



MONTEL
Analytics

PICASSO – LESSONS LEARNED

European Balancing Harmonization
Review





Harmonization of balancing markets, a logical next step?

European Harmonization Previous Steps:

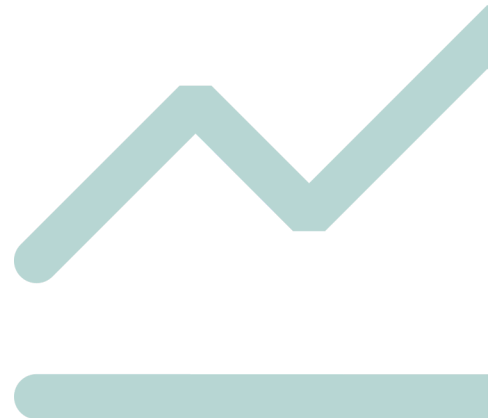
- From explicit flows to implicit flows: SDAC, CWE Flow-Base, Core Flow Based
- Single Intra-Day Coupling of continuous trading
- Start of Pan-European FCR auctions

Why would balancing activation be a logical next step for integration of markets?

- Intraday trading driven by forecast deviations, balancing risks
- Harmonizing balancing markets, harmonizing risks, levelling the playing field?

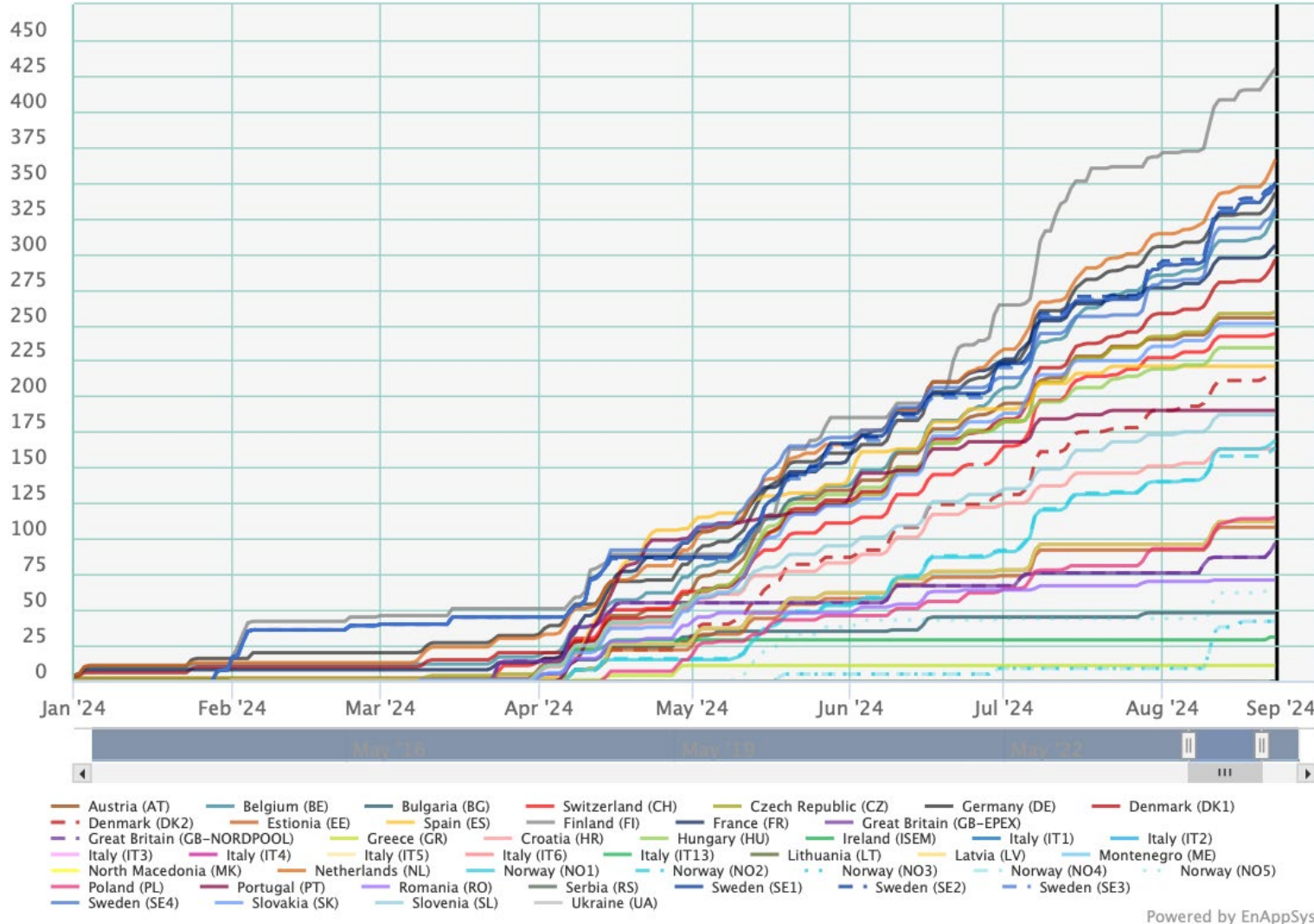
But, what about market dynamics?

- Contracting of balancing capacity was left out-of-scope
- Different market sizes
- Different local rules, for trading *and* balancing





Some examples: Negative Prices



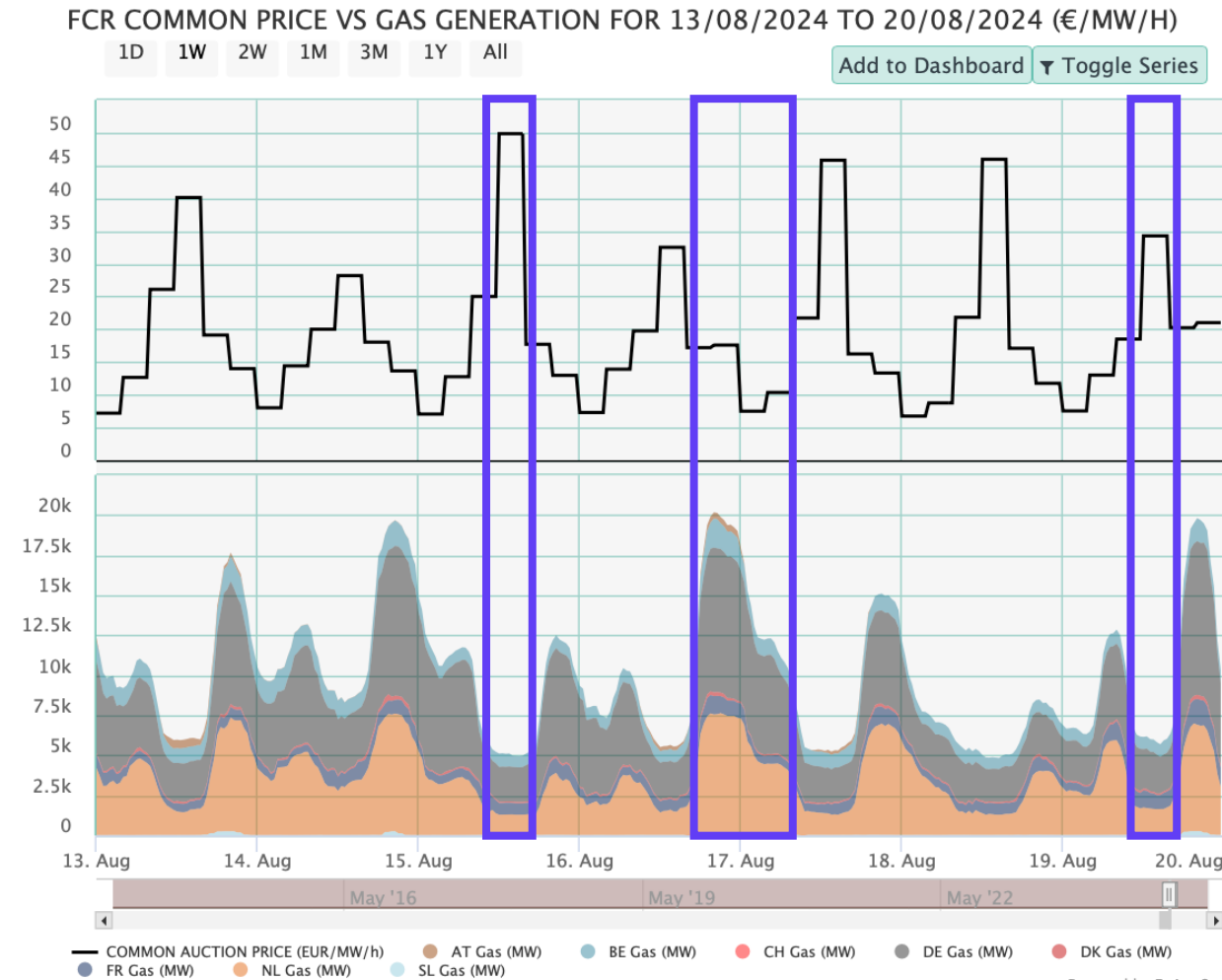
Very different price formation among countries.

- Many countries are seeing negative prices in day-ahead markets.
- Large differences between countries.
- Some markets see no negative prices at all.
- Impacts on balancing markets.



Some examples: Availability Prices

- FCR: Market Based Availability Contracting, joint auction (DE, AT, CH, CZ, NL, BE, FR, SL, DK1).
- FRR: Different availability contracting periods, weekly, daily, 4-hourly blocks
- Availability prices for aFRR and mFRR wildly different across Europe
 - Large differences in participating parties/assets
 - Different economics, availability fee to cover 'running out-of-merit'?





Some examples:

Central Dispatch vs Market Dispatch

- Market-based dispatch is characterized by its reliance on competitive markets to drive operational decisions.
- Central dispatch relies on a system operator making decisions based on broader economic and reliability criteria. (Italy, Poland, Spain)

Can you harmonize details, when paradigms are so radically different?

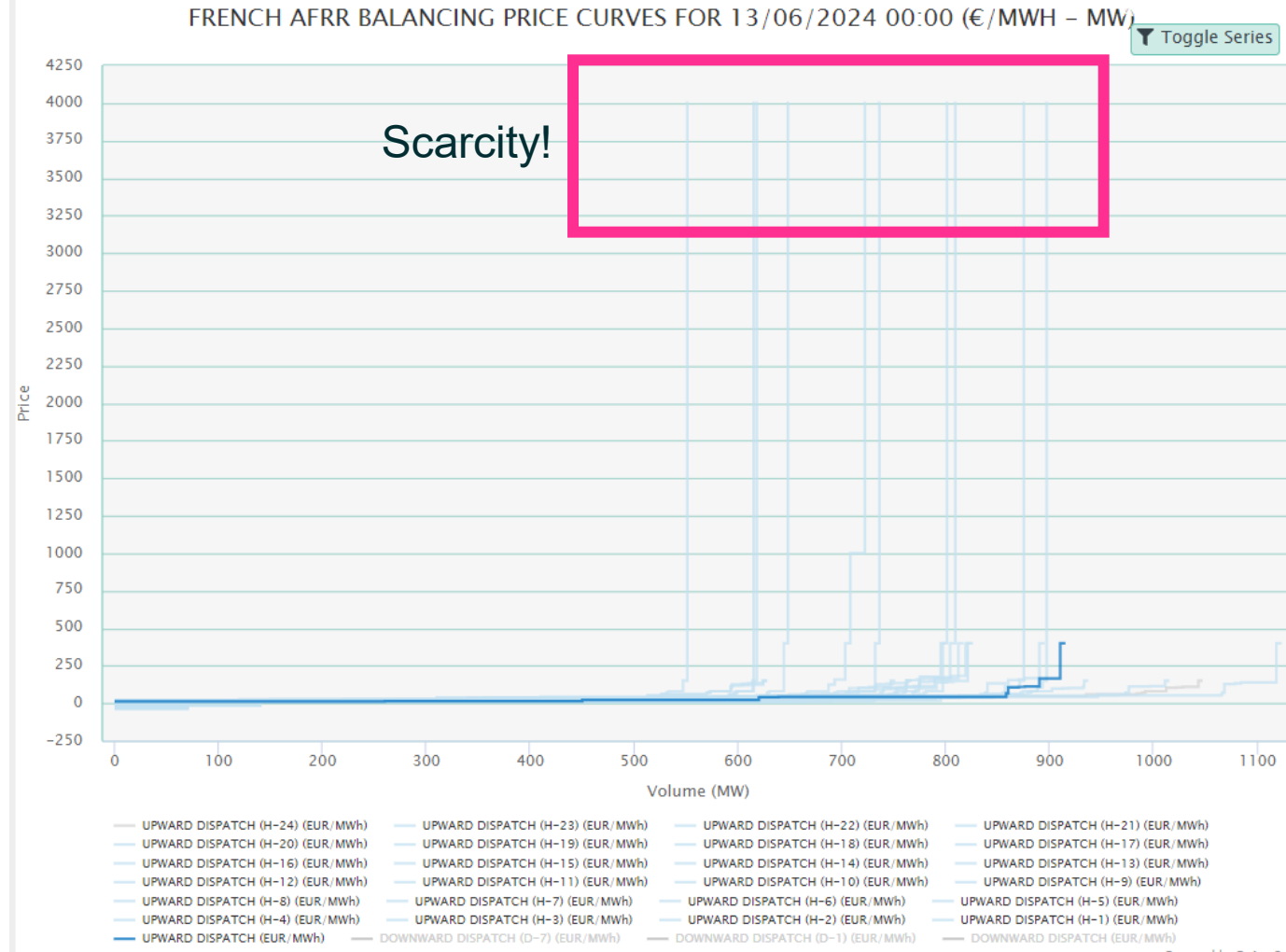


Activation Prices Analysed



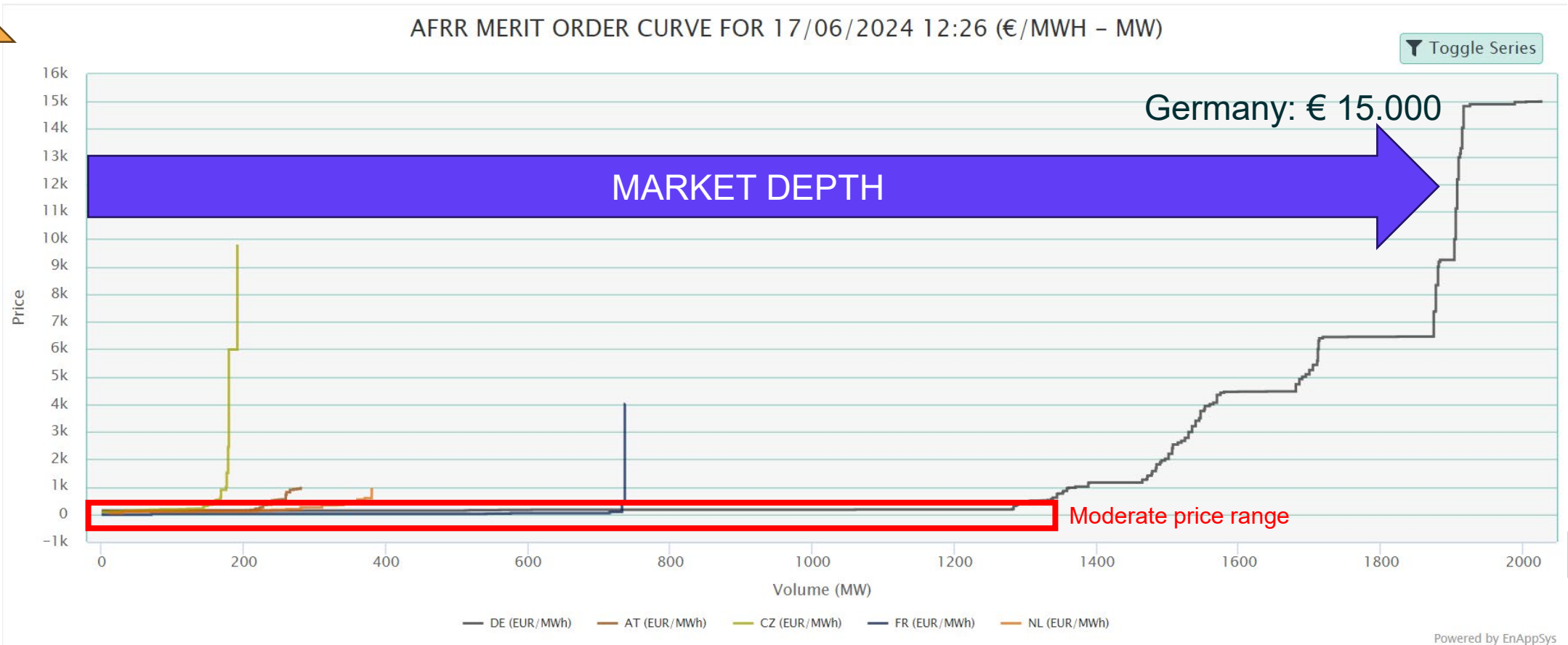
Bids for aFRR activation across Europe

- Different market sizes affect the depth of the curve.
- Different market rules affect 'extreme' bids.
- Scarcity can drive the 'tails' of the activation merit-order.
- Example: France





Upward Activation Prices in a European Context

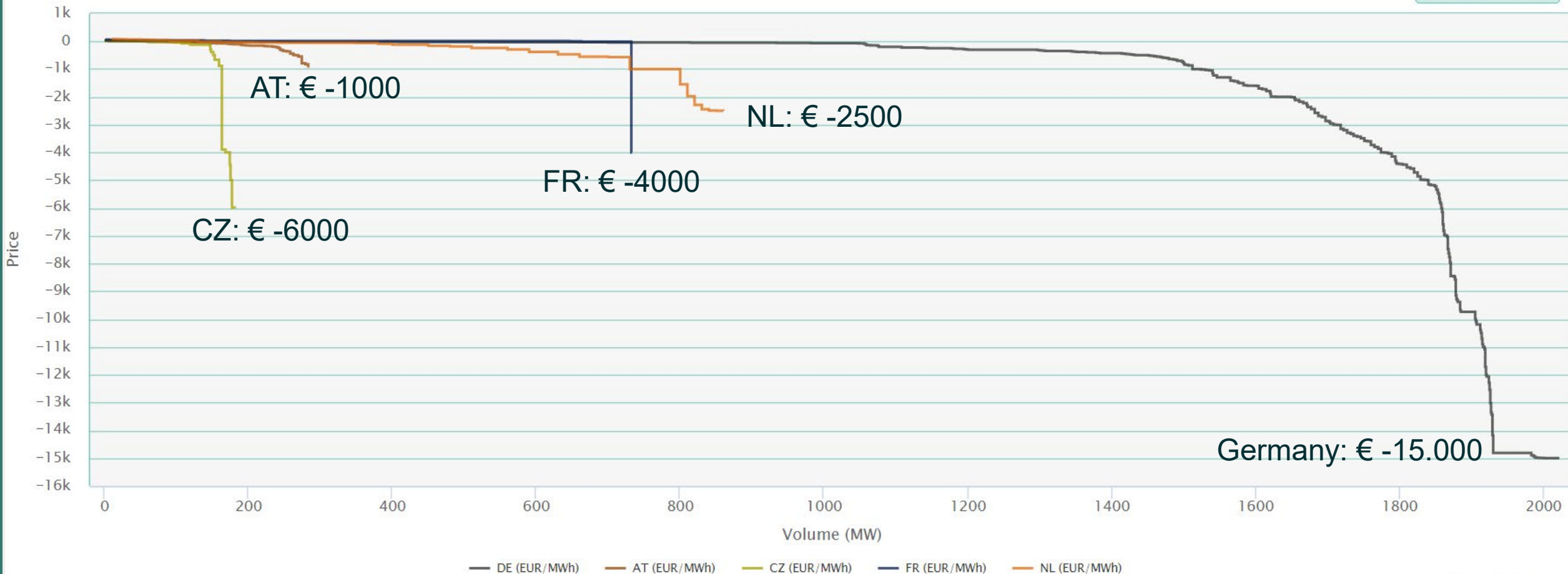




Downward Activation Prices in a European Context

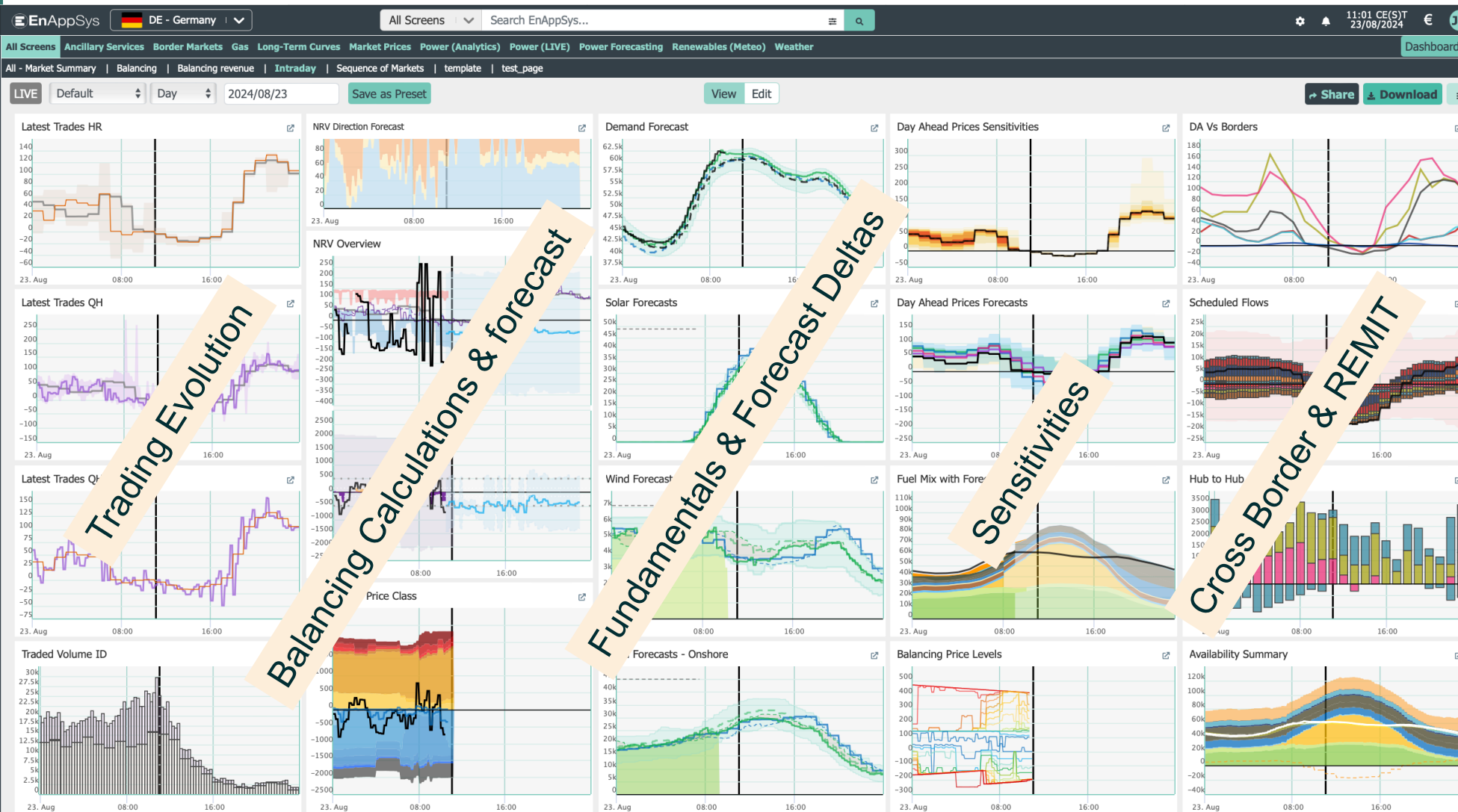
AFRR MERIT ORDER CURVE FOR 17/06/2024 12:27 (€/MWh - MW)

Toggle Series





Analysing 96 QH Periods in Context



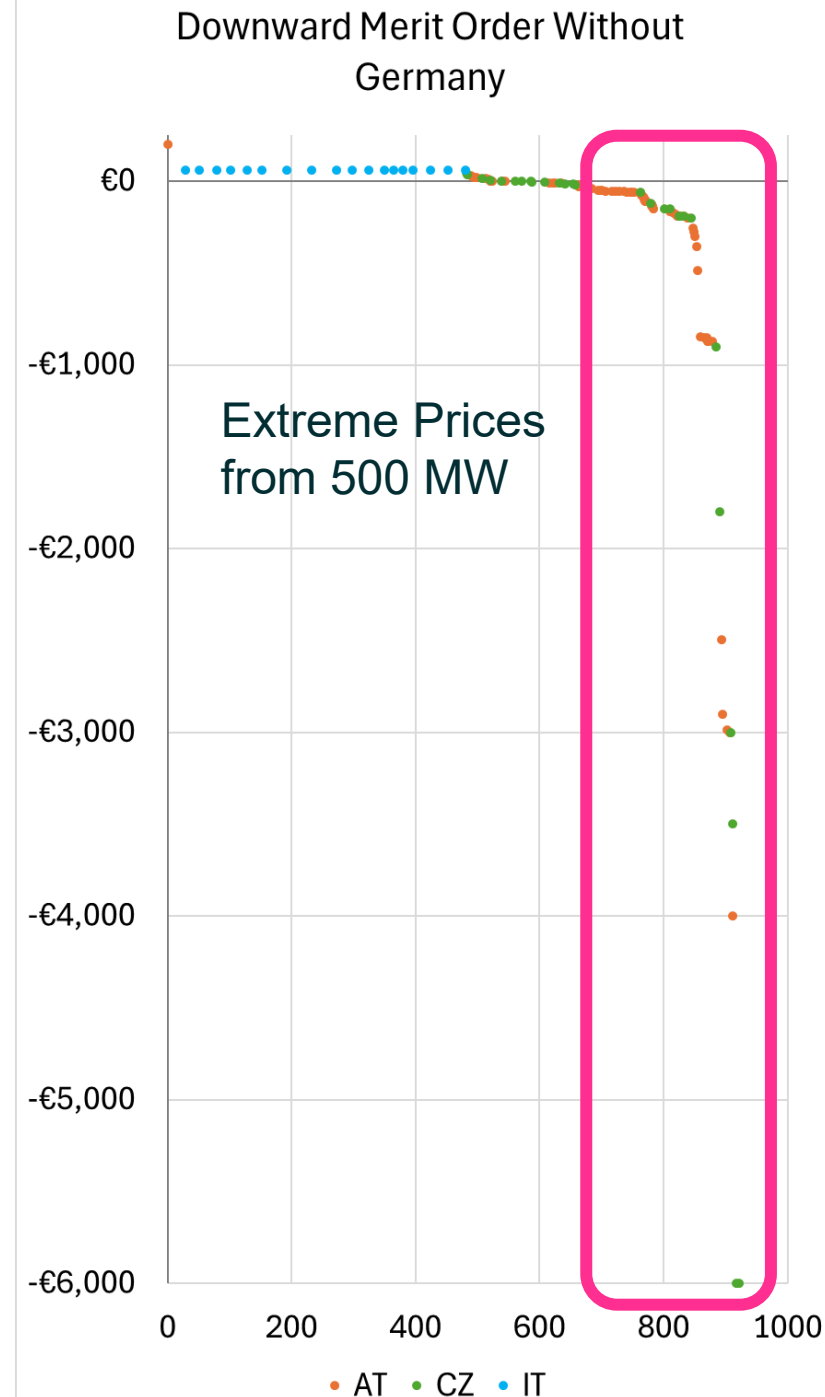
- Large amounts of data to be processed
- Updates until 25 minutes before delivery
- Analysing individual curves too complex and time consuming
- Customizable Dashboards

Lessons Learned – Italian Case

Understanding Cross-Border Capacity for Balancing

Requirements for Cross-border activation

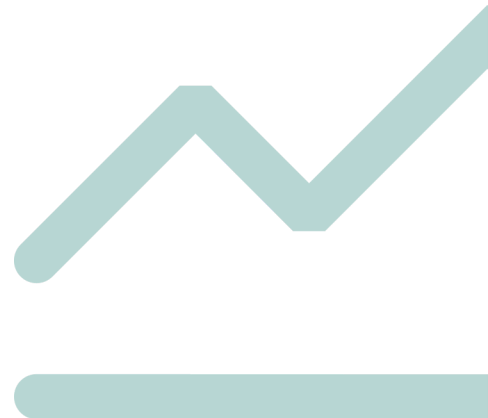
- Italy joined Picasso after DE, AT and CZ and had never seen a negative balancing price before.
- Cross-border activation *implies* more liquidity in balancing markets, however:
- The capacity available for activation is determined by the 'left-over' capacity **after** gate-closure for intraday trading.
- This can lead to unavailability of bids from a whole region, to some countries.
- The potential uncongested area is very large, but it can be small as well.
- Result: downward prices well below € -1000.
- Similar effects observed on upward regulation.
- Be aware of this risk.





What happened when we saw those extremes?

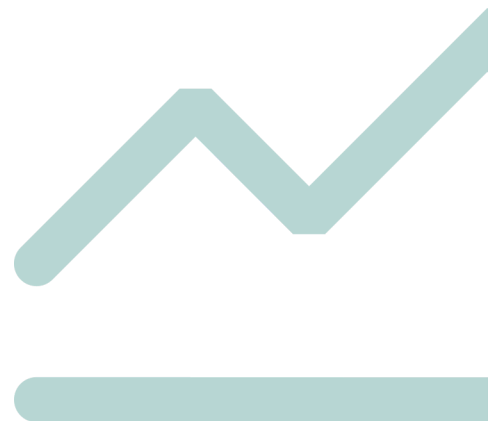
- Italy ran out of **downward** balancing capacity in Picasso (only around 500 MW submitted, Picasso requires 5-minute Full Activation Time for all bids).
- Germany was unavailable as it could not import more power intraday (border saturated, no ATC for import).
- That leaves Austria and Czech Republic. With a balancing need of “only” several hundred MW of downward capacity, Italy’s needs were moderate.
- But only moderate on the scale of Germany and Italy.
- The Czech and Austrian balancing markets only have around 200 – 250 MW of aFRR balancing capacity, which means you reach the end of the merit order quickly if you export 500 MW additionally.





Implementation: Errors of Judgement

- aFRR capacity driven by fundamentals
- aFRR activation driven by fundamentals and scarcity
- Scarcity driven by cross-border capacity and fundamentals
- Trading yourself out of trouble is cheaper than exposing yourself to balancing markets. This affects cross-border capacity!
- Picasso deals with activation prices only, assuming prices and drivers are the same across Europe was a mistake
- Market behaviour in Italy did not adapt to the new reality





Sequence of Markets

- Market Sequence:
 - Forwards, several days ahead
 - D-1 9:00 Ancillary Capacity Auctions
 - Day Ahead Market + ATC
 - Intraday Auctions
 - Continuous Intraday (ATC Evolution)
 - Balancing activation price optimization
 - Trade or face balancing price
- Optionality is key:
 - At each step in the sequence, you have the *option*, not the obligation to act.
 - Only when you leave your position to the balancing market, there is *no options left*.
 - Risk/Return Ratio evolves as delivery approaches



What's Next?

What will be the main challenges for Nordic Picasso Implementation?



There are no easy solutions

- Markets will remain different as fundamental rules are different.
- Large countries bordering small countries may face volatility in Marginal Activation Prices.
- Small countries may see more robustness.
- Coupled markets for intraday trading will use much cross-border capacity, it is better/safer to **'trade yourself out of trouble'** than face balancing markets.
- Leaving positions open for balancing markets is a risk as it should be.
- Initiatives to decrease impact of cross-border activations?
- Is the market ready for balancing harmonization or do we need to align other aspects of the market first?

Main Challenges: Cross-Border Capacity & Downward Capacity

- As power flows historically follow the same patterns utilizing the available capacity to level prices across the region, balancing in the same direction of these flows may be difficult. The capacity has been used.
- As much of the hydro generation consists of run-of-river and reservoir, downward capacity may be scarce during Spring-melt. If there is no wind to turn down, and dispatchable power is low (downwards), cross-border capacity is likely to run out, before balancing harmonization can be used.
- Red Flags:
 - Low price convergence is a volatility indicator
 - Conventional or dispatchable generation pushed out of merit by must-run

Thank you!

Jean-Paul Harreman
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