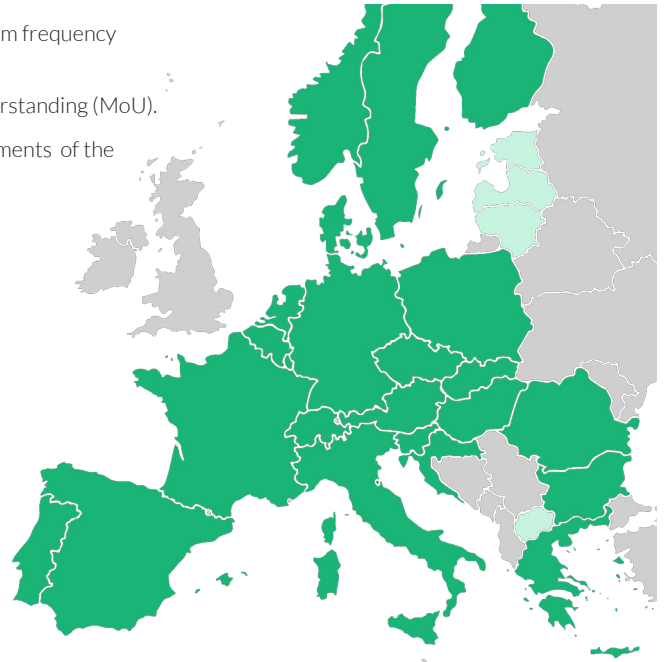




Facts

- Objective: European Platform for the exchange of balancing energy from frequency restoration reserves with automatic activation (aFRR).
- Project launched in July 2017 by 8 TSO signing a memorandum of understanding (MoU).
- New MoU signed in 2018-2019 by 25 TSOs to incorporate the requirements of the Electricity Balancing (EB) regulation.
- Planned Go-Live: Q1 – 2022 (as of 24.04.2021).



● PICASSO member ● PICASSO observer

Implementation Framework

Harmonization through standard products as defined aFRR Implementation Framework, pursuant to Article 21(1) of the EB regulation.

Standard Product Characteristics

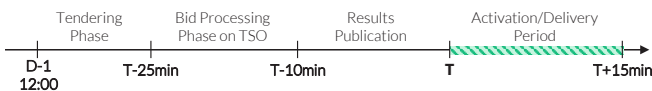
Mode of activation	Automatic
Full activation time (FAT) Maximal time between the activation request by the connecting TSO and full delivery of power of the respective balancing energy bid.	7.5 min (5 min by 2024)
Validity Period Activation requests from the TSO to the BSP is only possible within the validity period.	15 min
Minimum duration of delivery period The period during which BSP delivers full requested change of power in-feed to or withdrawal from connected TSO system.	No minimum duration

Harmonization through standard bids and bidding periods (gate opening & closing times).

Bid Types & Bidding Period

Bid Types	Fully divisible bid A balancing energy bid that consists of a single quantity and a single price. All bids are fully divisible and standardized. Contrary to MARI and TERRE, no complex, non-divisible or linked bids are possible.
Gate Opening (GOT)	D-1 12:00AM gate opening for activation periods on day D.
Gate Closure (GCT)	25 minutes before the period by its activation to satisfy the TSO balancing energy need.

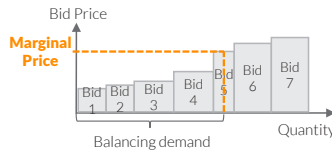
Timeline



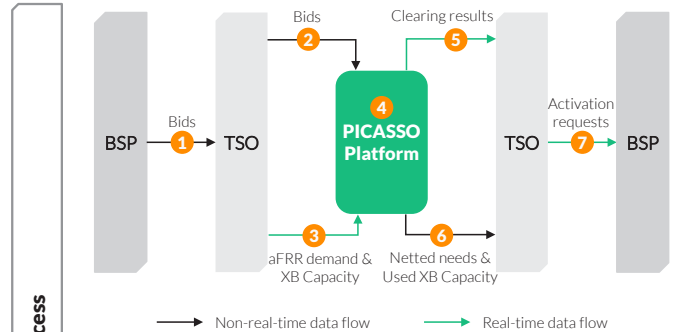
Pricing & Settlement

Harmonization through standard pricing & settlement

- Marginal Pricing (Pay-as-cleared)
- Price of last bid of standard product which has been activated
- Same principle as day-ahead market



PICASSO Process



- TSO receives bids from Balancing Service Providers (BSP) in Load Frequency Control (LFC) area.
- TSO forwards standardized aFRR balancing bids to platform.
- TSO submits aFRR demand and available cross-border capacity (XB).
- Algorithm optimizes clearing of balancing needs against BSP offers.
- Publication of clearing results (accepted bids and marginal prices).
- Resulting XB schedules and remaining XB capacity sent to TSOs.
- TSO request activation of BSP as needed.

Impact: BSPs need to adapt to PICASSO in case they want to offer their production as aFRR. Strategies have to be developed for successful execution, taking into account the bid characteristics.

Roadmap, as of 24.04.21

