Balancing Platforms Stakeholder Workshop

04.11.2025

Webinar

General Q&A Document

You can find the frequently asked questions on this document. This document aims to answer the questions submitted during the Stakeholder Workshop.

Questions and Answers
Question: Will the webinar be recorded? Will the sides be shared? **Answer:** Yes, the webinar was recorded. The video can be accessed here. The slides were published prior the workshop and can be found here. **Question:** On slide 9, can TSOs provide data showing how limited cross-zonal capacity impacts MARI and PICASSO? **Answer:** The visualisation of potential impacts of cross-zonal capacity on balancing energy exchanges by MARI and PICASSO is complex. TSOs are taking the task to investigate potential figures until next year's stakeholder workshop. **Question:** How do you calculate the economic surplus of the balancing platforms? Where can we find the exact calculations made for slide 11? **Answer:** The economic surplus generated by the European balancing platforms exists of consumer rent, producer rent, and congestion income related to the exchange of balancing energy bids. It is determined by comparing the actual market results with a scenario without exchanging balancing energy. To avoid unrealistic results, exceeding demand (situations with more FRR activation than available on national level) are neglected. A detailed description of the methodology is available under this link. **Question:** Do these EU-wide surpluses take into account the economic losses generated in individual countries? **Answer:** The overall welfare is optimized which can result in a reduction of consumer rent or producer rent in some countries in some time intervals. However, the overall effect (sum of all rents in all countries) is (very) positive. **Question:** The economic surplus seems to be an aggregate, could you provide more detailed insights on distributional effects i.e. how consumers/producers/TSOs in various member states were impacted after connection to MARI/PICASSO? **Answer:** These figures were shown later during the workshop, see slides 43 & 44 for MARI and slide 73 for PICASSO. **Question:** What is the difference between the data output across the various balancing systems? **Answer:** Each balancing platform determines for each participating TSO the bids to be activated, the satisfied demand and the remaining cross-zonal capacity. The platforms consider different balancing services which differ by the frequency of the optimization runs: The aFRR process requires an optimization run every 4 seconds (i.e., about 7.8 million runs per year) while the mFRR process

requires an optimization run every quarter hour and an additional optimization run in case of direct activation (i.e., about 35 thousand runs per year). The RR process requires one optimization every hour (i.e., about 8760 runs per year).

Question: Is there any expectation of having not only shared activation energy but also availability across borders in the future?
Answer: TSOs are currently working on so-called balancing capacity cooperations allowing for the cross border and/or joint procurement of balancing capacity. Please check the websites of ALPACA (link), COBRA (link) and the Nordic aFRR capacity market (link) for further details. FCR capacity is already exchanged between several countries for more than 10 years (link).

Question: Does being active on multiple platforms create challenges? Potential volatility, spikes in balancing prices? PICASSO and MARI, (FR, CZ, PL per se.).
Answer: Volatility and price spikes are usually not related to a TSO being connected to more than one balancing platform.

Question: Are anonymized data for auction bids or auction clearing prices available anywhere?
Answer: Data is available on ENTSO-E Transparency Platform: Auction Bids are labelled as Balancing Energy Bids and Clearing prices can be found under Prices of Activated Balancing Energy & aFRR CBMPs with filters Reserve Type = mFRR DA, mFRR SA and Type of Product = Standard.

Question: Transparency on MOL & activations for all and between participating countries would be great for improving market participation efficiency.
Answer: Data is available on ENTSO-E Transparency Platform. The full MOL can be found here: Balancing Energy Bids. Activations are found under Aggregated Balancing Energy Bids with filters Reserve Type = mFRR DA, mFRR SA and Type of Product = Standard. Exchanges between participating counties are published under Netted and Exchanged Volumes per Border.

Question: Given talk of GB potentially re-joining the IEM, do you see any key risks or opportunities for balancing services?
Answer: European balancing platforms welcome a growing European domestic market for balancing energy, e.g., by GB potentially re-joining the IEM. Integration of DC links into balancing processes (a potential risk/challenge) is currently worked on to ensure participation of Nordic TSOs on the European balancing platforms.

Question: Do you see any issues or inefficiencies with some TSOs using mainly mFRR for regulation and others using aFRR?
Answer: Harmonizing the balancing processes among TSOs is not a must to ensure secure system operation. It is the responsibility of the individual TSO to ensure the quality of balancing with enough FRR reserves (either aFRR and/or mFRR). When it comes to the individual FRR reserve, a level playing field is ensured via harmonization of standard products. The individual TSO chooses the FRR based on local conditions but taking into account the TSO obligation to balance the system.

Question: Are there KPIs on price volatility before/after connection to MARI and PICASSO?
Answer: Most TSOs introduce the European target market design (e. g. marginal pricing) when joining the European balancing platforms. Consequently, it is difficult to provide KPIs allowing for an overarching comparison. An exemplary overview for Germany is available here (link, figures 20 to 23).

Question: What are the legal (or regulatory) implications for the legal accession deadlines not respected and delays in accession in MARI and PICASSO?

Answer: NRAs supervise the TSOs' individual accession. Therefore, consequences/mitigation actions are followed up on national level.

Question: Regarding low activation volumes in Germany, could you provide clarification on the reasons for the limited use of MARI (mFRR) and PICASSO (aFRR)?
Answer: German TSOs operate the balancing process reactively (i.e., predominantly use aFRR) while at the same time procuring a significant amount of aFRR capacity. Also applying the imbalance netting process on all electrical borders (see IGCC, link for details) results in a limited activation of FRR.

Question: Are there any short-term planned updates/amendments of the (matching) algorithms and included features/constraints for respectively MARI and PICASSO?
Answer: The current algorithm descriptions (including any updates) are available online (link for MARI, link for PICASSO).

Question: Transparency issues related to how, when and where publication takes place concerning e. g. Orders per BZ for Capacity and Energy Activation and in aFRR and mFRR?
Answer: Data is available on ENTSO-E Transparency Platform: balancing energy in the section Balancing Energy Bids, balancing capacity in the section Procured capacity.

Question: Where are available transmission capacities for individual countries published?
Answer: Data is available on ENTSO-E Transparency Platform under Balancing Border Capacity Limitations with filters Process Type = mFRR.

Question: Data shows more price volatility and costly activations following MARI/PICASSO. Please share evidence of consistently improved frequency quality across countries.
Answer: . TSOs are not aware of any direct link between price volatility and system frequency.

Question: Did the switch to the 15-minute market time unit (MTU) had an impact on balancing?
Answer: As the change to the 15-minute MTU only took place in October 2025, it is currently too early for a conclusive assessment regarding potential impacts on balancing. More data is needed for a thorough analysis.

Question: How did the perception of extreme balancing energy prices change the accession timeline?
Answer: With the introduction of the elastic demand and the adopted method to calculate the CBMP (ACER decisions 8/2024 and 9/2024), a reduction of price spikes was visible, which comes along with several accessions in the period 2024 / 2025.

Question: When congestion cost (slide 43) for market participants and congestion income for TSOs, which have to remain profit neutral, can be spend for removing congestion?
Answer: Usage of congestion income is regulated on national basis.

Question: How TSOs reconcile NTCs, nodal activation of balancing energy and potentially very high flows due to momentary high imbalances?
Answer: Cross-zonal capacity is determined by the established capacity calculation processes. Balancing Platforms only use the remaining cross-zonal capacity after day-ahead and intraday markets for scheduled energy. The flows resulting from the activations remain in the acceptable range of secure system operation.

PICASSO/IGCC Q&A Document

Questions and Answers

General questions:

Question: What is the status of the early 2023 announcement by ACER about the investigation of the functioning and properties of the PICASSO Algorithm?
Answer: It resulted into the decision 8/2024 and 9/2025. Please also see the decision register from ACER.

Question: What is the reason that Italy is still not joining PIASSO? What kind of changes does Terna need to do (or have they done)?
Answer: TERNA has conducted changes to the T&C and is currently scheduled to rejoin PICASSO in 2025, November 25th .

Question: Why is PICASSO causing astronomic price spikes in balancing prices, and what solutions are being considered to resolve such extreme events?
Answer: The adapted pricing methodology (since 2024) as well as elastic demand are two of the solutions that are in place. Unexpected price events (to which you probably refer when saying "astronomic price spikes") are monitored and discussed on regular basis to further improve the quality of PICASSO.

Question: What are main differences between IGCC and PICASSO?
Answer: IGCC only does netting, PICASSO also does bid selection optimization

Question: How frequently does IGCC encounter situations where no available capacity remains?
Answer: The question can refer to saturated borders or to situations in which there is no full netting. The amount of full-netting for a region can be derived based on the CBMPs, which are then both valid (this can be analysed as data is accessible on the transparency platform). The amount of time that there are saturated borders cannot be analysed separately for IGCC. Both quantities are not part of standard operational monitoring.

Question: Is IGCC a topic of decommissioning in the long-term scenario?
Answer: This is a political and not a technical question.

Question: Can you elaborate on the IT issue around the 23rd of October for aFRR pricing - resulting in high imbalance prices?
Answer: This question was answered during the meeting. The mentioned IT issue was not on the PICASSO platform but on the German procurement platform. Please see German news published on www.regelleistung.net.

Question: Regarding the PICASSO IT incident on 23 October, could you please share your view: (i) lack of communication on 23/10 & effects on ID trading; and (ii) the absence of post-incident price corrections across all market areas.
Answer: (i) PICASSO acknowledges that there was a lack of central communication. A communication strategy for similar events will be established as an outcome of the post mortem evaluation. (ii) As PICASSO has not experienced a situation similar to the 23 October incident, the TSOs need time to evaluate if and how to do any corrections to the PICASSO CBMP. The TSOs are still assessing the incident.

Question: How do the volumes above the elastic demand price (if not executed) get satisfied?
Answer: They do not, see also the total non-satisfied elastic demand in the yearly KPI report.

Question: Fingrid is participating in PICASSO but not IGCC? Can the aFRR need still be netted with the neighbouring countries with PICASSO netting?
Answer: yes, this "implicit netting" happens as part of PICASSO.

Question: Regarding slide 64, have you graphs showing congestion rents which prevents market participants from Europe to have same market conditions and have additional cost.
Answer: Congestion rent does not prevent market participants from the same market conditions. The platform cannot make any decision on building the grid.

Question: What does OC stand for?
Answer: Operational Cycle, meaning time between each new run of the AOF with new inputs and producing new outputs (4 sec).

Question: What is the FAT for aFRR? Why is there a need to recalculate the AOF every 4 seconds if the FAT is anyway much longer?
Answer: The FAT is 5 minutes for aFRR. The recalculation is done more often as the aFRR demand changes, the FAT is in place to allow the physical asset time to respond. Further it supports a smoother aFRR delivery. Further explanation of the AOF can be found in the Public AOF Description (link).

Question: When did the CBMP price definition change? One part of slide 66 references and ACER decision on 9/25, but then later this changes to 9/24.
Answer: Decision No. 9/2025 was a typo (it actually does not exist yet to present day). Correct reference is to ACER decision No. 9/2024 (and decision No. 8/2024). Please note these are not dates, but decision No. See ACER individual decisions.

Question: France could export significant aFRR, but export interconnectors are saturated. Yet, France ends up importing more downward aFRR, especially in summer. Why?
Answer: PICASSO optimizes the allocation of demand to different LFC areas based on the common merit order.

Question: Is there data available on the breakdown of the economic surplus per country per consumer/producer/congestion rent for PICASSO (as for MARI)?
Answer: see question above, operational report and yearly KPI report.

Specific technical questions:

Question: How the price for IGCC netted energy is determined?
Answer: As the mean price from the first accessible bid in upward and downward direction

Question: Given the diverse TSO approaches, what incentives exist to harmonize their key processes like bidding, activation, baseline calculation... from BSP perspective.
Answer: the European regulation works towards linked markets across TSOs and harmonizing products and procedures.

Question: How use of CMOL, not parallel activation of offers, is influencing frequency performance especially in the seconds around the changes of schedules.
Answer: This is not a PICASSO-specific question: the activation through PICASSO is linked with the OC, however, for deterministic frequency deviations, FCR would play the biggest role probably.

MARI Q&A Document

Questions and Answers

General questions:

Question: Why haven't countries in the middle of Europe been requested and activated for mFRR?
Answer: TSOs in the middle of Europe currently connected to MARI are operating the process of system balancing reactively, i. e. mostly rely on the activation of aFRR instead of mFRR. (Note that so-called reactive TSOs also activate mFRR. However, the volumes are barely visible in figures also showing the mFRR activation of proactive TSOs using mFRR far more frequently.)

Question: How come the use of MARI is so different between different TSOs?
Answer: TSOs can either balance the system by relying mostly on mFRR (so-called proactive TSOs) or on aFRR (so-called reactive TSOs). While pro-active TSOs anticipate system imbalance and activate mFRR upfront (longer full activation time), reactive TSOs rely on the fast availability of aFRR (shorter full activation time). Both ways of operating the system are viable.

Question: Could the high mFRR Iberian demand be due to Red Eléctrica not remunerating FCR and aFRR still being not very liquid? (Slide 39)
Answer: There is no link between the characteristics of FCR/aFRR and the level of mFRR demand in Spain. The intensive use of mFRR products in Spain responds to the extremely limited interconnection capacity with the rest of the continent together with the high penetration of both RES and self-consumption. Please note that FCR is a mandatory and non-remunerated feature for all units in Spanish Electricity System. Hence, there is no lack of this kind of reserve that could lead to increased mFRR. Also, aFRR market in Spain doesn't show a particularly limited liquidity.

Question: What happened with Italy this year regarding their due date for joining MARI?
Answer: During the consultation phase of the network code held in May 2025 and concerning the participation to PICASSO, Terna proposed September 2025 as the scheduled date for joining MARI. However, during the above-mentioned consultation phase, Italian market participants raised concerns about the proposed date and asked a rescheduling in Spring 2026. Following the observations received by Terna, ARERA formally asked with Deliberation 364/2025 to set the connection date not earlier than February 2026, considering other relevant changes foreseen in local market. Therefore, Terna is now considering a new accession date for Q2 2026.

Specific technical questions:

Question: Does MARI foresee an obligatory ramp up, ramp down period for participants? Does the full activation time of 12,5 min have to be met in a specific linear manner?
Answer: Ramping period as well as de-ramping period is defined in terms and conditions for BSPs by each TSO as long as it is compliant with the requirements regarding FAT (full activation time). FAT is 12,5 minutes (including communication) and there is also no particular requirement for delivery

shape, and it is a subject for national terms and conditions for BSPs, also considering different capabilities of BSPs' resources. Information is available in mFRR Implementation Framework.

Question: Could you compare prices from the Intraday market (specifically IDAs and continuous intraday market) with the MARI prices (SA - scheduled activation and DA)?
Answer: Depending on the overall system balance, prices at the continuous intraday market for scheduled energy correlate with all types of balancing services (aFRR and mFRR). TSOs would like to point out that validity period and type of activation are not the only relevant characteristics distinguishing balancing services from intraday markets for scheduled energy: While markets for scheduled energy are (intentionally) anonymous, the provider of a balancing energy bid is (intentionally) known to the connecting TSO enabling quality management of the provision of balancing services.

Question: Are there any interactions expected between MARI and 30min IDCZGCT?
Answer: The MARI project closely collaborates with the SIDC project to reduce any interactions to a minimum.

Question: How is remuneration affected by offer direction (up/down) and activation price sign (positive/negative)?
Answer: Remuneration for balancing energy is done based on the sign conventions of EB Regulation, Article 46 and Table 1 of EB Regulation respectively:

Question: Regarding bidirectional activations in same MTU in Spain and Portugal for MARI, is this caused by indivisible offers offset by cheaper counter-activations, or grid congestion?
Answer: The observed activations are primarily due to counter-activations between bids presented by BSPs for the SA product, resulting from the AOF's objective to maximise social welfare in a single merit order list. Other possible causes include indivisible bids.

TERRE Q&A Document

Questions and Answers
Question: Where will TERRE's surplus move to after TERRE stops operations by the end of this year? **Answer:** The impact of TERRE project's end will depend on each TSO's situation (balancing system, market…). However, with connections to the MARI platform, it is anticipated that for some TSOs there will be a limited impact on liquidity due to a transition of RR offers to mFRR offers into the MARI platform. **Question:** How will the closure of the TERRE LIBRA platform impact European electricity balancing markets and the launch of successor platforms like MARI and PICASSO? **Answer:** As stated, the impact of the TERRE project's closure will be different between TSOs. However, a transition of RR offers to mFRR offers into the MARI platform is anticipated. The launch of MARI and PICASSO platform will remain unimpacted. **Question:** How is settlement for cross-border reserve transactions calculated and processed across different national markets in TERRE? **Answer:** In TERRE the cross-border capacity is implicitly exchanged so there is not any reserve settlement. **Question:** Will Replacement Reserve (RR) services be unavailable, or will they only be available locally? **Answer:** With the end of the TERRE project, as TERRE TSOs will not be involved anymore in a European implementation project for exchanging replacement reserves in line with article 19 of the Electricity Balancing Guideline, it will no longer be feasible for European RR TSOs to exchange RR standard products under these new circumstances, even at national level. **Question:** Are the individual country RR platforms continuing functioning despite the change in European rules? **Answer:** With the end of the TERRE project, as TERRE TSOs will not be involved anymore in a European implementation project for exchanging replacement reserves in line with article 19 of the Electricity Balancing Guideline, it will no longer be feasible for European RR TSOs to exchange RR standard products under these new circumstances. **Question:** Will individual countries come up with some domestic replacement of RR? Or would you assume much more volume bidding into mFRR instead? **Answer:** The situation depends on each TSO you are invited to directly contact your respective TSO for more information. However, with connections to the MARI platform, it is anticipated that for some TSOs there will be a limited impact on liquidity due to a transition of RR offers to mFRR offers into the MARI platform. **Question:** Do you have a country specific analysis for RR as you have for mFRR? **Answer:** TERRE TSOs are ensuring detailed reporting on RR operations through the KPIs reports which are publicly available in TERRE webpage of the ENTSO-E website. On Transparency Platform indicators stated in the EBGL are also available.

Question: Due to the decommissioning of the RR platform is it going to be no RR services at all, or will they be only available locally?

Answer: With the end of the TERRE project, as TERRE TSOs will not be involved anymore in a European implementation project for exchanging replacement reserves in line with article 19 of the Electricity Balancing Guideline, it will no longer be feasible for European RR TSOs to exchange RR standard products under these new circumstances.