and energy follow harmonised European rules, and recurring auction results show consistently significant bid surpluses across all reserve types, indicating robust liquidity and secure availability. A noticeable effect is increasing capacity costs during sunny periods, when negative wholesale prices often raise the opportunity costs for providing balancing capacity and thus lead to higher clearing prices; integrating PV into the balancing capacity markets may help counteract this.

### Assessment of sharing/exchange of reserves

German TSOs cannot reduce their balancing capacity demand through reservesharing agreements with other LFC blocks because the probabilistic reserve requirements are higher than the deterministic (N1) criteria.

### Specific products in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d)

Balancing in Germany relies exclusively on the European standard products FCR, aFRR, and mFRR, with no specific products at the national level.

# 7.11 Greece (Independent Power Transmission Operator S.A.)

## 1 // Introduction

- The extended version of the balancing report covering the calendar years 2024 and 2025 is available on IPTO's website.
- The link to the current version of the national T&Cs (available in English) is available on IPTO's website.
- Greece is a single LFC area and a single LFC block within the Continental Europe SA. Key system characteristics are presented below.

| Country | Greece |
|---|---|
| TSO | IPTO |
| Scheduling area/LFC area/LFC block | HETS (Hellenic Electricity Transmission System) |
| No of BZs/scheduling areas/imbalance areas | 1 |

IPTO applies a central dispatch model, under which the balancing market comprises the ISP, the balancing energy market (including the mFRR and aFRR processes), and the balancing market settlement procedure.

| Market Name | Execution/time resolution | Description |
|---|---|---|
| **Integrated scheduling process** | Three scheduled executions per dispatch day (ISP1, ISP2, ISP3) and ad hoc executions if necessary/15-minute resolution | › Co-optimisation of balancing energy and capacity<br>› Balancing capacity procurement (FCR, aFRR, mFRR)<br>› Commitment schedule and indicative production schedule of balancing service entities<br>› Ensuring operational security in the transmission system, considering network constraints |
| **Balancing energy market** | › mFRR: Scheduled every 15 minutes, with direct activation between scheduled sessions/15-minute resolution<br>› aFRR: Continuous activation every four seconds/ four-second control cycle | Activation of mFRR and aFRR balancing energy offers through real-time dispatch instructions and Automatic Generation Control instructions to the balancing service entities |
| **Balancing market settlement procedure** | Weekly settlement/15-minute ISP | › Metering validation<br>› Calculation of balancing energy, imbalances, and corresponding prices<br>› Settlement of activated energy and balancing capacity |

### Integrated Scheduling Process

BSPs representing generating units are subject to mandatory submission of balancing energy and balancing capacity bids in the ISP for each balancing service entity they represent, in accordance with the applicable regulatory framework. BSPs representing dispatchable RES units or demand response participate on a voluntary basis. The required balancing capacity (reserves) per BZ – namely upward and downward FCR, aFRR, and mFRR – is procured on a daily basis through the ISP in accordance with IPTO's approved dimensioning methodology.

### Balancing Energy Market

The balancing energy market comprises mFRR (activated on a 15-minute basis) and aFRR (activated continuously via Automatic Generation Control with a four-second control cycle). BSPs representing generating units are required to submit mFRR and aFRR balancing energy offers, while dispatchable RES and demand response participate voluntarily, except for volumes corresponding to awarded balancing capacity through the ISP, which are mandatory. BSPs may update previously submitted offers under more favourable terms, subject to market rules. The balancing energy gate closure time (BE GCT) is 15 minutes before the relevant ISP for mFRR and 45 minutes for aFRR. Greece currently operates as a single BZ. Payments for activated balancing energy are determined per direction based on the price sign, while balancing capacity is remunerated on a pay-as-bid basis, subject to contracted volumes and verified availability.

### Imbalance settlement

The imbalance area corresponds to the Hellenic Electricity Transmission System (HETS) with a 15-minute ISP and, as Greece operates as a single BZ, the imbalance price area coincides with the imbalance area. The imbalance of a balancing service entity is defined as the difference between certified metered energy and its final market schedule, adjusted for dispatch instructions. IPTO applies single imbalance pricing, with the imbalance price determined per settlement period based on the marginal activated balancing energy price (mFRR/aFRR), while in the absence of activation, it reflects avoided balancing energy costs.

As of December 2025, there were 21 active BSPs representing 46 balancing service entities, of which two corresponded to pumping units, nine to dispatchable load portfolios, and two to dispatchable RES portfolios. The number of active BRPs was 75.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Please find below the progress regarding the European balancing platform for the activation of balancing energy.

| European balancing platform for the activation of balancing energy | Accession timeline |
|---|---|
| **RR platform (TERRE)** | N/A |
| **aFRR platform (PICASSO)** | March 2025 |
| **mFRR platform (MARI)** | Q3 2028 |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 If response to Q1 is "no", why? | N/A |
| 1.2 If response to Q1 is "yes", what were the main results"? | Participation of all eligible resource types in the European balancing platforms, including stand-alone units and aggregated portfolios, is envisaged subject to the successful completion of the applicable pre-qualification process. |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes for aFRR standard products**<br>**No for mFRR standard products** |
| 2.1 // If response to Q2 is "no", why? | Participation in the European platform MARI is targeted for Q3 2028, as it is a complex project that requires significant and extensive modifications and adaptations to systems, infrastructures, and procedures related to mFRR. |
| 2.2 // If response to Q2 is "yes", what were the main results? | Successful connection to the PICASSO platform (March 2025) |
| **Q3: Do you procure a standard product for balancing capacity?** | **No** |
| **Q4: What are the main characteristics?** | **N/A** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **No** |
| 5.1 // If response to Q5 is "no", why? | Sharing potential within the synchronous operation region (SOR) will be assessed in the context of the SELENE sizing task. |
| 5.2 // If response to Q5 is "yes", what were the main results? | N/A |
| **Q6: Are you already involved in a BCC as a member or observer?** | **No** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

In 2025, significant amendments were introduced following IPTO's connection to the European aFRR platform PICASSO on 18 March 2025. These included amendments to the Balancing Market Rulebook and relevant methodologies to enable participation in PICASSO, alignment of national balancing energy products with the European standard aFRR product, and conversion of local bids into standardised European products. The pricing and settlement framework was also revised, including balancing energy prices, imbalance price calculation, and related clearing timelines.

The introduction of 15-minute products in the day-ahead and intraday markets in 2025 resulted in corresponding amendments to the balancing market, notably the reduction of the integrated scheduling process dispatch period from 30 minutes to 15 minutes.

Furthermore, the Balancing Market Rulebook was amended to lift the suspension on the submission of balancing energy bids with negative prices, in place since 2021, and to introduce a temporary price floor of −50 €/MWh during the transition period. These amendments introduced incentives for improved operational management of RES and CHP units, thereby supporting efficient system operation under high renewable penetration.

Further amendments to the T&Cs for BSPs and BRPs are expected in light of the integration of storage units into the balancing market and the forthcoming participation of IPTO in the European mFRR platform (MARI).

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2024?** | **Yes** |
| 1.1 //f response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | N/A |
| **Q2: Has your TSO made use of additional components pursuant to Article 9 (6) of the ISHM as of 1 January 2024?** | **No** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Not considered |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2024?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

IPTO does not use specific balancing products subject to conditions pursuant to Article 26 of the EB Regulation. Furthermore, as stated in Section 2, IPTO does not currently participate in cross-border balancing capacity exchange or reserve sharing through interconnections.

IPTO determines balancing capacity requirements for FCR, aFRR, and mFRR in accordance with the approved "Methodology for the Determination of Zonal/Systemic Balancing Capacity Needs".

As a TSO within the Continental Europe SA, IPTO applies the FCR dimensioning rules set out in Article 153 of Commission Regulation (EU) 2017/1485 (SO Regulation). The total FCR requirement at the SA level covers at least the reference incident (3,000 MW in both directions), with IPTO's share calculated proportionally to its net generation and consumption over a one-year reference period.

The minimum FRR requirement for the Greek LFC block is determined based on historical operational data and allocated between aFRR and mFRR in accordance with the approved methodology. Operational aFRR and mFRR needs may exceed the minimum requirement and are calculated considering system load, contingency risks, RES variability, interconnector deviations, and extreme operating conditions.

The co-optimisation of balancing energy and balancing capacity within the integrated scheduling process ensures cost-efficient procurement while maintaining system security.

## Volumes of available reserves

The technical capability of each dispatchable generation unit to provide FCR, aFRR, and mFRR is defined and registered as part of its approved technical operating characteristics for the provision of balancing services. The total volumes of technically available balancing capacity for FCR, aFRR, and mFRR, presented in the table below, correspond to the aggregated registered technical capabilities of eligible balancing service entities.

| Balancing Capacity | Total up [MW] | Total dn [MW] |
|---|---|---|
| **FCR** | 1,056 | 1,056 |
| **aFRR** | 4,020 | 4,030 |
| **FCR** | 1,056 | 1,056 |
| **mFRR** | 5,789 | 5,635 |

Table 23: Available balancing capacity (MW) in December 2025.

## Volumes of procured reserves

The average procured volumes of FCR, aFRR, and mFRR per integrated scheduling process dispatch period for the years 2024 and 2025, as determined through the integrated scheduling process, are presented in the table below.

| Years | FCR_UP (MW) | FCR_DN (MW) | aFRR_UP (MW) | aFRR_DOWN (MW) | mFRR_UP (MW) | mFRR_DOWN (MW) |
|---|---|---|---|---|---|---|
| **2024** | 52 | 49 | 582 | 117 | 620 | 174 |
| **2025** | 52 | 52 | 620 | 119 | 665 | 206 |

Table 24: Average volumes of procured reserves for years 2024–2025.

## Volumes of used balancing energy

The total annual volumes of used balancing energy (MWh) per product for the years 2024–2025 are presented in the table below. For mFRR, the reported volumes correspond to the net activated balancing energy per 15-minute ISP, aggregated over the year.

| Years | BEup (MWh) | | BEdown (MWh) | |
|---|---|---|---|---|
| | aFRRup | mFRRup | aFRRdown | mFRRdown |
| **2024** | 718,410 | 471,742 | 572,768 | 2,081,318 |
| **2025** | 550,551 | 717,124 | 593,279 | 2,106,855 |

Table 25: Annual values of balancing energy used for years 2024–2025.[25]

25 Netted mFRR quantities are presented.

# 7.12 Hungary (Magyar Villamosenergiaipari Átviteli Rendszerirányító Zártkörűen Működő Részvénytársaság/MAVIR Hungarian Independent Transmission Operator Ltd)

## 1 // Introduction

The Hungarian electricity system consists of one scheduling and LFC area, for which the TSO is MAVIR Hungarian Independent Transmission Operator Ltd. ("MAVIR"). The national TSO report on balancing according to EBGL 60 is available at the following link in Hungarian: **EBGL 60 report**.

The T&Cs related to balancing pursuant to Article 18 of EBGL were submitted to the Hungarian NRA on 18 June 2018, approved on 18 September 2018, and entered into force on 1 January 2019. It is part of the Hungarian International Network Code (Section 3.1, **link**) and defines the T&Cs for both BSPs and BRPs in both Hungarian and English.

A BSP can participate in the balancing services markets as long as it fulfils the qualification requirements, which consist of a successful pre-qualification and a valid framework contract for balancing services. In the Hungarian LFC area, there are three types of reserves: FCR, aFRR, and mFRR. The dimensioning of reserves is based on SOGL requirements. MAVIR calculates the necessary reserves using a machine learning algorithm. The implemented methodology enables a much more accurate assessment and consideration of the real risks affecting system balance. The machine learning algorithm-based procedure enables dimensioning with hourly resolution based on the weather and system load forecast data available on the previous day. The procurement of balancing capacity consists of a pre-selection process, which concludes in a framework agreement, which is a prerequisite to participate in monthly tenders or in the daily and intraday bidding based on the agreement.

During daily and intraday balancing service bidding, BSPs must submit their bids with hourly resolution; however, settlement is ultimately performed on a quarter-hourly basis. Since 20 February 2025, intraday tenders have been used not only to cover unsatisfied volumes in the previous time frames, but also to procure a certain volume that was not included in the monthly tenders or daily bidding. The rules and procedures related to the pre-selection process can be found in the tender documentation.

The intraday balancing energy market was introduced on 1 January 2021. Since 1 November 2023, BSPs have been allowed to submit their balancing energy bids closer to real time, with a 25-minute GCT, in accordance with Article 6(4) of Regulation (EU) 2019/943. In the balancing energy market, BSPs with procured balancing capacity and BSPs without procured balancing capacity are on a level playing field – the only evaluation criterion applied is the balancing energy price.

The activation of balancing energy bids is based on the MOL, maintained separately for positive and negative aFRR balancing energy bids and for positive and negative mFRR balancing energy bids. Balancing services in both markets are priced on a pay-as-bid basis. The bidding mechanism follows the multiple volume–multiple price method, so the control range can be covered by several price–volume pairs.

MAVIR has participated in the common IN process, IGCC, since 10 March 2020, with the purpose of avoiding the simultaneous activation of FRR in opposite directions. The significant market power procedure remains in effect in the balancing energy market. The application of price limits was reintroduced on 1 December 2023 in both the upward and downward directions.

The T&Cs related to balancing include every requirement related to the BRPs and define every rule for scheduling and imbalance settlement. The ISP applied in the Hungarian scheduling area is 15 minutes.

The imbalance settlement methodology was changed on 1 January 2022, when MAVIR fully implemented the ISHM in accordance with the requirements stipulated by Article 52 (2) of the EB Regulation (Commission Regulation (EU) 2017/2195 establishing a guideline on electricity balancing, an imbalance settlement harmonisation methodology). The new methodology fully conforms with the harmonisation requirements, implementing a single imbalance price calculation system for BRP imbalances in Hungary. Currently, only a price incentive is applied in the imbalance price calculation methodology. The determination of the price incentive was updated on 1 January 2025. Since then, not only the day-ahead market price is used but also intraday auctions and continuous intraday market prices, provided that liquidity in those markets exceeds a fixed threshold. The legal framework for introducing a scarcity component was approved by the Hungarian NRA, but will become applicable only after the reported period, in Q2 2026 at the earliest.

In 2025, 26 BSPs and 173 BRPs operated in Hungary. The DSR/BESS/RES pre-qualified volumes are as follows:

- DSR: 277 MW
- BESS: 125 MW
- RES: 3,686 MW

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **aFRR platform** | October 2026 | Market development and system upgrade (granted for two years) |
| **mFRR platform** | October 2026 | Market development and system upgrade (granted for two years) |
| **IN-Platform** | Has participated in IGCC since March 2020 | – |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **FCR cooperation** | Observer | To be defined after joining BPs |
| **ALPACA** | Observer | To be defined after joining BPs |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | MAVIR will switch to exclusively using standard products for both aFRR and mFRR starting in October 2026. Pre-qualification has been ongoing since 2025, and the implementation of the required regulatory and IT changes covered the entire period concerned by this report. |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| If response to Q2 is "no", why? | N/A |
| If response to Q2 is "yes", what were the main results? | See answer 1.2 |
| **Q3: Do you procure a standard product for balancing capacity?** | **No** |
| **Q4: What are the main characteristics?** | **Local products:**<br>› **aFRR with 15-minute FAT**<br>› **mFRR with 12.5- and 15-minute FAT, direct activation** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **Yes** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | MAVIR wants to take advantage of the exchange of balancing capacities or the sharing of reserves; however, joining a BCC requires the use of the standard product. Possible further steps to be defined after the connection to MARI and PICASSO. |
| **Q6: Are you already involved in a BCC as a member or observer?** | **Observer (FCR, ALPACA)** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| **Evolution of the T&Cs for BSP** | |
|---|---|
| **Content** | Status (not submitted, submitted, approved) and timeline |
| **1 // Clarifications on the separation of balancing capacity and balancing energy markets** | 1 // Approved, entry into force: 1 March 2024 |
| **2 // Various modifications:**<br>**a // BSP must not be under direct or indirect control of another BSP to ensure the proper functioning of the significant market power procedure.**<br>**b // Clarified rules for activation order in case of identical energy price bids**<br>**c // Clarification on the settlement rules concerning aggregated storage**<br>**d // Clarification on imbalance adjustment in case controlled unit belongs to multiple BRPs** | 2 // Approved, entry into force: 13 September 2024 |
| **3 // Clarification on BSP independence requirements in relation to the significant market power procedure** | 3 // Approved, entry into force: 11 December 2024 |
| **4 // Clarification on participation in case injection capacity is higher than connection points' capacity** | 4 // Approved, entry into force: 27 June 2025 |
| **Evolution of the T&Cs for BRP** | |
| **Content** | Status (not submitted, submitted, approved) and timeline |
| **1 // Intraday market prices introduced as a minimum price with a premium, scarcity surcharge introduced for now with zero financial impact** | 1 // Approved, entry into force: 11 December 2024 |
| **2 // Adjustment of external schedules resolution** | 2 // Approved, entry into force: 27 June 2025 |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | – |
| **Q2: Has your TSO made use of additional components pursuant to the ISHM, Article 9 (6) as of 1 January 2026?** | **Yes** |
| 2.1 // Scarcity component? | Implemented |
| 2.2 // Incentivising component? | Implemented |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

Dimensioning of reserve capacities is based on Article 157, the methodology applied by MAVIR, which includes both a deterministic and a probabilistic component. Required volumes are determined through a machine learning algorithm on D-1. Inputs to the algorithm include forecasted system load and weather data; therefore, notable intraday and seasonal volatility can be observed in calculated values.

Taking into account Article 6 of EU Regulation 2019/943 regarding the procurement of balancing capacities, MAVIR applies a derogation approved by the Hungarian Regulatory Authority until the end of 2025, so that a minimum of 30 % of balancing capacities are procured in a daily or intraday time frame. Reserve capacities were procured via LT (monthly) and short-term (daily and intraday) tenders. The actual share of short-term procurement was 58 % in 2024 and 59 % in 2025.

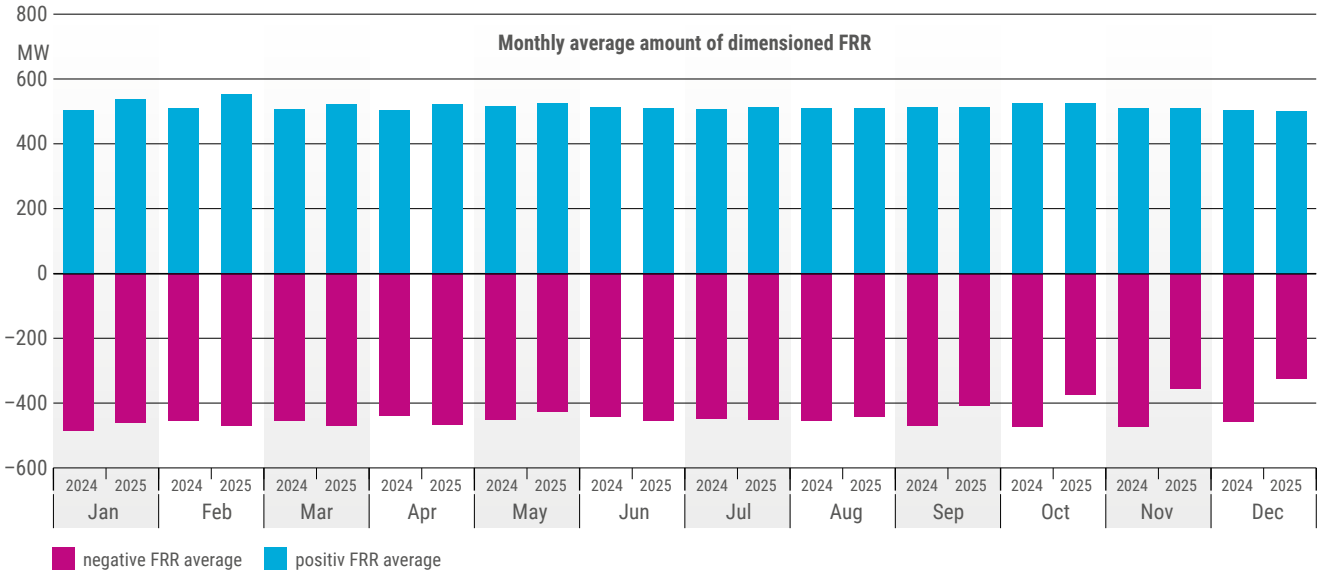



Figure 129: Monthly average amount of dimensioned FRR

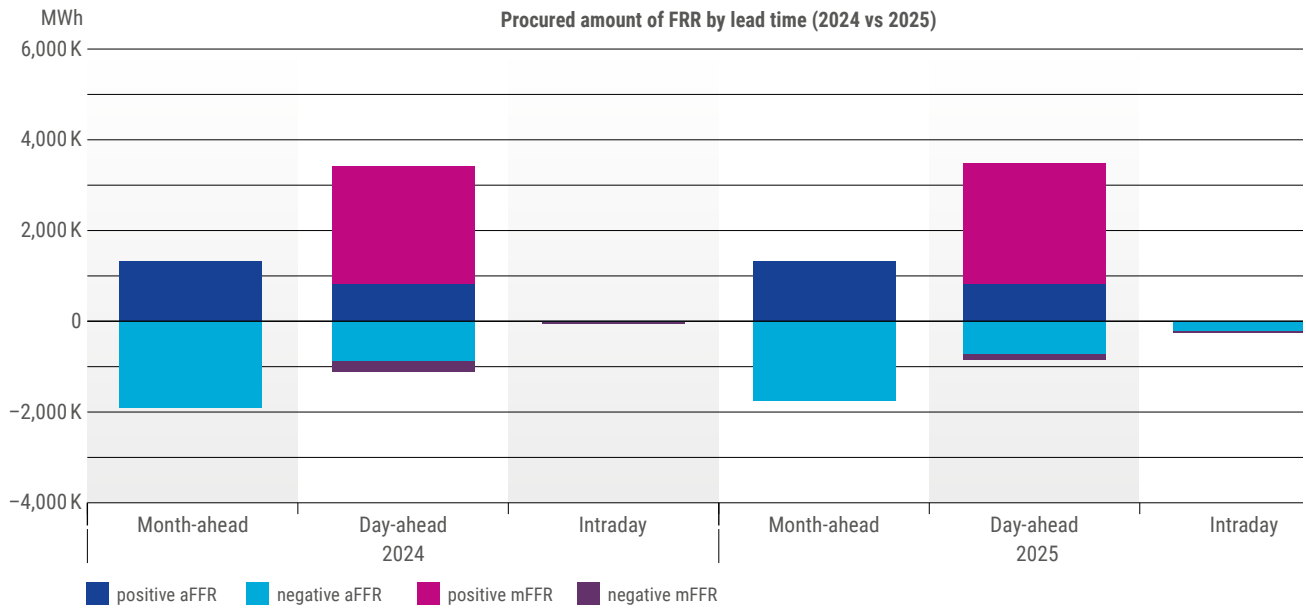



Figure 130: Procured amount of FRR by lead time (2024 vs 2025)

Available pre-qualified volumes significantly increased during the reported period, driven by the expansion of RES and BESS penetration.

| | 2024 | 2025 |
|---|---|---|
| **FCR pre-qualified volume (end of year)** | 163 | 213 |
| **aFRR pre-qualified volume (eligible for capacity procurement at end of year)** | 2,933 | 3,643 |
| **mFRR pre-qualified volume (eligible for capacity procurement at end of year)** | 1,774 | 1,790 |

MAVIR will begin using standard products and join MARI and PICASSO in October 2026; therefore, no specific products were defined during the reported period. No reserve sharing or exchange mechanisms were implemented during 2024–2025.

# 7.13 Ireland (EirGrid plc and SONI Limited)

## 1 // Introduction

The detailed TSO report on balancing, according to Article 60 of the EB Regulation, by EirGrid is published on the Irish website here, and by SONI on the Northern Irish website here.

EirGrid and SONI are the TSOs for Ireland and Northern Ireland, respectively. They are part of the Ireland and Northern Ireland SA, which operates a single electricity market (SEM), including a single balancing market covering both jurisdictions. As part of this, EirGrid and SONI operate the LFC block, which is equivalent to the LFC, scheduling, and monitoring areas covering both jurisdictions.

The following documents are the national T&Cs applicable to the balancing market in SEM.

**1 //** Balancing Market Principles Statement is a document that refers to EU and national legislation and statutory licences in effect and applicable to EirGrid and SONI.

**2 //** The Trading and Settlement Code (TSC) is the primary document governing the operation of the SEM in Ireland and Northern Ireland. It outlines the rules and procedures for the sale and purchase of wholesale electricity, ensuring efficiency, development, financial security, participation, competition, transparency, and equity within the market.

**3 //** The grid code outlines the technical requirements and rules for connecting to and using the electricity transmission system in the SEM in Ireland and Northern Ireland.

**4 //** Following entry into force, EirGrid and SONI have undertaken an exercise to analyse the compliance of SEM arrangements and T&Cs with the individual requirements of the EB Regulation in detail, including the relevant European methodologies developed under the EB Regulation. The results of this analysis are outlined in "Analysis of SEM Compliance with Commission".

In the SEM, the fact that both energy and non-energy requirements must be managed at the same time was recognised as part of the I-SEM High Level Design Decision (SEM-14-085), which stated that the balancing market would be the single mechanism for managing all of these aspects, and the Energy Trading Arrangements Markets Detailed Design decision (SEM-15-065), which considered further details on how this is to be implemented and its impacts on imbalance pricing. The approach followed under the SEM central dispatching model and integrated scheduling process is permitted under Article 14 of the EB Regulation, and the necessary regulatory approvals for its future use have been granted.

There are currently 224 registered parties in the SEM. Of these 224 units, 152 are renewable units and 26 are batteries.

Prior to new market arrangements going live in October 2018, EirGrid and SONI, respectively, were undertaking a programme to align Ireland and Northern Ireland's SEM with the European approach and structure of day-ahead, intraday, and balancing markets. While this project created the first balancing market arrangements in the jurisdiction under Article 64 of the EB Regulation, Ireland and Northern Ireland had a general derogation against compliance with all aspects of the EB Regulation outside the creation of methodologies until 31 December 2019. From that date, the code entered into force for Ireland and Northern Ireland, and the timelines under the EB Regulation have begun to take effect. As a result, the TSOs have undertaken work to ensure the local T&Cs related to balancing comply with the EB Regulation. This analysis was completed in 2020.

The compliance analysis assessed the level of compliance of the SEM arrangements with each individual paragraph of the EB Regulation. This led to an assessment of each element of the regulation to determine whether the provision currently applies to the SEM. For example, where a product class is not currently procured, as is the case for balancing capacity in the SEM, or a provision relates to a methodology that does not currently apply in the local arrangements, those provisions were assessed as not being currently applicable.

For provisions that do apply to the SEM, an assessment was made as to whether or not the local approach is compliant with the provisions of the regulation by comparing an outline of the SEM approach, as set out in the documents governing the local SEM T&Cs, against the requirements in the regulation. Where this was considered beneficial, either in terms of enhancing compliance or adding clarity regarding how the local T&Cs relate to the provisions of the regulation, changes were suggested. If the local approach was found to be materially different from the relevant EB Regulation provision, or if it was not possible to conclude that the local approach was in line with the requirement without additional detailed analysis, the item was marked for further consideration. Over 400 paragraphs of the EB Regulation were assessed in the initial analysis, and 271 were found to be not directly applicable to the SEM at this time. The SEM arrangements were considered compliant with 96 of the remaining paragraphs; 46 further paragraphs, spanning 23 topics, were found to warrant further detailed consideration. This additional consideration led to the following findings:

- Nine of the topics were found to be compliant in all material respects, with no further action necessary.
- Six of the topics were found to be compliant in all material respects, with minor changes proposed to improve clarity or transparency.
- For four topics, it was not possible to arrive at a conclusive finding on compliance, so further industry input was sought on the analysis via the regulatory consultation on compliance.
- For the final four topics, it was concluded that changes would be merited to ensure that the EB Regulation's requirements are met.

After this review and consideration of the SEM arrangements in the context of compliance with the EB Regulation, the TSOs found them to be substantially compliant in material respects with the relevant requirements of the EB Regulation. While this document highlights a small number of areas where some uncertainty remains, the TSOs do not consider these issues to adversely affect the substantial compliance of the SEM arrangements with the requirements of the EB Regulation. After a detailed submission was made to the regulatory authorities of the SEM, a public consultation was launched on the findings of the analysis. This consultation is now complete, and a decision is due to outline the next steps, which may include rules and systems changes.

There is also separate work underway to investigate future interactions with the arrangements for coupling with the European balancing platforms, such as MARI, which is expected to take longer to complete. Meanwhile, the TSOs have renewed observer status in MARI. Because the exit of the United Kingdom from the EU has resulted in the SEM having no direct interconnection with another Member State, this will further delay the full implementation of the substantial requirements of the EB Regulation, including participation in balancing platforms, until such time as the Celtic interconnector between the SEM and France is completed later in this decade.

Given the outstanding questions with respect to compliance of the current arrangements and the longer-term implementation of SEM participation on the balancing platforms, it is not possible to provide the information envisaged in Article 60 of the EB Regulation in this executive summary for this iteration of the report. It is intended that the work currently underway will enable the provision of the applicable information for future iterations of the report.

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **No** |
| 1 1 // If response to Q1 is "no", why? | Existing SEM rules were preserved and applied to all relevant BSPs. |
| 1.2 // If response to Q1 is "yes", what were the main results"? | N/A |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.2 // If response to Q2 is "yes", what were the main results? | As the SEM is centrally dispatched, integrated scheduling process bids are used. Conversion rules were applied as permitted under Article 27 of the EB Regulation. As this solution has yet to be implemented, we have no comment on results. |
| **Q3: Do you procure a standard product for balancing capacity?** | **N/A to SEM. Currently we do not procure balancing capacity.** |
| **Q4: What are the main characteristics?** | **N/A to SEM. Currently we do not procure balancing capacity.** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **N/A before Celtic interconnector go-live** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | N/A before Celtic interconnector go-live |
| **Q6: Are you already involved in a BCC as a member or observer?** | **N/A before Celtic interconnector go-live (Commission Adopted Opinion: please see here for Ireland and Northern Ireland).** |

## 2 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| **Content** | Not submitted – awaiting RAs decision on T&Cs for BSP/BRP |
| **Evolution of the T&Cs for BRP** | |
| **Content (see below)** | Not submitted - awaiting RAs on T&Cs for BSP/BRP |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2024?** | **There was an exemption.** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | The implementation of a 15-minute ISP is included in the market's multi-year plan currently being developed by SONI, EirGrid, and the NRAs to addresses compliance requirements. |
| **Q2: Has your TSO made use of additional components pursuant to Article 9 (6) of the ISHM as of 1 January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Implemented |
| 2.2 // Incentivising component? | Not considered |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2024?** | **No** |
| 3.1 // Condition (a) | N/A |
| 3.2 // Condition (b) | N/A |
| 3.3 // Condition (c) | N/A |
| 3.4 //Condition (d) | N/A |
| 3.5 // Condition (e) | N/A |

## 3 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

In the SEM, TSOs do not currently procure balancing capacity through a dedicated balancing capacity market. Instead, the required reserve capacity is currently procured under the **DS3 arrangement**, which provides payment for the availability of services. Further details of reserve dimensioning can be found in this **information paper**. An example of the contracted volumes for system services under the DS3 arrangement can be found in **DS3 System Services Regulated Arrangements Gate 13**.

To ensure the efficient and secure operation of the power system, the TSOs EirGrid and SONI schedule and dispatch units in accordance with their respective **Operating Security Standards**. These standards ensure that the all-island transmission system is operated in a secure and reliable manner. The process by which the TSOs schedule and dispatch the power system is outlined in the **Balancing Market Principles Statement**. This includes a description of how the operational constraints are applied to the scheduling and dispatch process. In addition, the **weekly operational constraint document** specifies both long-standing operational constraints and constraints that are updated on a weekly basis. This document also includes the methodology used to determine reserve requirements, which are primarily based on the size of the largest in-feed to the system.

Looking ahead, the SEM is currently in the process of implementing a balancing capacity market called the day-ahead system services auction, with a planned go-live in 2027. Further details regarding reserve dimensioning for this future market design are provided in the **TSOs Volume Forecasting Recommendations Paper** and the corresponding **SEM committee decision**.

# 7.14 Italy (Terna – Rete Elettrica Nazionale SpA)

## 1 // Introduction

- The version of the report covering the period from 18 December 2021 to 17 December 2023 can be consulted at this link. The updated version, covering the period from 18 December 2023 to 17 December 2025, will be published in the coming months.
- Link to the current version of the national T&Cs (English version if available)
- Geographical scope:

  1 // SA: CE

  2 // LFC block = LFC area = Italy (Sardinia not included)

  3 // Scheduling areas = BZs = North, Centre-North, Centre-South, South, Calabria, Sicily, Sardinia (current BZ configuration)

  4 // Two imbalance price areas: (1) macro-area comprised of the North BZ and (2) macro-area comprised of all other Italian BZs.

In Italy, a central dispatching model is adopted to determine both the unit commitment status and the dispatching level of dispatchable facilities through an integrated scheduling process. This process takes into account commercial and technical data, the start-up characteristics of the facilities, the latest control area adequacy analysis, and operational security limits.

In particular, the central dispatching model is adopted within the integrated scheduling process, which, together with the EU balancing platforms, constitutes the Italian balancing and re-dispatching market, where Terna procures the dispatching resources required for the secure operation of the Italian electric power system as follows:

- During the scheduling phase of the Italian integrated scheduling process (called MSD), upward and downward integrated scheduling process bids are selected to relieve congestions within BZs and ensure the availability of appropriate FRR and RR margins.
- The balancing process is primarily carried out through the EU balancing platforms through the activation of standard balancing products, ensuring real-time system equilibrium between electricity injections and withdrawals.
- During the real-time phase of the Italian integrated scheduling process (or balancing market), upward and downward integrated scheduling process bids are selected to relieve real-time congestions within BZs and ensure or restore FRR and RR margins, and secondarily to maintain the balance between electricity injections and withdrawals.

In this regard, the minimum aFRR requirement is calculated for each relevant period and zonal aggregation, as a function of load forecasts and taking into account the safe operation of the interconnection between the mainland, Sicily, Sardinia, and, for islands, the regulating contribution of interconnections. The mFRR requirement is dimensioned to ensure that, for each relevant period and zonal aggregation, the complete reconstitution of aFRR margins can be achieved. It also accounts for the unplanned unavailability of thermal production in the case of upward capacity, and of hydroelectrical loads in the case of downward capacity, for a quantity at least equal to, respectively, the maximum schedule among all thermal production or the maximum schedule among all the hydroelectrical loads. The RR requirement is dimensioned for each relevant period and zonal aggregation, taking into account the unplanned unavailability of thermal production in the case of upward capacity, or hydroelectric loads in the case of downward capacity, for a quantity at least equal to, respectively, the maximum schedule among all thermal production or the maximum schedule among all hydroelectric loads, together with the forecast error of electrical demand and intermittent RES production.

In 2024, there were 354 BRPs, 30 of which were also BSPs. In 2025, there were 381 BRPs, 29 of which were also BSPs. There were also other BSPs (12 in 2024 and four in 2025) that participated in the Italian balancing and re-dispatching market through pilot projects, as described below.

As of 1 January 2025, the Integrated Electricity Dispatching Text (TIDE) has entered into force. Following its entry into force, all units are permitted to participate in the Italian balancing and re-dispatching market. In particular, dispatchable units deemed significant for scheduling purposes are required to participate at the individual level, whereas all other units – including RES units, consumption units, and batteries – may participate on a voluntary basis, either individually or through aggregation. Aggregated units may be structured into two categories – UVAN and UVAZ – depending on whether the aggregation is carried out at the nodal or zonal level, respectively. The establishment of the aggregated units UVAN and UVAZ was enabled by dedicated pilot projects, which opened the Italian balancing and re-dispatching market to new aggregated resources, pursuant to Decision 300/2017/R/EEL of the Italian NRA, and that ceased to produce effects with the start of the TIDE consolidation phase as of 1 February 2026.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | Participation from 13 January 2021 until 31 December 2024<br>Participation suspended since 1 January 2025 pursuant to ARERA Resolution 449/2024 | |
| **aFRR platform** | Participation from 19 July 2023 until 15 March 2024<br>Participation suspended since 15 March 2024 pursuant to ARERA Resolution 60/2024<br>Participation restarted since 25 November 2025 pursuant to ARERA Resolution 364/2025 | One-year derogation granted (ARERA Resolution 46/2022)<br>Reasoning: implementation of all the needed changes (regulatory, market, IT, etc.) for the coordination between national processes and the aFRR platform. |
| **mFRR platform** | Participation after 1 February 2026 pursuant to ARERA Resolution 364/2025 | Two-year derogation granted (ARERA Resolution 46/2022)<br>Reasoning: implementation of all the needed changes (regulatory, market, IT, etc.) for the coordination between national processes and the mFRR platform. |
| **IN-Platform** | Participating since 27 January 2020 | |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| **Evolution of the T&Cs for BSP** | |
|---|---|
| **Content** | Status (not submitted, submitted, approved) and timeline |
| **New rules for integrated scheduling process bids conversion into aFRR standard product** | Approved (ARERA Resolution 364/2025) |
| **Rules for integrated scheduling process bids conversion into mFRR standard product** | Approved (ARERA Resolution 423/2025) |
| **New Integrated Electricity Dispatching Text (TIDE)** | Approved (ARERA Resolution 345/2023) |
| **Evolution of the T&Cs for BRP** | |
| **Content (see below)** | Status (not submitted, submitted, approved) and timeline |
| **New Integrated Electricity Dispatching Text (TIDE)** | Approved (ARERA Resolution 345/2023) |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented (since 1 January 2025)** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | Date |
| **Q2: Has your TSO made use of additional components pursuant to Article 9(6) of the ISHM as of 1 January 2024?** | **Yes (since 1 April 2022)** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Implemented |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4. //Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Dimensioning and balancing capacity procurement in accordance with Articles 60(2)(b), 60(2)(c), 60(2)(e), and 60(2)(f)

With reference to Article 60(2)(b), please refer to point c) of Paragraph 1 (Introduction). In particular, by adopting a central dispatching model, FRR and RR margins are implicitly ensured by correcting the unit commitment status and/or the dispatching level of units participating in the Italian balancing and re-dispatching market and resulting from the day-ahead and the intraday markets. For this reason, provisions (c), (e), and (f) of Article 60(2) of Commission Regulation (EU) 2017/2195 are not applicable to the Italian case.

### Assessment of sharing/exchange of reserves

**Specific products in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d)**

Articles 26(1)(a)–(f) and provisions (a) and (d) of Article 60(2) of the EB Regulation are not applicable to the Italian case since only integrated scheduling process bids and aFRR and RR standard products have been used to ensure real-time system equilibrium between electricity injections and withdrawals.

# 7.15 Netherlands (TenneT TSO B.V.)

## 1 // Introduction

The 2026 national report covers calendar years 2024 and 2025; previous years are covered in the 2024 national report. The full 2026 national report will be published **here**.

TenneT TSO B.V (hereinafter referred to as "TenneT NL") is the Dutch TSO. TenneT NL is responsible for its single LFC block, with only one LFC area, as part of the Continental Europe SA. TenneT NL is the single connecting TSO for the NL BZ, comprising a single imbalance price area and imbalance area.

The market, including the balancing market, is organised according to a self-dispatching model. For frequency restoration, balancing energy from aFRR and mFRR is used, after reducing balancing energy demand by IN. Balancing energy demand from mFRRda is supplementary to aFRR activation. The non-mandatory reserve replacement process is not implemented.

TenneT NL has been connected to the PICASSO platform for the standard aFRR product since mid-October 2024. At the end of 2025, TenneT NL opened the market for the standard mFRR product (MARI platform) for pre-qualification alongside the specific mFRRda product already in place. From mid-November 2025, TenneT NL started the transition to move from 24-hour block aFRR capacity contracts to four-hour block aFRR capacity contracts. For a limited but not yet defined period, 24-hour and four-hour block capacity contracts will be used in parallel.

National settlement principles, in place since 2001, comply with Regulation (EU) 2017/2195:

- ISP is 15 minutes.
- All imbalance prices comply with Articles 55(4)(5) and (6) of Regulation (EU) 2017/2195.
- Balancing energy bid prices are per ISP and become firm 25 minutes prior to the ISP of delivery to allow bid price consistency with all previous wholesale markets.
- Non-contracted balancing energy bids for aFRR are allowed.
- Value of avoided activation is defined at mid-price MOL FRR.
- Balancing energy prices are uniform per ISP for all FRR balancing energy.
- BRPs are allowed to notify regarding position changes after IDGCT.
- Imbalance settlement is finalised within 10 working days, including the procedure for BRPs and BSPs to challenge settlement volumes.
- Financial neutralisation TSO is guaranteed in the National Grid Code through Article 44(2) Regulation (EU) 2017/2195; No financial mechanism with BRPs, separate from imbalance settlement, is implemented or under consideration.

Electricity consumption (including grid losses) is approximately 117 TWh (2025), and production is about 128 TWh. There are currently approximately 39 BSPs accredited, and approximately 190 BRPs, of which approximately 50 serve as connections. Batteries are dominating the FCR market. There is also increasing interest from market participants with variable RES and batteries in participating in aFRR markets, especially after the announcement of a shift towards four-hour block capacity contracts.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | No RR process in place | |
| **aFRR platform** | Since 17 October 2024, fully operational | |
| **mFRR platform** | Since 2 December 2025, market open for pre-qualification. | |
| **IN-Platform** | Accession to IGCC since February 2012 | |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **FCR cooperation, platform for procurement and exchange of FCR7** | Member | 2015 |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | IT developments for connecting to MARI platform and allowing BSPs to start prequalification for mFRR standard product |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.2 // If response to Q2 is "yes", what were the main results? | Connected to PICASSO in October 2024; mFRR standard product opened for prequalification in December 2025. |
| **Q3: Do you procure a standard product for balancing capacity?** | **Yes, standard aFRR since July 2022** |
| **Q4: What are the main characteristics?** | **Link to product manual** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **Yes, sharing of reserves with neighbouring TSOs within RG CE** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | 1 // Sharing of capacity is possible since deterministic dimensioning parameter for FRR capacity > stochastic dimensioning parameter.<br>2 // Unavailability of remaining CZC in flow-based CZC allocation prevents utilisation of this sharing potential; consequently, there is no reduction in balancing capacity procurement. |
| **Q6: Are you already involved in a BCC as a member or observer?** | **Observer in ALPACA cooperation**<br>**Member in the COBRA project** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| **Content** | Approved since 18 December 2018 |
| **Evolution of the T&Cs for BRP** | |
| **Content (see below)** | Approved since 18 December 2018. Updated and approved by the NRA on market suspension and restoration rules, and on settlement rules in the case of market suspension as of 8 December 2021. No separate imbalance settlement rules are foreseen during market suspension. |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented, since 1 January 2001** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | |
| **Q2: Has your TSO made use of additional components pursuant to Article 9(6) of the ISHM as of 1 January 2024?** | **No** |
| 2.1 // Scarcity component? | No, but it is considering it. |
| 2.2 // Incentivising component? | Not considered |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **Yes/No** |
| 3.1 // Condition (a) | Implemented; formal approval by relevant NRA on 2 March 2022 |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Dimensioning and balancing capacity procurement

For the calendar years covered by this report, the deterministic criterion exceeded the stochastic and probabilistic criteria for the minimally required volumes of FRR.

Since mid-September 2025, FRR dimensioning has been conducted on a daily basis, hours before the FRR auction (D-1 09:00) using forecasting technology. Dimensioned volumes since then have higher variability. Dimensioning is still mainly maximised by deterministic values, as in prior years. Since December 2025, non-contracted balancing bids have been predicted and taken into account for the reduction of procured volumes in the downward direction. This provides a more optimal provisioning.

### Assessment of sharing/exchange of reserves

Introduction of flow-based market coupling in May 2015 eventually resulted in both borders being congested in both directions for a significant time after ID GCT, thus removing this opportunity to use reserve sharing under normal operating conditions to fulfil FRR dimensioning requirements without reservation of X-zonal capacity.

### Specific products

For the calendar years covered by this report, TenneT NL defined and operated a specific product for mFRR in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d). This product was approved by the NRA on 15 December 2021.

# 7.16 Norway (Statnett SF)

## 1 // Introduction

The Norwegian power transmission system is geographically located in Northern Europe and is a part of the Nordic SA, which consists of the transmission systems of Finland, Sweden, Norway, and Eastern Denmark. This comprises the Nordic LFC block. There are five BZs: NO1, NO2, NO3, NO4, and NO5 in Statnett's control area.

The market design is based on the self-dispatch model. The types of reserve used in the Nordic SA to balance the system are FCR and FRR.

The FCRs are reserves used for the containment of frequency. The FCRs are divided into FCR-N and FCR-D.

FRRs are reserves to restore the frequency to the nominal value and release activated FCRs. FRRs are divided into two reserve products: aFRR and mFRR.

Statnett only procures FCR-N through the FCR market. Statnett's obligations for available FCR-D volumes have historically been covered through so-called "base delivery" (mandatory limitation on the speed droop of hydropower units).

aFRR balancing capacity is procured daily (D-1) in a Nordic market. aFRR balancing capacity is procured to cope with imbalances in the control area.

mFRR balancing capacity is procured in a national market. The market is both seasonal and weekly. mFRR balancing capacity is procured to ensure reserves cover dimensioning incidents and cope with imbalances in the control area.

Norway has not joined the European balancing platforms; therefore, Norwegian aFRR and mFRR cannot be defined as "specific products", as described in the EB Regulation.

The sources (load, consumption, other) of the balancing products vary. Statnett does not discriminate between the technologies – all types of technologies can participate in the reserve markets.

### Opportunities for the exchange of balancing capacity and the sharing of reserves

The Nordic TSOs exploit the possibility of sharing reserves (within the Nordic LFC block), both implicitly in the FRR dimensioning process and explicitly in bilateral agreements.

The Nordic TSOs also exchange FCR in bilateral agreements, in cases where such an exchange can be performed, respecting operational security limits. Moreover, the Nordic TSOs are working on common procurement procedures for aFRR and mFRR to more efficiently exploit the possibilities to exchange balancing capacity within the LFC block. Currently, the status is a common Nordic aFRR capacity market. The method and market design were approved by ACER in 2020, and it began operation in December 2022. The **NBM roadmap** contains updated information on further plans and implementation.

### Progress towards joining the European balancing energy platforms and balancing capacity cooperation

In 2025, the Nordic region underwent a major transition to ACE-based balancing and implemented a 15-minute ISP to facilitate integration with the European platforms MARI and PICASSO. This transition required significant automation of balancing and congestion management processes. Currently, work is underway to enable a joint Nordic connection to MARI in 2027. Furthermore, Statnett plans to connect to PICASSO in 2028.

### Evolution of the T&Cs for BRPs and BSPs

The T&Cs for BSPs and BRPs, in accordance with Articles 18 (5), (6), and (7), were approved by the Norwegian regulator on 15 January 2024.

## 2 // Progress and timeline towards joining the European platforms and balancing capacity cooperations

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **aFRR platform** | Q1 2028 | PICASSO |
| **mFRR platform** | Q1 2027 | Balancing the Nordics is a significant change to adapt to MARI. Nordic cooperation has been active for a long time. |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **aFRR** | Nordic volume – continues wide organised cooperation | In operation |
| **mFRR** | Norwegian, and also across BZs | In operation |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | Regulatory work is in progress between the TSO and DSOs to fit these kinds of units into the lower grid levels. Voltage control is an issue. |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.2 // If response to Q2 is "yes", what were the main results? | Operation of mFRR SA and – DA March 2025 and 15-minute MTU/ISP |
| **Q3: Do you procure a standard product for balancing capacity?** | **Yes** |
| **Q4: What are the main characteristics?** | **Minimum 1 MW and fulfil T&Cs** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **Yes** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | Exchange between BZs in the Nordics |
| **Q6: Are you already involved in a BCC as a member or observer?** | **Member in Nordic and European (ENTSO-E)** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| **Content** | T&Cs for BSPs were approved on 15 January 2024 |
| **Evolution of the T&Cs for BRP** | |
| **Content (see below)** | T&Cs for BRPs were approved on 15 January 2024 |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Yes** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | N/A |
| **Q2: Has your TSO made use of additional components pursuant to Article 9 (6) of the ISHM as of 1 January 2024?** | **No** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Not considered |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

# 7.17 Poland (Polskie Sieci Elektroenergetyczne S.A.)

## 1 // Introduction

a // Link to the National TSO report on Balancing (from which current executive summary is being provided).

b // Link to current version of National Term & Conditions (if available English version)
PSE's website: Link – Polish version only (detailed directions: "Warunki Dotyczące Bilansowania (WDB)" à "WDB – tekst obowiązujący").

c // Geographical scope: synchronous area(s), LFC block(s), LFC area(s), scheduling area(s) = imbalance area(s), bidding zone(s) = imbalance price area(s), TSO(s).

Polskie Sieci Elektroenergetyczne S.A. (PSE) is the sole transmission system operator in Poland responsible for Polish Balancing Market. Geographically Polish LFC block, LFC area, scheduling area and bidding zone overlap with Polish borders. Polish LFC area is a part of the Continental Europe synchronous area.

d // General information about market design and reserve dimensioning: central / self-dispatch model, types of reserve used to balance the system and dimensioning, specific requirements defined in the terms and conditions for BSP/BRP[26] according to Articles 18(5-7) (information or requirement on unused capacity, requirements regarding the BRP position, etc.).

The Polish Balancing Market is based on the Central Dispatching Model, in which the TSO is responsible for selecting and dispatching the capacity of all units taking part in balancing market. The balancing market in Poland covers the 400 kV and 220 kV transmission networks, connection points for centrally dispatched units to the 110 kV and distribution network and points in the distribution network to which units take part in balancing market. PSE uses the following types of reserves:

- Frequency Containment Reserve (FCR),
- Frequency Restoration Reserve with Automatic activation (aFRR),
- Frequency Restoration Reserve with Manual activation (mFRR) – (introduction since the 14.06.2024),
- Replacement Reserves (RR).

The reserves dimensioning in Poland is based on the probability of generation units outage, demand forecast uncertainty, historical values of needed reserves, maximum generation units size and for the downward reserve, maximum demand unit size (including HVDC connection with Sweden). The required reserves capacity, calculated as annual average, is as follows:

- FCR: +171 MW/ −171 MW,
- FRR27: +957 MW/ −593 MW,
  - including aFRR: +400 MW/ −400 MW,
- RR: +514 MW/ --

Each balancing service provider (BSP) should have at least one scheduling unit that actively participates in the balancing market (active scheduling unit) and a dedicated IT system used for the communication between BSP and TSO, e.g. to activate the balancing services. BSP provides balancing services through the scheduling units.

The evaluation of the provisions of balancing services pursuant to Article 18(5)(f) of EB regulation is performed based on the real-time measurements.

PSE uses standard aFRR, mFRR and RR products within the meaning of EB Regulation. Since the accession to the PICASSO platform (11.07.2025) aFRR product is activated via European platform for the exchange of balancing energy from aFRR, while mFRR and RR are activated locally based on the integrated scheduling process bids submitted by BSPs. Additionally, currently PSE uses local FCR product.

Each BRP is obliged to deliver information to the TSO about the energy contracts concluded at the passive scheduling unit level with other BRPs. The measurement data for each BRP's passive scheduling unit is provided by measurement operators.

One imbalance price is determined for the whole scheduling area; therefore, the imbalance price area is equal to the scheduling area.

26 Including the rules for suspension and restoration of market activities, in accordance with Article 36 of the EB Regulation, and the rules for settlement in case of market suspension pursuant to Article 39 of Regulation (EU) 2017/2196 once approved, in accordance with Article 4 of the EB Regulation.

27 PSE does not have the separate demand for mFRR capacity, that's why PSE calculates demand for total FRR capacity and minimal value of aFRR capacity. The rest of FRR capacity (above the minimal aFRR value) may be covered by both reserves (aFRR and mFRR) depending on the price offer competition of these reserves.
FRR (aFRR + mFRR): is dimensioned as maximum power of the the largest generating resource (positive dimensioning incident) and of the largest load resource (negative dimensioning incident) in the Polish Power System.

The integrated scheduling process in Poland starts in the day-ahead timeframe and the integrated scheduling process bids are submitted by BSPs no later than by 14:30 the day before the electricity supply. Submission of integrated scheduling process bid for whole available capacity is mandatory for all centrally dispatched generation units. Integrated scheduling process bids submitted in the day-ahead market horizon may be corrected in the intra-day balancing process till h-0:55 before trading hour.

The settlements of balancing services and imbalance energy are performed for each decade of the month. Preliminary settlements data are available on day d+1, while final ones on day d+4. Settlements correction is possible in the following months: m+2, m+4, m+8, m+15.

e // General information about the market size: number of BSP(s), BRP(s), information about historical/new market players, DSR/RES/Batteries participation.

| Market participant | Number of market participants in 2024 | Number of market participants in 2025 |
|---|---|---|
| **BSP (DUB)** | 13 entities (total number of entities)<br>97 active scheduling units (total number of units) | 14 entities (total number of entities)<br>100 active scheduling units (total number of units) |
| **BRP (POB)** | 158 entities<br>234 passive scheduling units | 181 entities<br>266 passive scheduling units |
| **DSR** | 0 | 0 |
| **Storage** | 2 entities<br>18 active scheduling units | 2 entities<br>18 active scheduling units |
| **RES** | 0 | 0 |

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | Not connected – platform phase-out | N/A |
| **aFRR platform** | Already connected | N/A |
| **mFRR platform** | Accession planned in late 2026 | Changes in internal balancing market process |
| **IN-Platform** | Already connected | |

At this moment, PSE does not plan to join any balancing capacity cooperations.

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | New T&Cs facilitating participation of RES, DSR, and storage in the balancing market were approved and entered into force in June 2024. |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.2 // If response to Q2 is "yes", what were the main results? | Standard balancing energy products for aFRR, mFRR, and RR have been implemented in the Polish balancing market since June 2024. |
| **Q3: Do you procure a standard product for balancing capacity?** | **Yes** |
| **Q4: What are the main characteristics?** | **Standard balancing capacity products as defined in the EB Regulation:**<br>› **aFRR (upward and downward)**<br>› **mFRR (upward and downward)**<br>› **RR (upward and downward[28])** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **No** |
| 5.1 // If response to Q5 is "no", why? | Very high uncertainty regarding available transmission capacity and lack of an efficient mechanism to allocate transmission capacity between energy and capacity products |
| 5.2 // If response to Q5 is "yes", what were the main results? | N/A |
| **Q6: Are you already involved in a BCC as a member or observer?** | **No** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| **Content** | Groundbreaking balancing market reform, which entered into force on 14 June 2024 |
| **Evolution of the T&Cs for BRP** | |
| **Content (see below)** | Groundbreaking balancing market reform, which entered into force on 14 June 2024 |

28 Only under special conditions, as defined in the national T&Cs 7.1 (4.3).

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | |
| **Q2: Has your TSO made use of additional components pursuant to Article 9 (6) of the ISHM as of January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Implemented[29] |
| 2.2 // Incentivising component? | Implemented |
| 2.3 // Component related to financial neutrality of the TSO? | Financial neutrality is ensured in transmission tariff |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### 1 // Analysis of the dimensioning of reserve capacity, including the justification and explanation for the calculated reserve capacity requirements, in accordance with Article 60(2)(b) of the EB Regulation.

Reserves dimensioning is based on the probability of generation unit outage, demand forecast uncertainty, historically required reserve volumes, maximum generation unit size, and, for the downward reserve, maximum demand unit size (including HVDC connection with Sweden). The availability of reserves is monitored constantly, looking 10 days in advance. The required level is expressed as a percentage of forecasted demand, and it decreases as it approaches real time. Currently, required values are calculated according to the national T&Cs for balancing, as defined under paragraph 7.1.(4).

The total required reserve capacity consists of FCR, aFRR, and mFRR, and is padded to the total required value by RR. Values of reserves are mentioned under point 1. d) above.

### 2 // Analysis of the optimal provision of reserve capacity, including the justification of the volume of balancing capacity in accordance with Article 60(2)(c) of the EB Regulation

The volume of balancing capacity procured by PSE is determined in a riskbased manner and reflects the operational needs of the Polish power system (KSE), in particular the probability and consequences of outages of generating units, forecast uncertainties, and the size of dimensioning incidents. The adopted approach aims to ensure operational security while keeping the total balancing costs efficient and avoiding unnecessary early blocking of market participants' resources.

Procurement is carried out close to real time (D1), which enables daily adjustment of required volumes to the current system conditions (e.g. expected demand level, generation availability, network constraints, and anticipated adequacy margins). This procurement timing improves the accuracy of reserve needs and limits the need for conservative, long-horizon buffers.

PSE applies a layered reserve structure (FCR, aFRR, mFRR, and RR), where the total required reserve capacity is met by combining products with different response characteristics. The possibility of covering reserve demand through different products and the substitution of reserves supports economically efficient fulfilment of the overall requirement.

29 The scarcity component is included in the local balancing energy price, and the incentive component is directly used to calculate the imbalance price

The optimal provision is further supported by the cooptimisation of energy and reserves within the integrated scheduling process under the central dispatching model. Cooptimisation ensures that reserve procurement and energy dispatch are determined consistently, considering operational security limits and network constraints, and allowing for the efficient allocation of available resources between energy delivery and reserve availability.

As a result, the procured balancing capacity volumes are justified by the current risk profile of the system and are secured in a manner that balances security and efficiency, i.e. ensuring adequate reserves for credible incidents while limiting unnecessary procurement and preserving flexibility for market participants.

## 3 // Analysis of the opportunities for the exchange of balancing capacity and sharing of reserves in accordance with Article 60(2)e of the EB Regulation

Currently, PSE does not see a feasible or efficient pathway to engage in balancing capacity exchange or reserve sharing, mainly due to:

- Very high uncertainty regarding available transmission capacity in the relevant time frames; and
- Lack of an efficient mechanism to allocate transmission capacity between energy and capacity products.

These factors prevent predictable, reliable, and costeffective crossborder capacity arrangements.

Moreover:

- Reserving scarce CZC for capacity products could unduly constrain realtime congestion management and reduce PSE's flexibility during disturbances.
- Without a robust, transparent cooptimisation between energy and capacity usage of the interconnectors, capacity reservations may unjustifiably limit dayahead/intraday trades and create unpriced opportunity costs.
- Heterogeneous product definitions, timings, and activation logics across borders still complicate efficient, routine TSO–TSO cooperation for capacity products.

However, even without sharing reserves if needed for system security, PSE may still provide energy to neighbouring TSOs through operational, emergencytype measures (e.g., agreed supportive power/emergency deliveries). These are ad hoc operational tools, not marketbased exchanges of balancing capacity.

## 4 // An explanation and a justification for the procurement of balancing capacity without the exchange of balancing capacity or sharing of reserves in accordance with Article 60(2)f of the EB Regulation

- **Security-first:** Procuring **balancing capacity domestically** ensures firm, controllable access to reserves and avoids dependence on crossborder transmission availability that cannot be guaranteed with sufficient firmness in the procurement horizon.
- **Costeffectiveness under uncertainty:** In the absence of an **efficient allocation mechanism** between **energy** and **capacity,** usage of CZC for crossborder capacity procurement can raise total balancing costs without equivalent reliability benefits.
- **Market integrity:** Not reserving interconnector capacity for capacity products supports liquidity and efficient price formation in the **dayahead** and **intraday** markets, in line with the EB Regulation's principle that balancing implementation must not compromise forward/DA/ID market development.
- **Proportionality and transparency:** Given today's technical and market constraints, a domestic procurement model is a **proportionate** and **transparent** approach to meeting reserve requirements while respecting EB Regulation objectives (competition, efficiency, security).

# 7.18 Portugal (Rede Eléctrica Nacional S.A.)

## 1 // Introduction

REN – Rede Eléctrica Nacional, S.A. (REN) is the sole TSO in Portugal, managing one LFC area, which geographically overlaps with the scheduling area, BZ, imbalance price area, and monitoring area. The Portuguese LFC area is part of the CE SA and the South-West Europe CCR.

The detailed TSO report on balancing, according to Article 60 of the EB Regulation, is available in Portuguese **here**.

The market design is based on a self-dispatch model. In 2025, the procured reserves and energy used for balancing in the Portuguese LFC area were secondary regulation, which will be replaced by the aFRR standard product, mFRR, and RR.

The rules for pricing and evaluation of balancing energy and reserve bids, the subsequent evaluation of balancing services, the rules for operating as a BSP in Portugal, and the type of reserves and settlement for BSPs, are set by the Manual de Procedimentos da Gestão Global do Sistema do setor elétrico (MPGGS), approved by the Entidade Reguladora dos Serviços Energéticos (ERSE), the Portuguese NRA.

The T&Cs defined in Article 18 of the EB Regulation were approved by ERSE in September 2025. In relation to settlement and invoicing, it takes place after the balancing service evaluation period, followed by an appeal period, and is REN's responsibility.

The MPGGS defines the technical requirements for balancing services and the possibilities and conditions for aggregation. The consequences of non-compliance are also described. If a BSP fails to provide the contracted balancing reserves, it will be subject to a penalty in the relevant settlement period. If the BSP fails to provide the balancing energy (aFRR and mFRR), it will be subject to penalties. If the BSP does not provide the balancing services according to the technical requirements established in the MPGGS, it may be suspended from the provision of any balancing services and subject to a set of pre-qualification tests to verify compliance.

BRPs are responsible for their imbalance, and they cannot transfer the imbalance responsibility to another BRP under contract. REN computes the imbalance position of each BRP, based on measured values for energy consumption, including losses, measured values of energy for production facilities, and contracted energy from organised markets, bilateral contracts, and balancing services. REN defines the financial value for the imbalance of each BRP, based on the imbalance position of each BRP and the overcost associated with the activations in the balancing market. Tariffs cover the administrative costs of balancing. Regarding imbalance settlement, balancing capacity costs, technical restrictions, and other costs, economic neutrality is guaranteed. No exemption is in place regarding the publication of bids (price and quantity) of balancing energy or capacity, in accordance with Article 12(4).

In the Portuguese system, there are 29 BSPs and 43 BRPs. In recent years, we have observed a steady increase in the participation of RES in balancing markets, and, more recently, battery storage systems have also started to enter these markets. By contrast, the participation of DSR remains very limited.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | Connected to the platform from 29 September 2020 until 30 December 2025 | Not applicable |
| **aFRR platform** | Accession planned for October 2026 | Not applicable |
| **mFRR platform** | Connected to the platform since 27 November 2024 | Not applicable |
| **IN-Platform** | Connected to the platform since 16 December 2020 | Not applicable |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **Name and objective of the cooperation** | Not applicable | Not applicable |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 //If response to Q1 is "yes", what were the main results"? | A significant increase in RES participating in balancing markets |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.1 // If response to Q2 is "yes", what were the main results? | Compatibility with the European balancing platforms and allowing BSPs from Portugal to provide standard products |
| **Q3: Do you procure a standard product for balancing capacity?** | **No** |
| **Q4: What are the main characteristics?** | |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **No** |
| **Q6: Are you already involved in a BCC as a member or observer?** | **No** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| **Pre-qualification process (simpler, including product verification), applying standard energy products for BSPs** | Approved in September 2025 |
| **Evolution of the T&Cs for BRP** | |
| | Not submitted |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | |
| **Q2: Has your TSO made use of additional components pursuant to Article 9 (6) of the ISHM as of 1 January 2024?** | **No** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Not considered |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **Yes** |
| 3.1 // Condition (a) | Implemented |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Dimensioning and balancing capacity procurement in accordance with Articles 60(2)(b), 60(2)(c), 60(2)(e), and 60(2)(f)

We are preparing to submit the methodology for the dimensioning of aFRR and mFRR balancing capacity to our NRA for approval.

### Specific products in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d)

In Portugal, there is a specific product for mFRR balancing capacity, which was implemented in April 2024.

### Assessment of sharing/exchange of reserves

Not applicable

# 7.19 Romania (National Power Grid Company Transelectrica S.A)

## 1 // Introduction

In adherence with Commission Regulation (EU) 2017/2195 of 23 November 2017, which establishes a guideline on electricity balancing, this report provides an overview of the Romanian electricity balancing framework managed by C.N.T.E.E. Transelectrica S.A., the national TSO. The Romanian power system operates within the Continental Europe SA and consists of a single LFC area, which also represents the national scheduling area, imbalance area, and BZ.

The Romanian electricity market operates based on a self-dispatch model, where market participants are responsible for scheduling their generation and consumption, while Transelectrica ensures real-time system balancing and frequency stability. In recent years, significant progress has been made in aligning the national balancing framework with the requirements of European legislation, particularly with regard to the implementation of standard balancing products and harmonised balancing market rules.

The T&Cs for BSPs and BRPs were developed in accordance with the provisions of the EB Regulation and approved by the Romanian NRA (ANRE). These terms entered into force on 1 June 2024, replacing the previously applicable regulatory framework established through ANRE Orders No. 61/2020 for BSPs and No. 213/2020 for BRPs.

The approved framework defines the rights and obligations of market participants in the balancing market, including requirements for participation in the centralised balancing market, rules governing balancing energy bids, and the responsibilities of BRPs regarding imbalance settlement. The regulatory framework also establishes the principles governing the activation and settlement of balancing energy and the financial interactions between Transelectrica and market participants.

Further details regarding the applicable T&Cs can be accessed **here**.

The Romanian balancing framework ensures transparent and non-discriminatory mechanisms for the procurement and activation of balancing energy, supporting the efficient management of system imbalances and the restoration of system frequency. Financial settlements include payments for activated upward and downward balancing energy, as well as charges associated with imbalance positions of BRPs.

The costs associated with balancing capacity procurement are recovered through regulated system tariffs, ensuring the financial sustainability of the balancing mechanism and the secure operation of the power system.

Transelectrica remains committed to the continued implementation of European electricity balancing regulations and to the progressive integration of the Romanian balancing market with the European balancing platforms, contributing to a more efficient, competitive, and secure electricity market within the European Union.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | Isolated TSO | N/A |
| **aFRR platform** | 2026, after MAVIR accession (sharing ATC is not possible)<br>Till then, isolated TSO | 24 July 2024, new SCADA system and local platform have been developed. Local go-live of the two systems took place in June 2024. |
| **mFRR platform** | 2026, after MAVIR accession (sharing ATC is not possible)<br>Till then, isolated TSO<br>Currently, we have started to test the ECP, and real-time communication is being configured. | 24 July 2024, new local BM platform was developed. Local "go-live took place in June 2024 |
| **IN-Platform** | Status – connected | |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | Currently, we have storage facilities as reserve-providing units, and they are working very well. The activation is just for local purposes, but they will participate in European balancing platforms once our connection is settled. |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.2 // If response to Q2 is "yes", what were the main results? | N/A |
| **Q3: Do you procure a standard product for balancing capacity?** | **Yes** |
| **Q4: What are the main characteristics?** | **According to ACER decision nr. 11/2020** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **No** |
| 5.1 // If response to Q5 is "no", why? | Not interested at the moment |
| 5.2 // If response to Q5 is "yes", what were the main results? | N/A |
| **Q6: Are you already involved in a BCC as a member or observer?** | **No** |

3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| **Content** | Approved 1 October 2022 |
| **Evolution of the T&Cs for BRP** | |
| **Content (see below)** | Approved 1 October 2022 |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | |
| **Q2: Has your TSO made use of additional components pursuant to Article 9 (6) of the ISHM as of 1 January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Not considered |
| 2.3 // Component related to financial neutrality of the TSO? | Implemented |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **Yes** |
| 3.1 // Condition (a) | Implemented |
| 3.2 // Condition (b) | Implemented |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

In accordance with Article 60 (2) of Commission Regulation (EU) 2017/2195, Transelectrica regularly performs analyses regarding the dimensioning of reserves, the procurement and activation of balancing capacity, the potential use of specific balancing products, and potential exchange or sharing of balancing reserves with other TSOs.

Following the entry into force on 1 June 2024 of the T&Cs for BSPs and BRPs, the Romanian balancing market operates based on standard balancing energy products aligned with the provisions of the EB Regulation. These products ensure a harmonised framework for the procurement and activation of balancing energy within the Romanian LFC area, while maintaining compatibility with the future integration into European balancing platforms.

At present, Transelectrica does not utilise specific balancing products beyond the standard products defined under the EB Regulation framework. The current market design has proven adequate to ensure the secure and efficient balancing of the Romanian power system.

With regard to the assessment of the potential sharing or exchange of balancing reserves, the topic continues to be monitored within the broader context of regional cooperation and European market integration. However, no operational implementation has been identified as necessary so far, and Romania currently manages balancing reserves independently within the national LFC area.

Transelectrica remains committed to continuously evaluating the evolution of the European balancing framework and to adapting the national balancing mechanisms when required, in order to ensure the efficient operation of the power system and the progressive integration of the Romanian balancing market into the European balancing platforms.

# 7.20 Serbia (Elektromreža Srbije)

## 1 // Introduction

Please see the national TSO report on balancing (from which the current executive summary is provided) here and the current version of the national T&Cs.

The Serbian TSO, EMS (Elektromreža Srbije), operates as a core utility within the Continental Europe SA. Under this framework, EMS manages the specific Serbia LFC area, scheduling area, imbalance area, and BZ. Regionally, EMS coordinates closely with neighbouring grid operators as part of the SMM (Serbia, Montenegro, and North Macedonia) LFC block to ensure system frequency stability and seamless cross-border market scheduling.

EMS operates in a self-dispatch model, and uses the following types of reserve to balance the system: FCR (+/−39 MW), aFRR (+/−70 MW), and mFRR (+300, −135 MW).

Within the EMS bidding zone, market participation is expanding, with one active BSP and 63 active BRPs. The grid currently supports 789.96 MW of installed wind generation capacity at the transmission system level.

The market has shifted away from the exclusive role of the public utility (EPS) to a model where private investors, such as large wind farms, actively bear full financial balance responsibility. Driven by new regulations, this rapid growth in RES is accompanied by the introduction of the country's first commercial BESS. Simultaneously, DSR is advancing through licensed aggregators, enabling industrial consumers to actively participate in national grid balancing.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | Not a member | Platform shut down |
| **aFRR platform** | Not a member | Technical and market preparation |
| **mFRR platform** | Not a member | Technical and market preparation. EMS is currently an observer to the platform. |
| **IN-Platform** | Participating member since October 2022 | – |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **Sharing reserves within the SMM LFC block** | Member | EMS has implemented joint FRR dimensioning inside the SMM LFC block in accordance with the SMM LFC block agreement. |
| **Exchange of cross-border mFRR** | Member | EMS and CGES, EMS and NOSBiH, and EMS and HOPS have signed an agreement for cross-border exchange of mFRR bilaterally. |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Partially** |
| 1.1 // If response to Q1 is "no", why? | The legal conditions are met, but the technical implementation is related to the broader plan of joining European platforms. |
| 1.2 //If response to Q1 is "yes", what were the main results"? | EMS Joint Steering Committee (JSC) made expected changes in legislation, changed the market code, and adopted the EB Regulation. |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Partially** |
| 2.1 // If response to Q2 is "no", why? | Standard products are introduced in a process for transposition EIP. |
| 2.2 // If response to Q2 is "yes", what were the main results? | EMS JSC made expected changes in legislation, changed the market code, and adopted the EB Regulation. The main results are 15-minute activation and ISP. |
| **Q3: Do you procure a standard product for balancing capacity?** | **No, by means of the defined standard balancing product in the EBGL.** |
| **Q4: What are the main characteristics?** | **No, by means of the defined standard balancing product in EBGL. EMS JSC made expected changes in legislation, changed the market code, and adopted the EB Regulation. The main results are 15-minute activation and ISP.** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **Yes** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | EMS has implemented joint FRR dimensioning inside the SMM LFC block in accordance with the SMM LFC block agreement. |
| **Q6: Are you already involved in a BCC as a member or observer?** | **Member/Observer/No** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| **Content**<br>**New market code is introduced, in which we changed ISP to 15 minutes, opened market for balancing capacities (transfer from regulated prices), and opened market for aggregators, DSR, and storage. A negative market price was also introduced.** | Approved in December 2025 |
| **Evolution of the T&Cs for BRP** | |
| **Content (see below)**<br>**The main characteristics are the introduction of the 15-minute BSP and dual balance responsibility to decouple standard supplier responsibility from responsibility of BSP for engagement of balancing resources.** | Approved in December 2025 |

wEvolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented from 1 January 2025** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | Date |
| **Q2: Has your TSO made use of additional components pursuant to Article 9(6) of the ISHM as of 1 January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Implemented |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Dimensioning and balancing capacity procurement in accordance with Articles 60(2)(b), 60(2)(c), 60(2)(e), and 60(2)(f)

Regarding the FCR, every year ENTSO-E evaluates and publishes the value for the primary reserve for different LFC areas. The technical characteristics of the FCR and the operational requirements that must be met by the producers participating in the FCR are defined in the grid rules. The balancing capacity and balancing energy from FCR units are not the subject of financial settlement between the BSP and the TSO.

Based on a statistical analysis of average LFC area imbalance values over the previous 12 months, combined with a deterministic aFRR dimensioning process, it was concluded that the required amount of aFRR for Serbia was ±70 MW.

The dimensioning of mFRR considered both the reference incident values for the LFC control block SMM – 492 MW in the positive direction and 256 MW in the negative direction – and the SMM LFC block agreement. Thus, the amount of mFRR for Serbia in 2025 was 300 MW in the positive direction and 135 MW in the negative direction.

### Assessment of sharing/exchange of reserves

Serbia is already making maximum use of sharing within the SMM block and IGCC, while a technical and time-bound integration plan has been set for exchange with the other EU platforms.

### Specific products in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d)

No specific products are defined that would distort competition, negatively impact the integration of balancing markets, or have side effects in other markets. However, balancing entities have their own characteristics, but only mFRR and aFRR are used.

# 7.21 Slovak Republic (Slovenská elektrizačná prenosová sústava a.s.)

## 1 // Introduction

The national TSO report is published on the SEPS website (available here).

As the only TSO in the defined area of Slovakia, SEPS consists of one LFC area, which geographically overlaps with the scheduling area and BZ. The Slovak LFC area is part of the Continental Europe SA and the Core CCR.

SEPS employs the self-dispatch model. Balancing reserves are procured from the BSPs, who comply with the criteria set by the national T&Cs[30] and the Operational Handbook (available here). Technical requirements on balancing services and non-frequency ancillary services are outlined in Document B of the T&Cs (available here). T&Cs are approved by the NRA (Úrad pre reguláciu sieťových odvetví).

Until its connection to European platforms for the exchange of balancing energy, SEPS used only specific balancing capacity and balancing energy products (see Chapter 4.2). Following the connection, SEPS uses standard aFRR and mFRR products except for the specific mFRR product with a three-minute FAT. The use of a special product by SEPS for 2025 was approved by the Regulatory Authority Decision No 0006/2024/E-EU.

Dimensioning of reserve capacity is determined by the SOGL and further specified in the SAFA for the RG CE. The determination of the required volumes of balancing capacity is subject to the methodology for determining the required volume of individual types of ancillary services, as described in Chapter 3 of Document F of the T&Cs (available here).

Average values of required balancing capacity per type of product for 2024 and 2025 are shown in the table below.

| | FCR +/– | aFRR+ | aFRR– | mFRR+ | mFRR– | mFRR3+ | mFRR3– |
|---|---|---|---|---|---|---|---|
| **2024** | 28 | 125 | 125 | 150 | 130 | 360 | 30 |
| **2025** | 29 | 128 | 135 | 220 | 130 | 360 | 30 |

There were 32 registered BSPs in 2024 and 31 BSPs in 2025. The number of BRPs in 2024 was 113.

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | N/A | N/A |
| **aFRR platform** | Connected (5 November 2024) | N/A |
| **mFRR platform** | Connected (3 December 2024) | N/A |
| **IN-Platform** | Connected (May 2020) | N/A |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **FCR cooperation** | Observer | Not earlier than Q4 2027 |

30 https://www.sepsas.sk/legislativa/technicke-podmienky/.

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 // If response to Q1 is "yes", what were the main results"? | Changes introduced to the T&Cs have led to an increase in the number of BSPs from BESS.<br>Demand has already been participating in balancing services provision (mFRR). |
| **Q2: Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.2 //If response to Q2 is "yes", what were the main results? | Standard products are fully adopted and used. |
| **Q3: Do you procure a standard product for balancing capacity?** | **Yes (aFRR+, aFRR−, mFRR+, mFRR−)** |
| **Q4: What are the main characteristics?** | **Reserves were procured in a yearly tender, monthly tenders, and daily tenders in 2024 and 2025.**<br>**In yearly and monthly tenders, up to 60 % of standard products and 70 % of all products are procured. The remaining reserves are procured on a daily basis.**<br>**For 2026, the yearly tender will be replaced by two six-month tenders.** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **Yes** |
| 5.1 // If response to Q5 is "no", why? | N/A |
| 5.2 // If response to Q5 is "yes", what were the main results? | Membership in FCR cooperation is being assessed. |
| **Q6: Are you already involved in a BCC as a member or observer?** | **Observer** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| | |
|---|---|
| **Evolution of the T&Cs for BSP** | |
| **Change in the calculation of the settlement price for imbalances to better reflect the costs of BE** | Approved (September 2025) |
| **Evolution of the T&Cs for BRP** | |
| **Measures to prevent high settlement price of imbalance for MTUs without BE activation** | Approved ( July 2025) |
| **Change in the calculation of the settlement price of imbalance** | Approved (October 2025) |
| **Change in the calculation of the share of balancing energy costs** | Approved (October 2025) |
| **Change in minimum collateral requirements** | Approved (December 2025) |

Imbalance settlement is carried out by OKTE, a subsidiary of SEPS. The settlement period is 15 minutes. In Slovakia, single imbalance pricing is implemented. BRPs are incentivised to balance the system and receive payments for maintaining imbalance in the opposite direction of system imbalance.

The system imbalance price is defined as the maximum or minimum price of the predominant (non-zero) balancing energy activated for SEPS within the ISP. Calculation of the imbalance settlement price includes other variables affecting the resulting price for BRPs, for example, prices for the day-ahead market, intraday market, and intraday auctions.

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | N/A |
| **Q2: Has your TSO made use of additional components pursuant to Article 9 (6) of the ISHM as of 1 January 2024?** | **Yes** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Yes |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Types of products

SEPS has used standard aFRR products since the connection to the PICASSO platform on 5 November 2024, and mFRR products since the connection to the MARI platform on 3 December 2024.

The exceptions are the special products mFRR3+ and mFRR3– (three-minute FAT), which are activated as a rapid response service in the event of outages of large generation units and to address major demand outages within Slovakia, or even within the continental EU, and for emergency supply purposes.

As shown in the graph below, aFRR accounts for the majority of activated balancing energy. A notable feature of 2024 was the high volume of exported emergency supply, which was provided specifically by mFRR3+.

Considering how mFRR3 is used and its share of the total supply of balancing energy, it can be concluded that mFRR3 does not have a negative impact on competition, nor does it distort it to any significant extent.

### Dimensioning and procurement of reserves

Operational experience in 2024 and 2025 shows that under normal operating conditions, the required volumes of balancing services are set sufficiently to ensure the safe and reliable operation of the Slovak power system.

Procurement of reserves was carried out without the exchange of balancing capacities or the sharing of reserves. There were three types of tenders: yearly, monthly, and daily. The organisation of yearly and monthly tenders was approved by the NRA. In accordance with Article 6 of Regulation (EU) 2019/943 on the internal market for electricity, the derogation allowed SEPS to conclude contracts more than one day before the provision of balancing capacity and to procure up to 60 % of standard balancing products and 70 % of all products more than one day before the provision of balancing capacity. Tenders were organised to optimise costs while maintaining a high level of system operation and safety.

Based on the resulting values from the assessment of the quality of regulation under Article 131 of the SO Regulation, it can be concluded that a high standard of regulation was achieved in 2024 and 2025, with a very low number of exceedances of the limit – well below the maximum allowable levels.

| | SEPS limit for the number of intervals | Number of intervals with exceeding values 2024 | Number of intervals with exceeding values 2025 |
|---|---|---|---|
| **Level 1** | 10,512 | 170 | 50* |
| **Level 2** | 1,752 | 17 | 8* |

* preliminary values

### Exchange and sharing of reserves

SEPS is exploring opportunities to participate in existing reserve sharing/exchange projects and, as of 1 February 2023, has observer status in the Western European/regional FCR cooperation project, where it gathers technical and economic details on procurement processes on the platform.

Based on internal analysis and current developments in the FCR cooperation, SEPS has postponed the planned connection to the FCR cooperation to no earlier than the fourth quarter of 2027. A review of the accession will be carried out in the first quarter of 2026. In this context, SEPS has analysed all aspects necessary for achieving full SEPS membership in the FCR cooperation.

# 7.22 Slovenia (ELES Ltd. Electricity Transmission System Operator)

## 1 // Introduction

- TSO report on balancing
- Current version of the national T&Cs for BSP: www.eles.si and BSP: www.borzen.si
- Geographical scope:
  - LFC block = Slovenia, Croatia, and Bosnia and Herzegovina
  - LFC area = Slovenia
  - Scheduling area = BZ = imbalance price area = Slovenia
- General information about market design and reserve dimensioning:
  - Self-dispatch model
  - Types of reserve used to balance the system: FCR, aFRR, and mFRR
  - Dimensioning for 2024:
    - FCR = ±14 MW symmetrical product
    - aFRR = ±60 MW separated per positive and negative direction
    - mFRR = 190 MW positive direction, 48 MW negative direction
  - Dimensioning for 2025
    - FCR = ±14 MW symmetrical product
    - aFRR= ±60 MW separated per positive and negative direction
    - mFRR = 190 MW positive direction, 66 MW negative direction
  - Specific requirements defined in the T&Cs for BSP/BRP[31] according to Articles 18(5–7) (information or requirement on unused capacity, requirements with regard to the BRP position, etc.): N/A
- General information about the market size in 2025:
  - Number of BSP(s): Two for FCR, four for aFRR, five and six for positive and negative mFRR, respectively
  - Number of BRP(s): Approximately 41
  - Information about historical/new market players: N/A
  - DSR/RES/batteries participation: Provide aFRR and/or mFRR reserves

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | N/A | |
| **aFRR platform** | July 2026 | › Local implementation of IT tools needed to be used after connection to the platforms, e.g. balancing energy settlement tool, local IT solution to be used to connect to platforms, management of balancing energy bids, etc.<br>› Implementation of requirements defined in T&Cs for BSPs by local BSPs |
| **mFRR platform** | July 2026 | › Local implementation of IT tools needed to be used after connection to the platforms, e.g. balancing energy settlement tool, local IT solution to be used to connect to platforms, management of balancing energy bids, etc.<br>› Implementation of requirements defined in T&Cs for BSPs by local BSPs |
| **IN-Platform** | Connected 1 February 2019 | |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **FCR cooperation** | Participating TSO | Not applicable |

31 Including the rules for suspension and restoration of market activities, in accordance with Article 36 of the EB Regulation, and the rules for settlement in case of market suspension pursuant to Article 39 of Regulation (EU) 2017/2196 once approved, in accordance with Article 4 of the EB Regulation.

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the Future

| Evolution of the T&Cs for BSP | |
|---|---|
| **T&Cs for BSP** | Approved by NRA on 6 July 2023. Current valid T&Cs for BSPs. |

### Evolution of the T&Cs for BRP

According to Slovenian legislation, imbalance settlement responsibility is awarded to market operator Borzen, which is responsible for developing T&Cs for BRPs. This process guarantees the financial neutrality of a TSO regarding the procurement of balancing energy.

The requirements of ISHM have been implemented. The ISP is 15 minutes. If a TSO's financial neutrality cannot be guaranteed, additional components pursuant to the ISHM may be applied, including dual pricing. In the reporting period, no additional components or dual pricing mechanisms were used.

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Dimensioning and balancing capacity procurement in accordance with Articles 60(2)(b), 60(2)(c), 60(2)(e), and 60(2)(f)

The dimensioning of reserve capacity is carried out commonly within the LFC control block of Slovenia, Croatia, and Bosnia and Herzegovina (SHB LFC block). Reserve capacity requirements are dimensioned based on operational experiences, taking into account the technical requirements defined in the ENTSO-E Operational Handbook for Continental Europe, the SAFA, the SO Regulation, the EB Regulation, and provisions defined in the Operational Agreement of the SHB LFC block, which, among other things, defines the T&Cs for the common dimensioning of reserves.

Based on a statistical analysis of differences between one-minute and 15-minute average values of the LFC area imbalance over the previous 12 months, combined with a deterministic aFRR dimensioning process, it was concluded that the required aFRR volume for Slovenia was ±60 MW in both 2024 and 2025.

The dimensioning of mFRR considered both the reference incident values for the SHB LFC control block – 696 MW in the positive direction and 220 MW in the negative direction — and the SHB LFC block agreement. Thus, the amount of mFRR for Slovenia was 190 MW in the positive direction and 48 MW in the negative direction for 2024 and 190 MW in the positive direction and 66 MW in the negative direction for 2025.

Procurement of reserve capacity was local; no exchange of balancing capacity or common procurement was applied, as ELES does not participate in any balancing capacity cooperation.

The costs of reserve capacity procurement are reimbursed to ELES through grid tariffs; no additional mechanism is in place to settle the procurement costs of balancing capacity, in accordance with Article 44(3) of the EB Regulation.

### Specific products in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d)

No specific products were used in 2024 or 2025; therefore, no information on procured or used specific product volumes is available. Until the go-live of balancing platforms in accordance with EB Regulation Articles 19(5), 20(6), and 21(6), ELES cannot provide justification that standard balancing energy products are insufficient to ensure operational security and maintain the system balance efficiently, as no specific products are currently being used.

According to the T&Cs for BSP, demand response and RES participate in the balancing market on an equal basis with other sources. No specific products are defined that would distort competition, negatively impact the integration of balancing markets, or have side effects in other markets.

Due to the limited liquidity of the balancing capacity market, dimensioned volumes of reserves were procured using LT contracts, yearly and monthly auctions, and daily auctions during the reporting period.

The market size for aFRR and mFRR slightly increased, as two additional BSPs entered the market for each service compared to previous years.

# 7.23 Spain (Red Eléctrica de España S.A.U)

## 1 // Introduction

In accordance with Article 60 of Commission Regulation (EU) 2017/2195 of 23 November 2017 establishing a guideline on electricity balancing (the EB Regulation), at least once every two years, each TSO shall publish a report on balancing covering the previous two calendar years. Thus, this Spanish EB Regulation report[32] describes the main actions that are being taken to adapt the Spanish electrical system to the EB Regulation in the period May 2024–May 2026.

The main achievements during 2024–2026 regarding the EB Regulation in the Spanish system are as follows:

- On 19 November 2024, the Spanish electrical system implemented a new secondary regulation service (SRS), replacing the previous pro rata aFRR activation scheme and harmonising national processes towards European aFRR balancing standard requirements. This preparatory phase before the PICASSO connection included redesigning control systems and adapting market interfaces.
- Evolution of ISP from one hour to 15 minutes occurred in December 2024 (derogation granted until 1 January 2025).
- On 10 December 2024, the Spanish electrical system formally joined MARI, the European platform for exchanging balancing energy from mFRR, in accordance with the EB Regulation. On 17 December 2024, the first mFRR energy exchanges took place between the Spanish electrical system and the rest of the MARI TSOs. This accession enabled Spain to participate in cross-border mFRR exchanges with countries such as Austria, Czechia, Germany, Slovakia, and Portugal, marking a key milestone in EU electricity market integration (although France was initially not connected to MARI, it has been allowing cross-border mFRR interchanges between Iberian countries and Central Europe). Following its accession, the Spanish electrical system rapidly became one of the most active users of the MARI platform, contributing a significant volume of mFRR bids that increased liquidity on the platform.
- Red Eléctrica prepared its national IT platform, e.sios, for connecting to CMM in two phases. On 19 February 2025, Red Eléctrica successfully connected to CMM for RR and mFRR processes (Phase 1). In a second phase (not yet completed), Red Eléctrica foresees the extension of tools to support the aFRR/IGCC integration within CMM.
- On 17 June 2025, after enough experience was gained running the new SRS based on a local aFRR energy market, the Spanish peninsular power system successfully connected to the European aFRR balancing platform (PICASSO), marking the culmination of several years of regulatory, operational, and technical preparation. Prior to connection, extensive internal testing was conducted, as well as coordination with TransnetBW (the TSO in charge of the PICASSO/IGCC platforms) to secure an integration window. The connection to PICASSO enables the Spanish system to exchange aFRR balancing energy with other European systems based on a common European merit order for aFRR energy. The implications were significant: Spanish aFRR balancing bids now compete at the European level, access to cross-border flexibility has increased, and system operation has become more economically efficient due to Europe-wide optimisation, including the implicit netting of aFRR needs performed by the PICASSO algorithm. The SRS continues to run at the local level, regardless of whether it is connected to the PICASSO/IGCC processes. In the event of a temporary disconnection from PICASSO/IGCC, the corresponding correction signal (PICASSO/IGCC) is set to zero. Furthermore, in the event of a disconnection from PICASSO, the marginal prices applied every four seconds to activated aFRR energy revert from PICASSO prices to local prices.
- In 2025, the specific SRAD (*Servicio de Respuesta Activa de la Demanda*) product was modified as part of its progressive evolution towards standard balancing products. SRAD is a specific mFRR-type product aimed at demand units, with the objective of familiarising them with balancing services and enabling their progressive participation in standard products. The first auction following the modification of this service took place on 28 November 2025.

Regarding stakeholder engagement, several webinars have been organised in 2024–2026 to engage Spanish stakeholders in the EB Regulation roadmap, while updates have been published in the Spanish roadmap to give Spanish market participants the latest news about the status of various projects.

32 Link to the national TSO report on balancing (from which the current executive summary is provided).

In parallel, a review of the regulations applicable to the balance services of the Spanish electrical system is being carried out regarding the following topics:

- Adaptations of Spanish T&Cs for BSPs and BRPs according to Article 18 of the EB Regulation and Spanish Operating Procedures were approved in 2024 for the connection to MARI and PICASSO.
- Adaptation of the Operating Procedures for the amendment of SRAD took place in November 2025.

Some characteristics of the Spanish system are provided below:

- **Geographical scope of the Spanish system:**
  - The SA of the Spanish system is Continental Europe.
  - For the Spanish case, the following concepts are fully equivalent: LFC Spanish control block(s) = Spanish scheduling area(s) = Spanish imbalance area(s) = Spanish BZ(s) = Spanish imbalance price area(s).
- **General information about market design and reserve dimensioning:**
  - The Spanish system follows a self-dispatch model.
  - Types of reserve that are used to balance the system and dimensioning: standard aFRR reserve local procurement and specific mFRR upward reserve local procurement.
- **General information about the market size: number of BSP(s), BRP(s), information about historical/new market players, DSR/RES/batteries participation:**
  - Number of pre-qualified standard mFRR BSPs: 33 BSPs in Q1 2026
  - Number of pre-qualified aFRR BSPs: 31 BSPs in Q1 2026
  - Number of pre-qualified specific mFRR BSPs: 20 BSPs in Q1 2026
  - Number of BRPs (Q1 2024): 513

The following table shows the participation of RES units and demand in balancing (information updated in January 2026).

| | Installed power of pre-qualified units for mFRR (MW) | Power pre-qualified for aFRR (MW) | Total installed power (MW) |
|---|---|---|---|
| **Wind** | 22,568 | 6,625 | 32,118 |
| **CHP** | 586 | 279 | 4,478 |
| **Small hydro** | 245 | 245 | 2,138 |
| **Thermosolar** | 896 | 0 | 2,296 |

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | 3 March 2020 go-live | RR platform dismantled on 30 December 2025 |
| **aFRR platform** | 17 June 2025 go-live | |
| **mFRR platform** | 10 December 2024 go-live | |
| **IN-Platform** | 21 October 2020 go-live | |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Did you carry out regulatory and IT developments to allow demand, RES, and storage to participate in European balancing platforms?** | **Yes** |
| 1.1 // If response to Q1 is "no", why? | N/A |
| 1.2 //If response to Q1 is "yes", what were the main results"? | Since January 2021, demand scheduling units have been able to participate in different RR/mFRR/aFRR processes, subject to previous pre-qualification. A specific upward mFRR reserve product for demand BSP units was introduced in the Spanish system in 2022 to encourage demand units to become BSPs.<br>Regarding independent aggregation, the development of national regulations is making strong progress, with a high-level regulatory framework already approved.<br>RES units are already active in mFRR/aFRR processes, representing a significant contribution to balancing services in line with the high RES penetration in the Spanish system. RES units were also active in the RR process, which ceased to exist as a balancing process on 30 December 2025.<br>Storage unit provision is currently primarily focused on pumped hydro storage units. Other storage technologies are being implemented either stand-alone or hybridised, (combining generation, demand, and/or storage) to participate in balancing services. |
| **Q2:Did you carry out regulatory and IT developments for adopting standard energy products (aFRR, mFRR, RR balancing energy products) in your system?** | **Yes** |
| 2.1 // If response to Q2 is "no", why? | N/A |
| 2.2 // If response to Q2 is "yes", what were the main results? | The Spanish system is already active in all balancing platforms (mFRR, aFRR, IN, and the former RR process that ended on 30 December 2025). |
| **Q3: Do you procure a standard product for balancing capacity?** | **Yes** |
| **Q4: What are the main characteristics?** | **There is only one standard balancing capacity product in the Spanish system, namely aFRR.** |
| **Q5: Did you assess the potential for exchange of balancing capacities or sharing of reserve?** | **No** |
| 5.1 // If response to Q5 is "no", why? | Interconnection reinforcement is judged as a prerequisite for future sharing/exchange of reserves. |
| 5.2 // If response to Q5 is "yes", what were the main results? | N/A |
| **Q6: Are you already involved in a BCC as a member or observer?** | **No** |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| **Evolution of the T&Cs for BSP** | |
|---|---|
| **Content** | A proposal to modify the Spanish T&Cs on balancing according to Article 18 of the EB Regulation was sent by Red Eléctrica to the Spanish NRA (CNMC) on 31 October 2023. It was approved on 6 June 2024, after being adapted to the MARI and PICASSO platforms. Further adaptation of the T&Cs is currently being carried out to integrate independent aggregators as future demand-side BSPs.<br>Its main objective is to adapt the T&Cs to the participation of the Spanish electrical system in the European MARI and PICASSO platforms.<br>In addition, further T&C adaptations are being developed (for which a public consultation was held between 2 and 20 March 2026) to enable the future participation of independent aggregators in balancing services. |
| **Evolution of the T&Cs for BRP** | |
| **Content (see below)** | The same T&Cs apply for BRPs and BSPs (see above). |

Evolution of the T&Cs for BRP – "Content" should include, among other information, the following content as per Articles 52, 53, 54, and 55 of the EB Regulation:

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2024?** | **Exemption** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | 31 December 2024 |
| **Q2: Has your TSO made use of additional components pursuant to Article 9 (6) of the ISHM as of 1 January 2024?** | **No** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Not considered |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **Yes** |
| 3.1 // Condition (a) | Implemented |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Dimensioning and balancing capacity procurement in accordance with Articles 60(2)(b), 60(2)(c), 60(2)(e), and 60(2)(f)

Regarding reserve dimensioning, the Spanish system follows SO Regulation dimensioning requirements; further details can be found in the Spanish Operating Procedure 1.5.[33]

### Assessment of sharing/exchange of reserves

The analysis of opportunities for the exchange of balancing capacity and the sharing of reserves with other TSOs has yet to be completed, pending the improvement of interconnection capacity between Spain and France. REE is committed to further developing balancing capacity markets and assessing the opportunities and benefits of sharing reserves in accordance with regional methodologies.

### Specific products in accordance with Articles 26(1)(a)–(f), 60(2)(a), and 60(2)(d)

A specific mFRR product (SRAD) was introduced in 2022, focused on demand-side BSPs. In this context, a new Operating Procedure 7.5 was approved by the CNMC (Resolution of 19 October 2023) on the active demand response service, aimed at addressing situations of insufficient upward tertiary regulation reserves. The objective of this service is to obtain flexibility from the demand side for balancing purposes, without participating in standard balancing markets to date. This initiative enables the aggregated participation of demand through its supplier as a BSP, replacing previous schemes based on individual consumer demand response. As noted above, in 2025, the SRAD product was modified as part of its progressive evolution towards standard balancing products, including, for example, the update of the FAT to 12.5 minutes.

33 Available here.

# 7.24 Sweden (Affärsverket Svenska kraftnät)

## 1 // Introduction

Affärsverket Svenska kraftnät (hereafter Svenska kraftnät) is the Swedish TSO. The Swedish transmission system is a part of the Nordic SA, in which the Nordic TSOs cooperate both operationally and in the development of the balancing system. The Nordic TSOs (Svenska kraftnät, Fingrid, Energinet, and Statnett) have formed one common LFC block that corresponds to the Nordic SA (Sweden, Finland, East Denmark, and Norway). The LFC, scheduling, and monitoring areas are equal to the four bidding zones of Sweden (SE1, SE2, SE3, and SE4).

The market design is based on the self-dispatch model and the reserves used for balancing in the Nordic SA FCR and FRR, while RR are not used in the Nordic power system.

The Nordic TSOs define two types of FCR for the Nordic SA: FCR-N and FCR-D. FCR-D is used to mitigate the impact of incidental disturbances, including the reference incident, and FCR-D Up has been used for this purpose. FCR-D Down was first introduced on 30 December 2021. The current Nordic FRR market is strongly dominated by mFRR, where Svenska kraftnät is participating in the Nordic mFRR energy activation market with all other Nordic TSOs. The Nordic market closely resembles the European platform MARI, and the Nordic TSOs all plan to join MARI as a collective in Q1 2027. aFRR is used to a lesser degree and is under development, where procured volumes and contracted number of hours are constantly increasing. There is no energy activation market for aFRR in Sweden. Instead, all activation is done pro rata, based on the grid frequency. Sweden aims to be connected to the European platform PICASSO as of Q4 2027.

The market sizes for the different products are shown in Table 1 below, together with participating BSPs. The dimensioning is set on a Nordic level and then distributed among the four Nordic TSOs according to national shares. The number of BSPs participating in balancing reserves has more than doubled in the last four years across all the markets.

Currently, the main power source for ancillary services in Sweden is hydro, but there is growing interest among market participants to participate in (other) RES. In the mFRR down-regulation market, there is a substantial contribution from wind power producers. For FCR-D Down, there is significant interest from wind, but also solar power. Pre-qualification of batteries has seen the largest increase in volume in the last few years in both FCR and FRR markets. DSR is a large contributor, mainly for the up-regulation market.

| Reserve product | Nordic volume | National share | National requirement | Number of BSPs |
|---|---|---|---|---|
| **FCR-N** | 600 MW | 37.75% | 226 MW | 20 |
| **FCR-D Up** | Up to 1,450 MW | 37.75% | Up to 547 MW | 24 |
| **FCR-D Down** | Up to 1,400 MW | 37.75% | Up to 528 MW | 25 |
| **aFRR** | 250–325 MW | 38% | 97–124 MW | 5 |
| **mFRR** | – | – | Up to 1,300 MW | 24 |

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

| European balancing platform for the activation of balancing energy | Accession timeline and status of accession | Reasoning for derogation and status of the derogation (granted or not) |
|---|---|---|
| **RR platform** | N/A | N/A |
| **aFRR platform** | Q4 2027 | Derogation granted, but accession further delayed due to the development of the Nordic mFRR energy activation market |
| **mFRR platform** | March 2027 | Derogation granted, but accession further delayed due to the development of the Nordic mFRR energy activation market |
| **IN-Platform** | N/A | N/A |

| Balancing capacity cooperations | Status (MoU, project, member, observer …) | Accession timeline |
|---|---|---|
| **Nordic aFRR capacity market** | Operational | As of December 2022 |
| **Nordic mFRR capacity market** | Operational (only SvK, Energinet, Fingrid) | As of November 2024 |

## 3 // Evolutions of the T&Cs for BRPs and BSPs related to the implementation of the EB Regulation over the last two calendar years, and further developments foreseen for the future

| Evolution of the T&Cs for BRP | |
|---|---|
| Main document, Balance Responsible Party Agreement (5938-2) | Approved, valid as of 1 November 2025 |
| Appendix 1: Definitions | Approved, valid as of 1 November 2025 |
| Appendix 2, General T&Cs | Approved, valid as of 1 November 2025 |

| Evolution of the T&Cs for BSP | |
|---|---|
| Main document, BSP Provider Agreement (5937-2) | Approved, valid as of 3 September 2025 |
| Appendix 1, Definitions | Approved, valid as of 3 September 2025 |
| Appendix 2, General T&Cs for Providers of FCR | Approved, valid as of 3 September 2025 |
| Appendix 3, Technical T&Cs for Providers of FCR | Approved, valid as of 3 September 2025 |
| Appendix 4, General T&Cs for Providers of aFRR | Approved, valid as of 3 September 2025 |
| Appendix 5, Technical T&Cs for Providers aFRR | Approved, valid as of 3 September 2025 |
| Appendix 5, General T&Cs for Providers of mFRR | Approved, valid as of 3 September 2025 |
| Appendix 5, Technical T&Cs for Providers of mFRR | Approved, valid as of 3 September 2025 |
| Information page (version 4.0) following Agreement 5937-2(.pdf) | Approved, valid as of 23 September 2025 |

| QUESTION | PLEASE SELECT AN OPTION |
|---|---|
| **Q1: Was the 15-minute ISP implemented by 1 January 2026?** | **Implemented** |
| 1.1 // If response to Q1 is "derogation" or "exemption", until when was this derogation/exemption granted? | 22 May 2023 |
| **Q2: Has your TSO made use of additional components pursuant to Article 9 (6) of the ISHM as of 1 January 2026?** | **Yes** |
| 2.1 // Scarcity component? | Not considered |
| 2.2 // Incentivising component? | Implemented |
| 2.3 // Component related to financial neutrality of the TSO? | Not considered |
| **Q3: Has your TSO made use of dual pricing as of 1 January 2026?** | **No** |
| 3.1 // Condition (a) | Not considered |
| 3.2 // Condition (b) | Not considered |
| 3.3 // Condition (c) | Not considered |
| 3.4 // Condition (d) | Not considered |
| 3.5 // Condition (e) | Not considered |

## 4 // Summaries and main results of the analysis of Articles 60(2)(a)–(f):

### Dimensioning of balancing capacity

The dimensioned volume for FCR-N is at least 600 MW for the Nordic synchronous system. FCR-N is used for continuous imbalances to keep the frequency within the 100 mHz range. For this reason, the purpose of FCR-N is not to mitigate the consequences of a disturbance, such as a reference incident. The distribution between control areas is revised each year based on annual consumption in the previous year. Svenska kraftnät has a national share of 37.75 %, corresponding to 226 MW.

The required FCR-D capacity for the synchronous system is equal to the largest possible imbalance caused by the loss of individual major components (production units, lines, transformers, bus bars, etc.) and is currently up to 1,450 MW for FCR-D Up and up to 1,400 MW for FCR-D Down. The volume is updated weekly, or more often if needed, and reflects each TSO's current situation. Svenska kraftnät has a national share of 37.75 %, corresponding to up to 547 and 528 MW, respectively.

mFRR is dimensioned by the individual TSOs based on their control area assessment of local requirements, such as bottlenecks in the network, dimensioning faults, and similar. The requirements for mFRR volumes are defined by large national N-1 incidents, and each TSO shall have mFRR volumes available equivalent to or greater than the dimensioning fault in the control area. Accession to the European platform MARI is currently expected in Q1 2027.

The aFRR product shall be seen as an automatic "complement" to mFRR in the frequency restoration process. Each quarter-year, all Nordic TSOs determine the hours for which aFRR shall be dimensioned. In Q4 2025, the Nordic TSOs procured 200–325 MW for the Nordic SA, where Svenska kraftnät's share was 38 % for Up and Down regulation of the aFRR need. The volumes procured are for all hours; previously, it was only procured for the hours where frequency variations were most challenging. The TSOs expect that future challenges will require more automated balancing. Subsequently, the aFRR volume will gradually be increased from today's level of 300 MW to a tentative target volume of 600 MW. The accession timeline for aFRR to join PICASSO is currently Q4 2027.

### Provisioning of balancing capacity

The dimensioning rules as outlined in Articles 127, 157, and 160 of the SO Regulation were not applied during the reporting period in the Nordic LFC block. Thus, Svenska kraftnät has not performed analyses on the optimal provision of reserve capacity pursuant to Article 32 (1) of the EB Regulation.

The Nordic TSOs do exploit the possibility of sharing reserves both implicitly in the FRR dimensioning process and explicitly in Nordic market-based solutions for both mFRR and aFRR. The Nordic aFRR capacity market is between all four Nordic TSOs. CZC is only reserved up to a pre-defined maximum level (default 10 % of CZC). mFRR is traded on a trilateral mFRR capacity market between Svenska kraftnät, Energinet, and Fingrid, where mFRR capacity can be traded and ATC reserved for balancing purposes. The Nordic TSOs also exchange FCR in bilateral agreements in cases where such exchange can be performed while respecting operational security limits.

### Specific products

Standard products for balancing energy, and thus specific products, will be applicable when the implementation frameworks for the European platforms are implemented and in operation, which is not yet the case. Svenska kraftnät has therefore not used specific products during this reporting period.

# 7.25 Switzerland (Swissgrid)

## 1 // Introduction

With the Swiss market liberalisation beginning in 2009, Swissgrid took on the role of TSO of Switzerland and balancing group coordinator.

The Swiss territory consists mainly of one scheduling area, which is equivalent to the Swiss control block and control area. However, there are slight differences due to Liechtenstein; smaller regions in Alsace (France) and around Schaffhausen (Germany), which are in the Swiss control block; and others belonging to Switzerland, like distribution grids around Laufenburg, which are not included in the control block. Within ENTSO-E, the Swiss control block is part of the SA of the RG Continental Europe. As "Coordination Center South", Swissgrid also assumes important monitoring and coordination tasks in cooperation with the Coordination Center North, Amprion, for stable load frequency control in Continental Europe.

A self-dispatch model is established in Switzerland. Regarding reserve dimensioning, Swissgrid follows the provisions of Commission Regulation EU 2017/1485 (SOGL), regarding positive and negative dimensioning incidents, as well as the need to cover LFC block imbalances 99% of the time. More details regarding the market design and dimensioning are available in Swissgrid's Balancing Roadmap 2026–2030: Balancing Roadmap.

Pursuant to the Swiss legal and regulatory framework, the requirements for BRPs and BSPs are specified in sectoral contracts between Swissgrid and the BSP/BRP. The BSP contracts regulate the mechanisms for each type of balancing energy (FCR, aFRR, and mFRR) to ensure the availability of balancing capacity and energy. The BSP and BRP contracts and conditions are published on Swissgrid's website: Sectoral contracts and annexes.

Regarding the market size, Swissgrid has 21 BSPs active in its aFRR and mFRR markets. In 2025, no new BSPs were registered by Swissgrid. The company observed a maximum pre-qualified power capacity of 171 MW for aFRR and 109 MW for mFRR from batteries in 2025. Hydropower remains the main pre-qualified technology, contributing over 13 GW (mFRR).

The detailed TSO reports on balancing according to Article 60 of Commission Regulation (EU) 2017/2195 (EB Regulation) by Swissgrid are published on the Swissgrid website under the following link: Energy statistic Switzerland (swissgrid.ch).

## 2 // Progress and timeline towards joining the European platforms and/or balancing capacity cooperations

Based on information from the latest available accession roadmaps, with further remarks from each TSO where necessary to ensure the most up-to-date information at the time of publication of the report.

FRR with weekly updated values. An overview of the average procured volumes for FCR, aFRR, and mFRR is shown in Figure 1 below.

Since Swissgrid was not allowed as an operational member in MARI and PICASSO in 2025, no reserves were exchanged or shared, and only local balancing energy and capacity products were used.

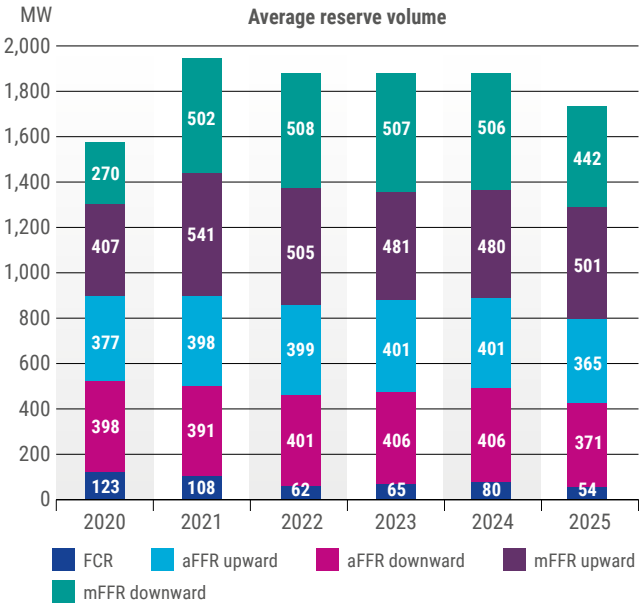



Figure 131: Average balancing capacity volume procured in Switzerland.

# 8 Annex I – Legal references and requirements

This report ensures the fulfilment of ENTSO-E reporting obligations as outlined in Article 59 (2)(a) of the EB Regulation. Moreover, the performance indicators agreed upon by all TSOs, and de facto approved by ACER,[34] which are incorporated in Chapter 4 of this report.

The requirements for ENTSO-E reporting on the detailed European report under Articles 59 (2)(a), 59 (3), 59 (4), and 59 (6) of the EB Regulation read as follows:

Article 59 (2): The format of the report shall vary as follows:

a // two years after entry into force of this regulation and subsequently every second year a detailed report shall be published;

Article 59 (3): The report pursuant to paragraph 2(a) shall:

a // describe and analyse the harmonisation and integration process as well as the progress made in terms of harmonisation and integration of balancing markets through the application of this regulation;

b // describe the status of implementation projects pursuant to this regulation;

c // assess the compatibility between the implementation projects and investigate any possible developments that pose a risk for future integration;

d // analyse the development of the exchanges of balancing capacity and the sharing of reserves and describe possible barriers, prerequisites, and actions to further enhance the exchange of balancing capacity and the sharing of reserves;

e // describe the existing and analyse the potential exchanges of balancing services;

f // analyse the suitability of standard products with respect to the latest development and evolution of different balancing resources and propose possible improvements of standard products;

g // assess the need for further harmonisation of standard products and possible effects of non-harmonisation on integration of balancing markets;

h // assess the existence and justifications for specific products used by TSOs and their effect on the integration of balancing markets;

i // assess the progress of harmonisation of the main features of imbalance settlement as well as the consequences and possible distortions due to non-harmonisation;

j // report the results of the cost-benefit analyses pursuant to Article 61.

Article 59 (4): ENTSO-E shall set up performance indicators for balancing markets that will be used in the reports. These performance indicators shall reflect:

a // the availability of balancing energy bids, including the bids from balancing capacity;

b // the monetary gains and savings due to IN, exchange of balancing services and sharing of reserves;

c // the benefits from the use of standard products;

d // the total cost of balancing;

e // the economic efficiency and reliability of the balancing markets;

f // the possible inefficiencies and distortions on balancing markets;

g // the efficiency losses due to specific products;

h // the volume and price of balancing energy used for balancing purposes, both available and activated, from standard products and from specific products;

i // the imbalance prices and the system imbalances;

j // the evolution of balancing service prices of the previous years;

k // the comparison of expected and realised costs and benefits from all allocations of CZC for balancing purposes.

Article 59 (6): The report pursuant to paragraph 2(a) shall also contain an executive summary in English of each TSO report on balancing pursuant to Article 60.

34 On 9 April 2019, ENTSO-E submitted to ACER the first proposal on performance indicators. On 1 October 2019, a second version of this proposal was submitted based on the comments received from ACER.

# Glossary

| | |
|---|---|
| **50Hertz** | 50Hertz Transmission GmbH (1 out of 4 German TSOs) |
| **ACE** | Area Control Error |
| **ACER** | Agency for the Cooperation of Energy Regulators |
| **aFRR** | Frequency Restoration Reserves with automatic activation |
| **AOF** | Activation Optimisation Function |
| **AL** | Albania |
| **ALPACA** | Allocation of CZC and Procurement of aFRR Cooperation Agreement |
| **APG** | Austrian Power Grid AG |
| **Amprion** | Amprion GmbH (1 out of 4 German TSOs) |
| **AST** | AS Augstsprieguma tikls (Latvian TSO) |
| **AT** | Austria |
| **ATC** | Available Transfer Capability |
| **BA** | Bosnia and Herzegovina |
| **BC** | Balancing Capacity |
| **BE** | Belgium |
| **BG** | Bulgaria |
| **BRP** | Balance Responsible Party |
| **BSP** | Balancing Service Provider |
| **BZ** | Bidding Zone |
| **BZB** | Bidding Zone Border |
| **CACM** | Commission Regulation (EU) 2015/1222 of 24 July 2015 establishing a guideline on capacity allocation and congestion management |
| **CBMP** | Cross-border Marginal Price |
| **CCR** | Capacity Calculation Region |
| **CGES** | Crnogorski Elektroprenosni Sistem AD |
| **CH** | Switzerland |
| **CM IT** | Capacity Management Information Technology |
| **CMOL** | Common Merit Order List |
| **COBRA** | Common Optimisation of Balancing Reserve & Cross-Zonal Capacity Allocation |
| **CZ** | Czech Republic |
| **CZC** | Cross-Zonal Capacity |
| **CZCAOF** | Cross-Zonal Capacity Allocation Optimisation Function |
| **CZCL** | Cross-Zonal Capacity Limits |
| **DAM** | Day-ahead Market |
| **DE** | Germany |
| **DK** | Denmark |
| **DSR** | Demand-Side Response |
| **EE** | Estonia |
| **EB** | Commission Regulation (EU) 2017/2195 of 23 November establishing a guideline on electricity balancing |
| **Elia E** | lia System Operator SA |
| **ESO** | Electroenergien Sistemen Operator EAD |
| **EMDR** | Electricity Market Design Reform |
| **EMS** | oint Stock Company Elektromreža Srbije |
| **ENTSO-E** | European Network of Transmission System Operators for Electricity |
| **ES** | Spain |
| **EU** | European Union |
| **FAT** | Full Activation Time |
| **FCA F** | orward Capacity Allocation |
| **FCR** | Frequency Containment Reserve |
| **FI** | Finland |
| **FR** | France |
| **FRCE** | Frequency Restoration Control Error |
| **FRR** | Frequency Restoration Reserves |
| **FSkar** | Financial Settlement of KΔf, ACE and ramping period |
| **GCT** | Gate Closure Time |

| | |
|---|---|
| **GR** | Greece |
| **HCZCAM** | Harmonised Cross-Zonal Capacity Allocation Methodology |
| **HHI** | Herfindahl–Hirschman-index |
| **HOPS** | Croatian Transmission System Operator Plc. |
| **HR** | Croatia |
| **HU** | Hungary |
| **HVDC** | High-Voltage Direct Current |
| **ID** | Intraday |
| **IF** | Implementation Framework |
| **IFA** | Interconnexion France-Angleterre |
| **IGCC** | International Grid Control Cooperation |
| **IE** | Ireland |
| **IN** | Imbalance Netting |
| **IPS** | Integrated Power System |
| **IPTO** | Independent Power Transmission Operator S.A. |
| **ISH** | Imbalance Settlement Harmonisation |
| **ISP** | Imbalance Settlement Period |
| **IT** | Information Technology |
| **IT** | Italy |
| **JAO** | Joint Allocation Office |
| **KPI** | Key Performance Indicator |
| **LFC area** | Load-Frequency Control area |
| **LFCBOA** | LFC block Operational Agreement |
| **LMP** | Local Marginal Price |
| **LU** | Luxembourg |
| **MC** | Market Coupling |
| **MARI** | Manually Activated Reserves Initiative |
| **MAVIR** | Magyar Villamosenergia-ipari Átviteli Rendszerirányító Zártkörűen Működő Részvénytársaság |
| **ME** | Montenegro |
| **MEMO** | Electricity Market Operator of North Macedonia |
| **MEPSO** | Macedonian Transmission System Operator AD |
| **mFRR** | Frequency Restoration Reserves with manual activation |
| **MSM** | Market Supervision Module |
| **MTU** | Market Time Unit |
| **NEMO** | Nominated Electricity Market Operator or Power Exchange |
| **NERC** | Normative Emergency Capacity Reserve |
| **NL** | Netherlands |
| **NO** | Norway |
| **NOS** | BiH Nezavisni Operator Sustava u Bosni i Hercegovini |
| **NRA** | National Regulatory Authority |
| **OC** | Operational Committee |
| **OST** | OST sh.a – Albanian Transmission System Operator |
| **PICASSO** | Platform for the International Coordination of Automated Frequency Restoration and Stable System Operation |
| **PL** | Poland |
| **PMO** | Project Management Office |
| **PSE** | Polskie Sieci Elektroenergetyczne |
| **PT** | Portugal |
| **RCC** | Regional Coordination Centres |
| **REE** | Red Eléctrica de España S.A.U. |
| **RE** | Red Eléctrica |
| **REN** | Rede Eléctrica Nacional, S.A. |
| **RES** | Renewable Energy Sources |
| **RO** | Romania |
| **RS** | Serbia |
| **RR** | Replacement Reserves |
| **RTE** | Réseau de Transport d'Electricité |

| | |
|---|---|
| **SAFA** | Synchronous Area Framework Agreement |
| **SA** | Synchronous Areas |
| **SC** | Steering Committee |
| **SDAC** | Single Day-Ahead Coupling |
| **SE** | Sweden |
| **SEPS** | Slovenská elektrizačná prenosová sústava, a.s. (Slovakian TSO) |
| **SI** | Slovenia |
| **SK** | Slovakia |
| **Statnett** | Statnett SF (Norway TSO) |
| **SO Regulation** | System Operations Guideline National Implementation |
| **SONI** | System Operator for Northern Ireland Ltd. |
| **Svenskä** | Svenskä kraftnät (Swedish TSO) |
| **Swissgrid** | Swissgrid ag (Swiss TSO) |
| **TenneT NL** | TenneT TSO NV (Dutch TSO) |
| **TenneT DE** | TenneT TSO GmbH (1 out of 4 German TSOs) |
| **Terna** | Rete Elettrica Nazionale SpA (Italian TSO) |
| **TERRE** | Trans-European Replacement Reserves Exchange |
| **Transelectrica** | National Power Grid Company Transelectrica S.A. (Romanian TSO) |
| **TransnetBW** | TransnetBW GmbH (1 out of 4 German TSOs) |
| **TSC** | TERRE Steering Committee |
| **TSO** | Transmission System Operator |
| **T&C** | Terms and Conditions |
| **UPS** | Independent |
| **VoLL** | Volume of Lost Load |
| **VUEN** | Vorarlberger Übertragungsnetz GmbH |

The terms used in this document have the meaning of the definitions included in Article 2 of the CACM, FCA and EB Regulations.

# List of Figures

# List of Tables

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