

Inside the short-term markets



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NL: Intraday Index Forecast

- 1 What is it?
- How to use it?
- Performance

BE: The rise of passive balancing

- 2 The trend in Europe
- Latest regulatory evolution in BE
- Balancing forecast

From auctions to real time



Intraday Price Indexes: simple indicators for the complexity of continuous trading

Intraday continuous is made of many trades of different volumes at different timings

Intraday Price indexes are a volume weighted average of all trades in a given time period for a given product: hourly or quarter hourly.

Indexes are used for different purposes



Valuation



Benchmarking



Financial settlement



Hedging

Different Indexes for different purposes

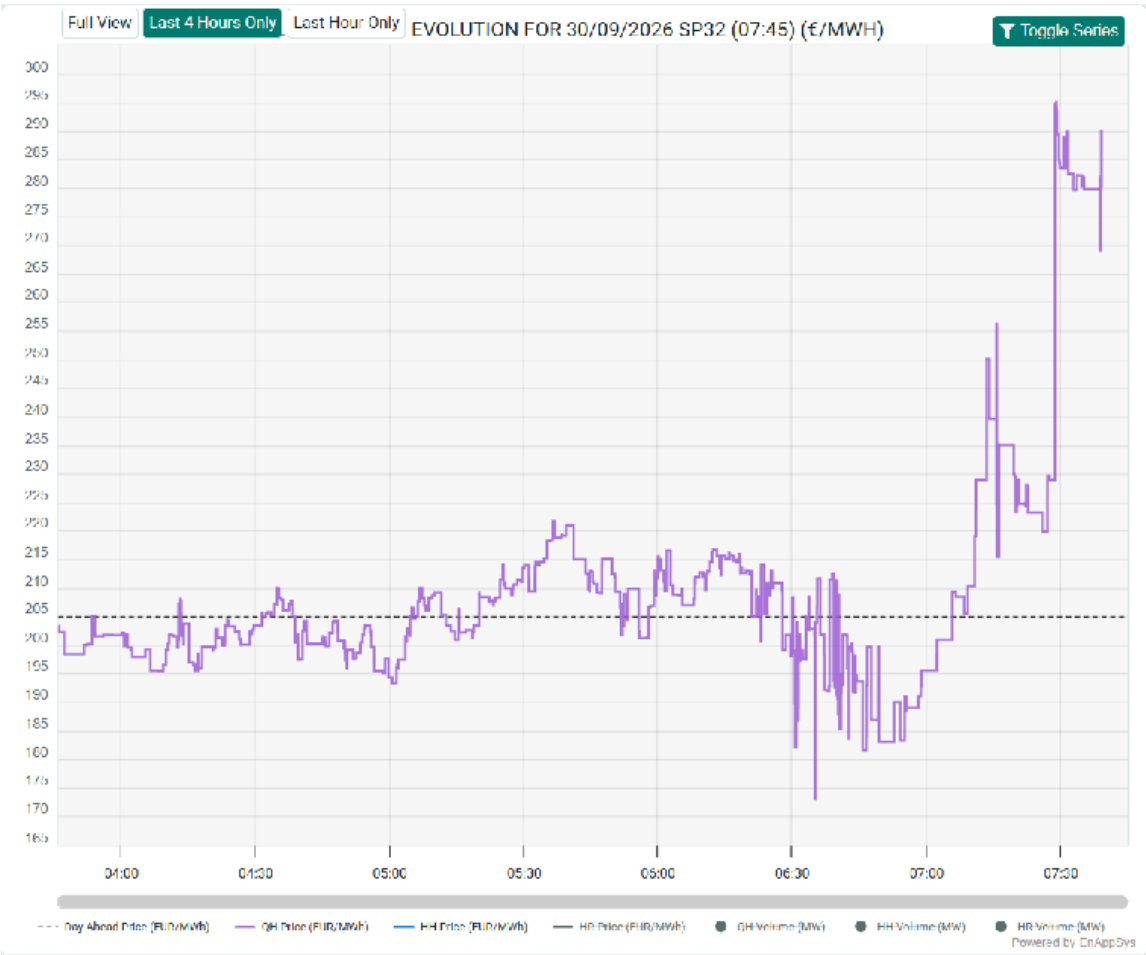
⌚ ID1 = Last 60 minutes -> Better for RES portfolio

⌚ ⌚ ⌚ ID3 = Last 3 hours of trading -> Speculative trading and/or early position closing

⌚ ⌚ ⌚ ⌚ ⌚ ⌚ ⌚ ⌚ IDFull = All trading session

Most important one as liquidity gathers at the end of the trading session

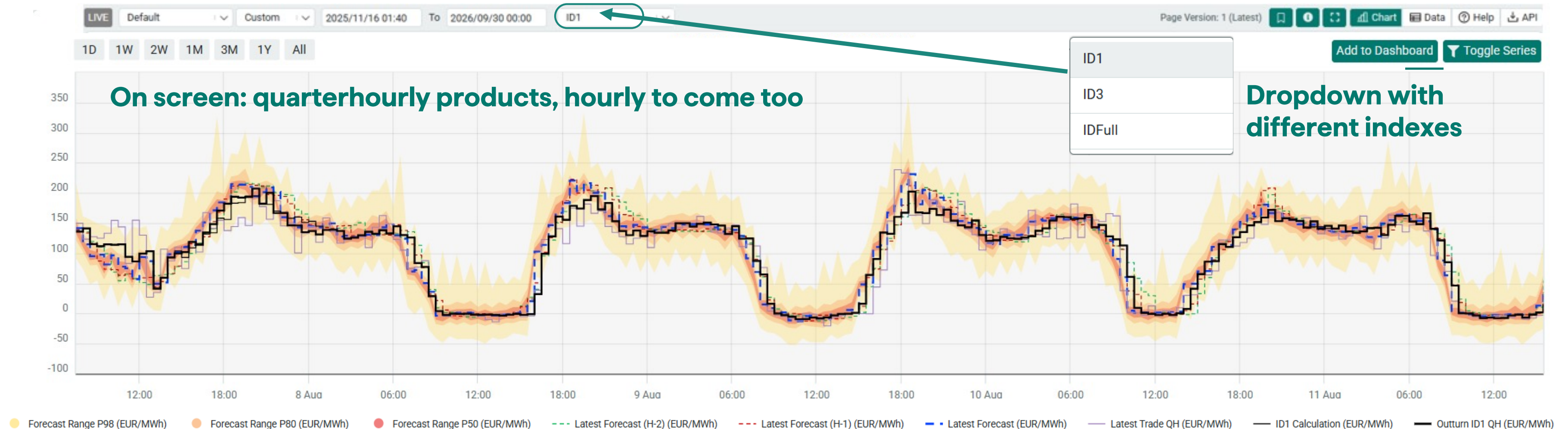
How to summarize this?



Traders use **ID1** because it converts a **fragmented, continuously traded** intraday market into a **standardized reference price** that can be used for valuation, benchmarking, hedging and financial settlement.

Let's meet our intraday index price forecast in EnAppSys

Available also for BE, FR, DE, AT, PL, FI, SEX, NOX, ...



Latest Forecast: created 15 minutes before delivery

Latest Forecast (H-1): created 1 hour before delivery

Latest Forecast (H-2): created 2 hours before delivery

Forecast Range P98/P80/P50: sensitivities

Outturn ID1 QH: actuals as published by EPEX on D+1

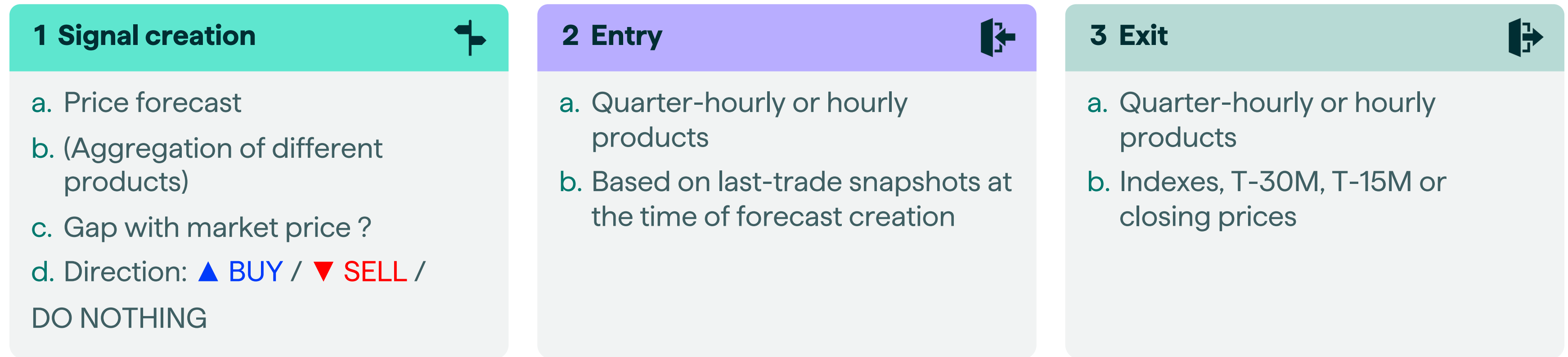
ID1 Calculation: trade-based calc. made on D



Quarter-hourly and hourly **indexes available for IDA1, IDA3 and ID Full**, with **actuals calculated within day**.

How to create forecasts based trading strategies and assess them?

A rule-based backtest on every quarter-hour, 1 MW per trade, net of exchange fees



Net PnL per trade = **direction** × (**exit** – **entry**) – €0.22

direction = +1 buy, –1 sell · fee €0.11/MWh per side · multiply by 0.25 for a 1 MW position per quarter-hour

Data and limits: NL from 1 Nov 2025, BE from 7 Jul 2026, to 29 Sep 2026.

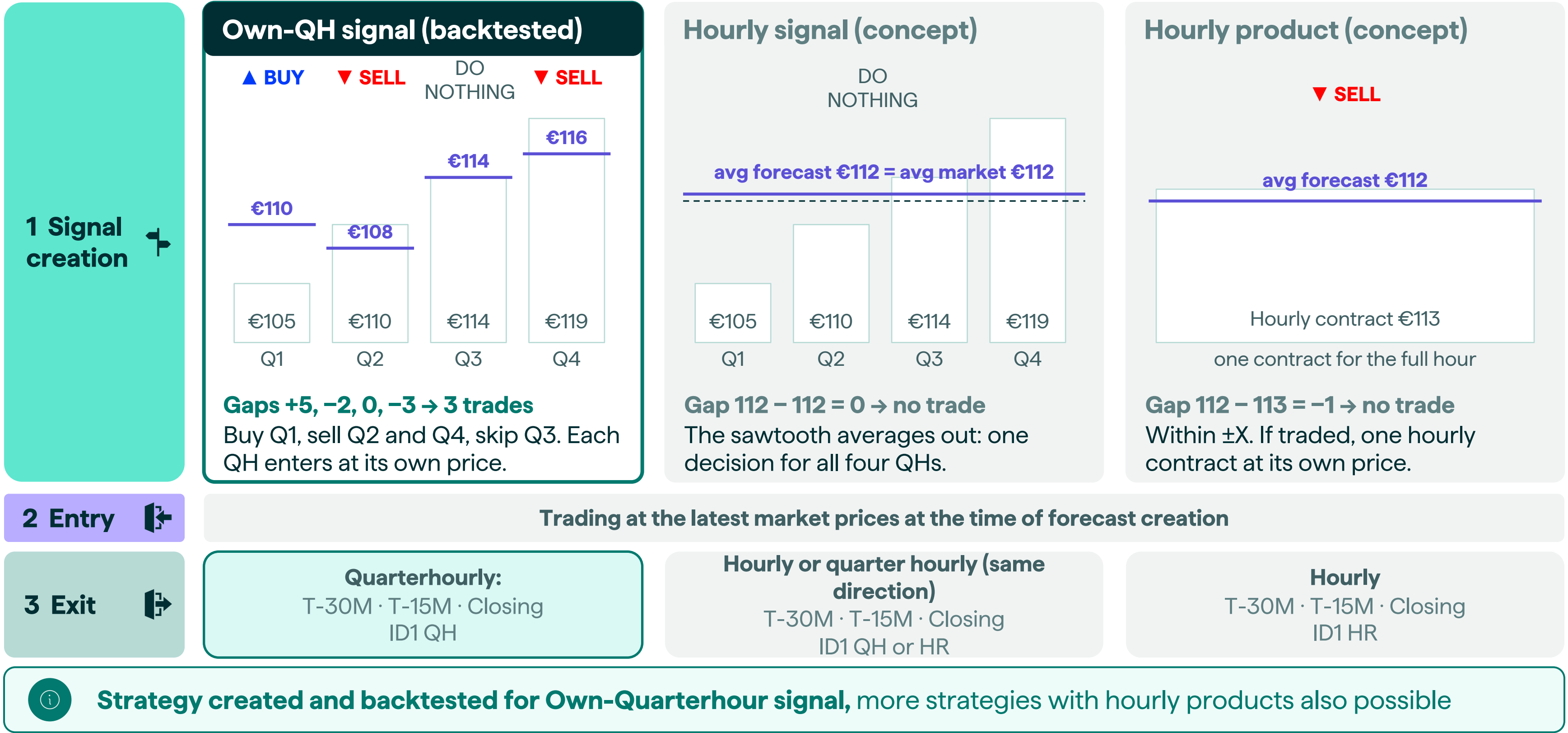
Entry prices are last-traded snapshots; no spread, slippage or volume limits, so figures are an upper bound.



Each strategy is a **signal** (BUY / SELL / DO NOTHING), an **entry at the last traded price** and a chosen **exit**; every combination is scored with the same **net PnL** formula.

Same hour, three different decisions

Market and forecasts at $h - 60$ min for the coming hour, threshold $X = 1$ (illustrative prices)



Lavender = forecast · grey bars = market price at $h - 60$ · arrows = decision · ID forecast strategy backtest · DE / BE / NL

Own-QH signal: results by market as a spread for better comparison

Net €/MWh, 7 Jul – 29 Sep 2026, ID1 HM01, X = 0, after fees; PnL: € total for a 1 MW position at the ID1 QH exit

Market	T-30M	T-15M	Closing QH	ID1 QH	Always buy → closing	Always buy → ID1 QH	Trades	Net PnL, 3 months	Net PnL ×4, annualised
BE	3.88	4.06	4.65	6.99	-0.77	-0.67	8,134	€13.9k	€55.6k
NL	5.43	5.34	3.55	5.11	-1.11	0.64	8,159	€10.3k	€41.2k



NL: real skill

€5.11/MWh at ID1 QH and about €5.40 at T-30M / T-15M, while always buying earns at most €0.64.

BE: best per MWh

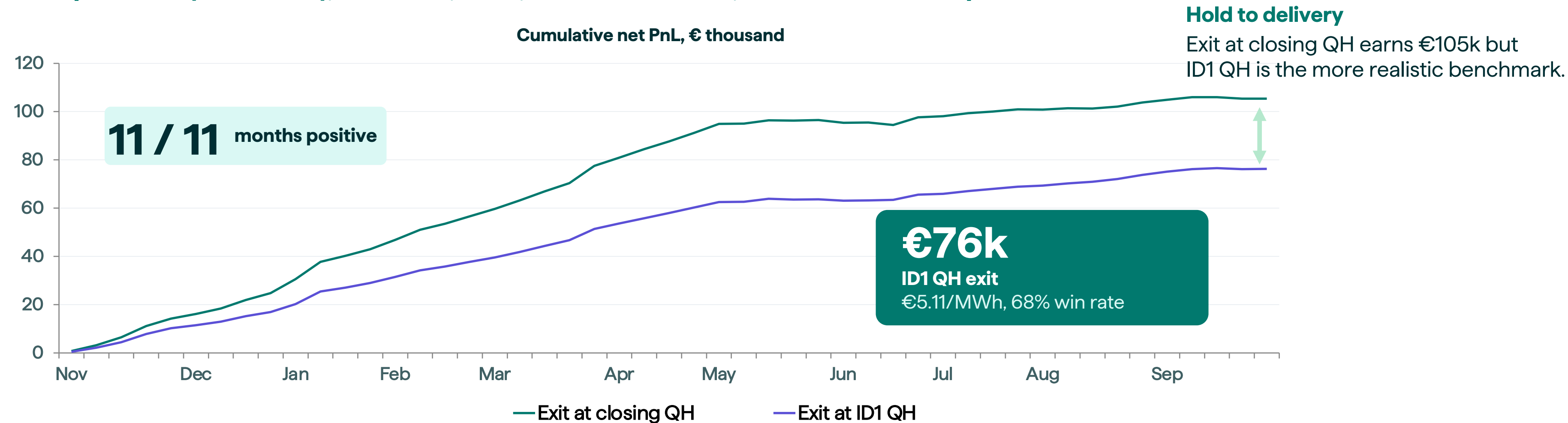
€6.99 at ID1 QH and €4–5 at the other exits, with always buying negative. Part may be within-hour price pattern rather than forecast skill.



BE leads on PnL (€13.9k vs €10.3k in 3 months); NL shows the clearer forecast skill.

NL: own-QH signal over 11 months

1 MW per trade (0.25 MWh), ID1 HM01, X = 0, net of €0.22 fees, 1 Nov 2025 – 29 Sep 2026



Mind the large gaps

Gaps above €50 are about 5% of trades but roughly 36% of PnL; those prices may not be executable.



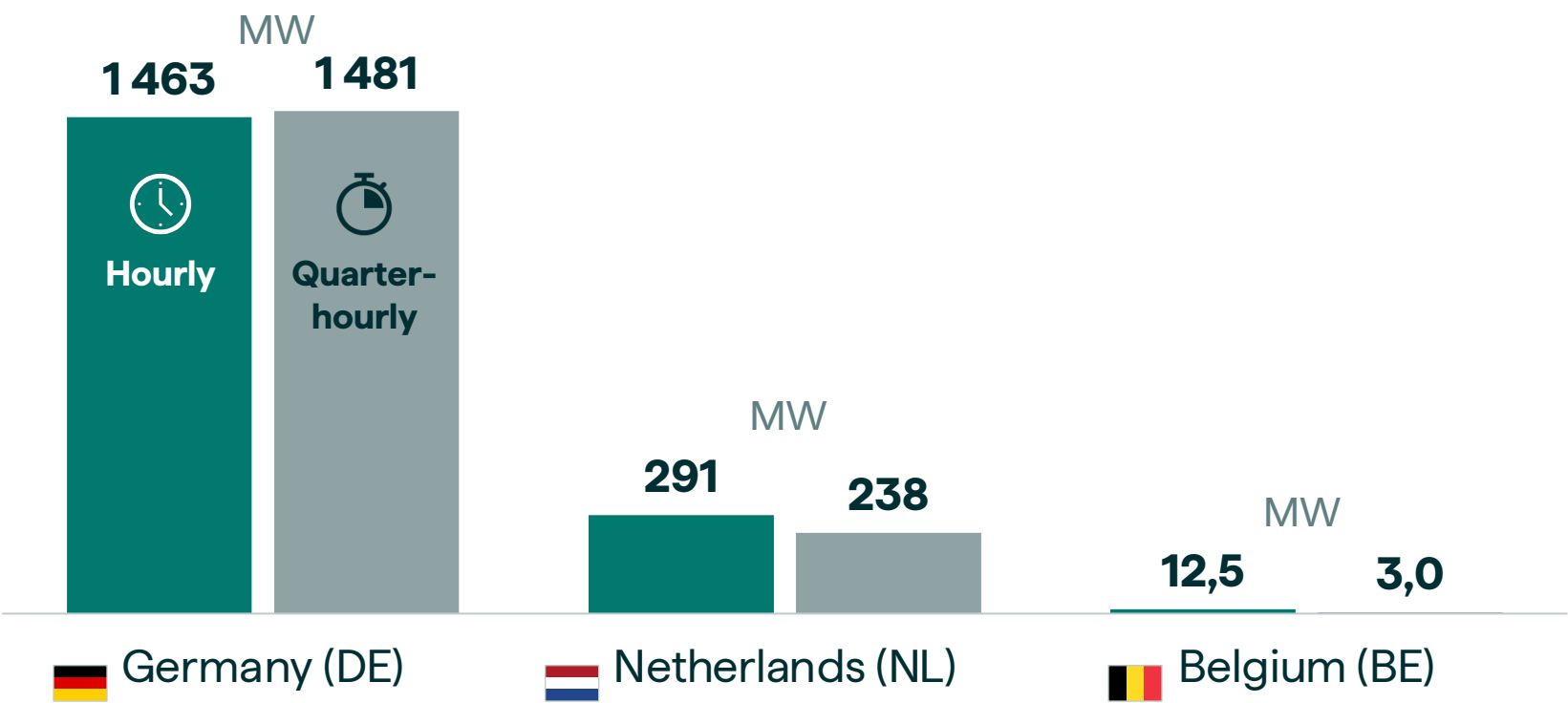
NL: the own-QH signal earns **€76k per MW at the ID1 QH exit** and was positive in all 11 months

Liquidity as a caveat

DE is far more liquid than NL; BE is illiquid and leans on cross-border trades

Average traded volume per product for ID1 timeframe

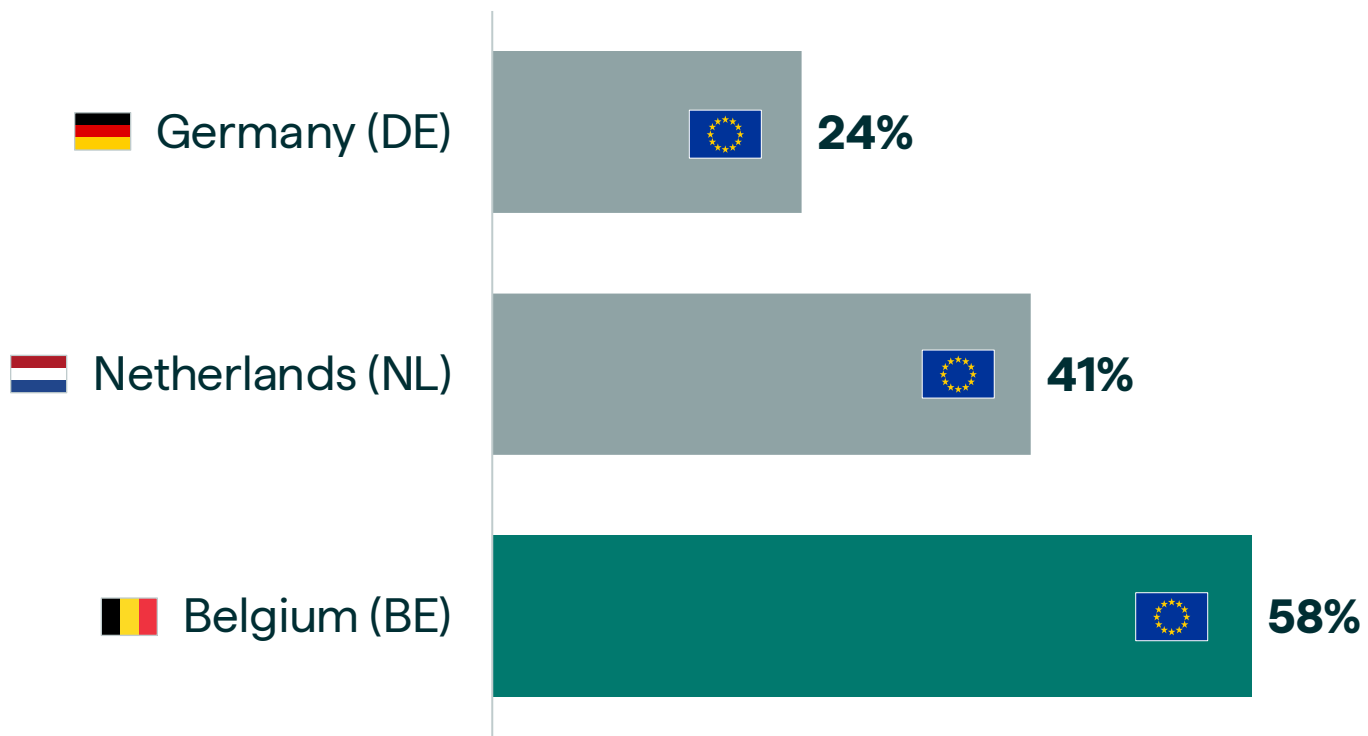
MW, **hourly** vs **quarter-hourly** products by country, Data: 2026 Jan-Oct



- **DE trades ~5× NL** per product; BE barely trades

Cross-zonal share of BZ volume

Buy side, average of Jan–Jun 2026



- **58% of BE volume is cross-zonal**, against 24% in DE
- BE liquidity depends on available **XBID capacity**

DE is liquid, NL workable in quarter hourly products, BE illiquid and dependent on XBID capacities
Strategies might need to be adapted to liquidity phases where cross border capacities are available

Source: EnAppSys (volume per product); cross-zonal share of BZ volume, buy side, monthly average Jan–Jun 2026

30 Minutes Cross Zonal Gate Closure Time to increase liquidity

Live since 14/01 for selected borders

Intraday Gate closure Time Reduction 60 → 30 min

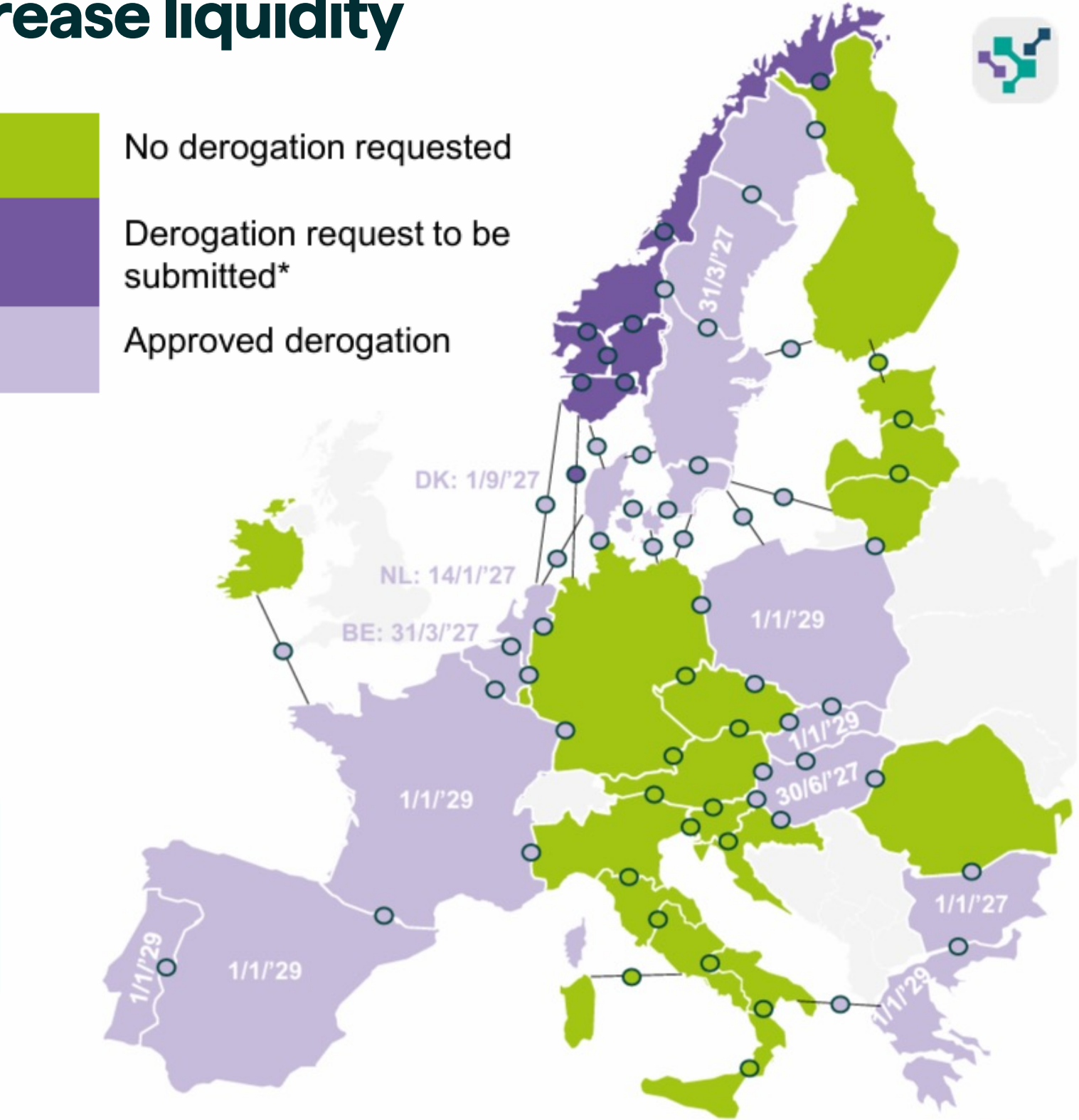
Borders	Planned go-live
NL-DE	Q4 2026 latest 14 Jan 2027
BE-NL / BE-DE	Q1 2027 latest 31 Mar 2027
Remaining borders, such as BE-FR	Q4 2028 latest 1 Jan 2029

Source: MCCG webinar, 4 Mar 2026 (ENTSO-E border-based overview, Feb 2026); TenneT on ACM derogation, 15 Jan 2026

+105%

Austria: trades doubled after go-live 14/01

In the time window 60-30 minutes before delivery
AT has cross-border dependencies similar to BE



Gate Closure time reduction 60 → 30 implementation ongoing: upcoming for BE & NL borders!
Important step **for intraday liquidity** and **balancing** as resulting capacities goes into MARI & PICASSO afterwards

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Europe: relaxation for passive balancing is happening

Established

Netherlands

Passive balancing is an explicit, long-standing part of the Dutch design, built on live balance-delta data that is now published every 12 seconds instead of every minute.

Just opened

Switzerland · Jan 2026

Moved to a decentralised model after 2024 forecast errors, e.g. 1,400 MW of solar missing on a snow day.

-40%

control energy since introduction, 60% of the help from trading balance groups; 100+ BRPs now support the grid.

Opening now

Belgium

Elia proposes a partial, controlled relaxation: caps of 0, 5 or 10 MW per BRP. Consultation in Q2 2027. Go Live date in Q4 2027.

Germany

Not officially allowed, yet common practice. TSOs are discussing a gradual opening. BRP contract to be consulted in H2 2027



**Common drivers: more RES means larger forecast errors.
Letting BRPs help the system is cheaper than contracting ever more control power.**

Sources: Yggdrasil (L. Weber); BNetzA Systemstabilitätsbericht 2025; Elia benchmark

Elia now wants to change the rules for passive balancing

Art. 16.2 T&C BRP today: an obligation of results

BRPs may deviate from their portfolio balance to help the system in real time, **provided they keep the resources to restore it in real time and at any time.**



Enforced for trader BRPs only !



[NEW] PROPOSED NEW ARTICLE 16.2

A BRP that deviates from its own balance **must at all times comply with its Maximum Authorized RT Exceedance.**



DEFINITION

Real-Time Exceedance

The part of a BRP's imbalance beyond the flexible resources in its portfolio to restore balance in real time.



Additional imbalance volume possible depending

- 1) on BRP's flexible assets and
- 2) Elia's methodology to calculate it (2 hours rolling window)



DEFINITION

Maximum Authorized RT Exceedance

A parameter set individually for each BRP: 0, 5 or 10 MW.



NEW !



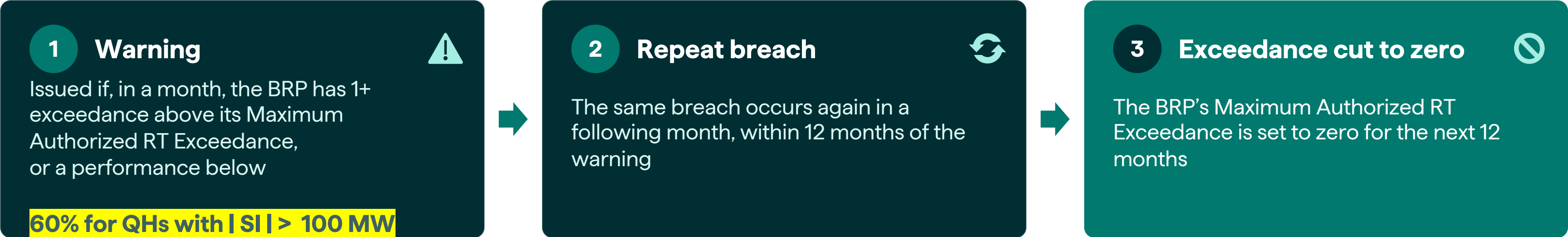
Valid for pure traders as a maximum imbalance position



Elia's proposal: BRPs may deviate from balance up to an **individual limit of 0, 5 or 10 MW, on top of own flexibility**

Elia to implement a monthly BRP performance monitoring

Goal: mitigate the system security risk if BRPs take large commercial positions



OTHER MITIGATION MEASURES

RISK 

Financial risk: larger imbalances lead to higher imbalance invoices

Adjusted bank guarantee

BRPs that want a Maximum Authorized RT Exceedance above zero might need to raise their bank guarantee.

RISK 

New BRPs without proven experience

3-month track record for new BRPs

New BRPs operate for 3 months before they can request a higher Maximum Authorized RT Exceedance and must raise their guarantee to match.

 **Breaches escalate monthly: a repeat breach cuts a BRP's exceedance to zero for 12 months**

Let's meet our NRV forecast in EnAppSys

Available in many other countries

2

Imbalance price as collateral output

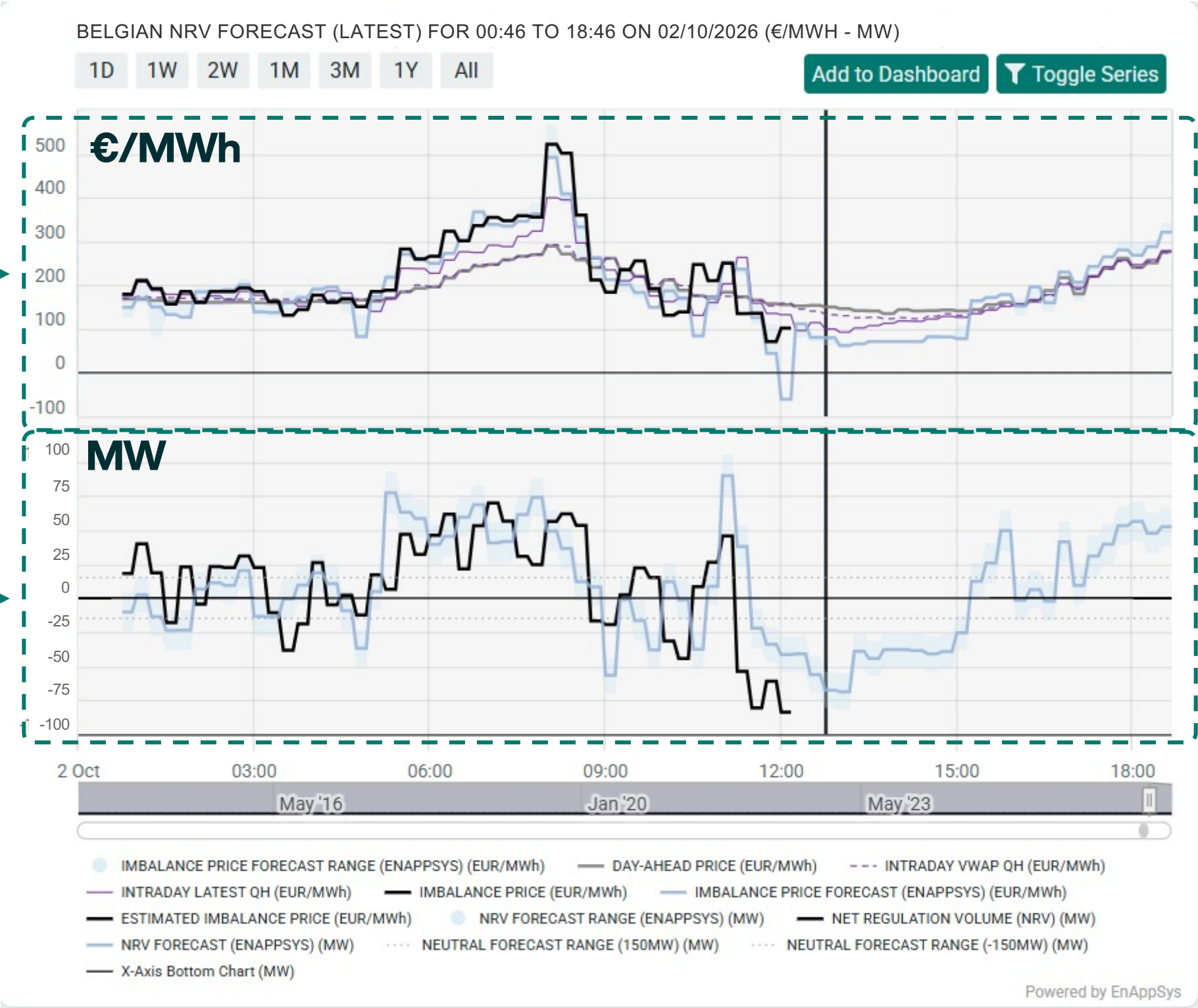
Forecast in blue
Intraday prices in purple
Actuals in black

1

NRV: main output driver of imbalance price

Forecast in blue
Actuals in black

NRV = net regulation volume



3

Forecast creation

4h, 3h, 2h, 1h, 45m, 30m, 15m before delivery
Minutely forecast update [Beta]

4

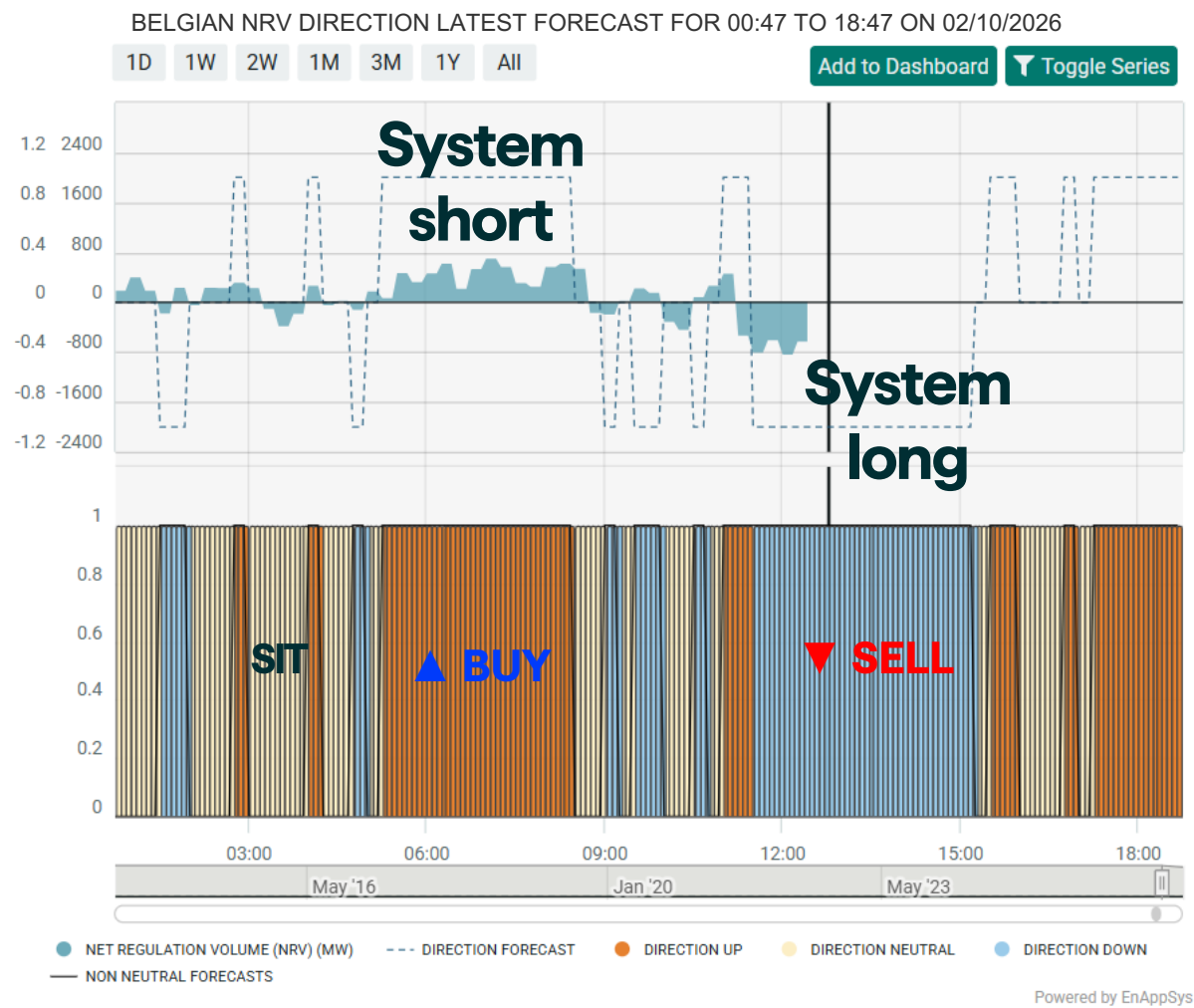
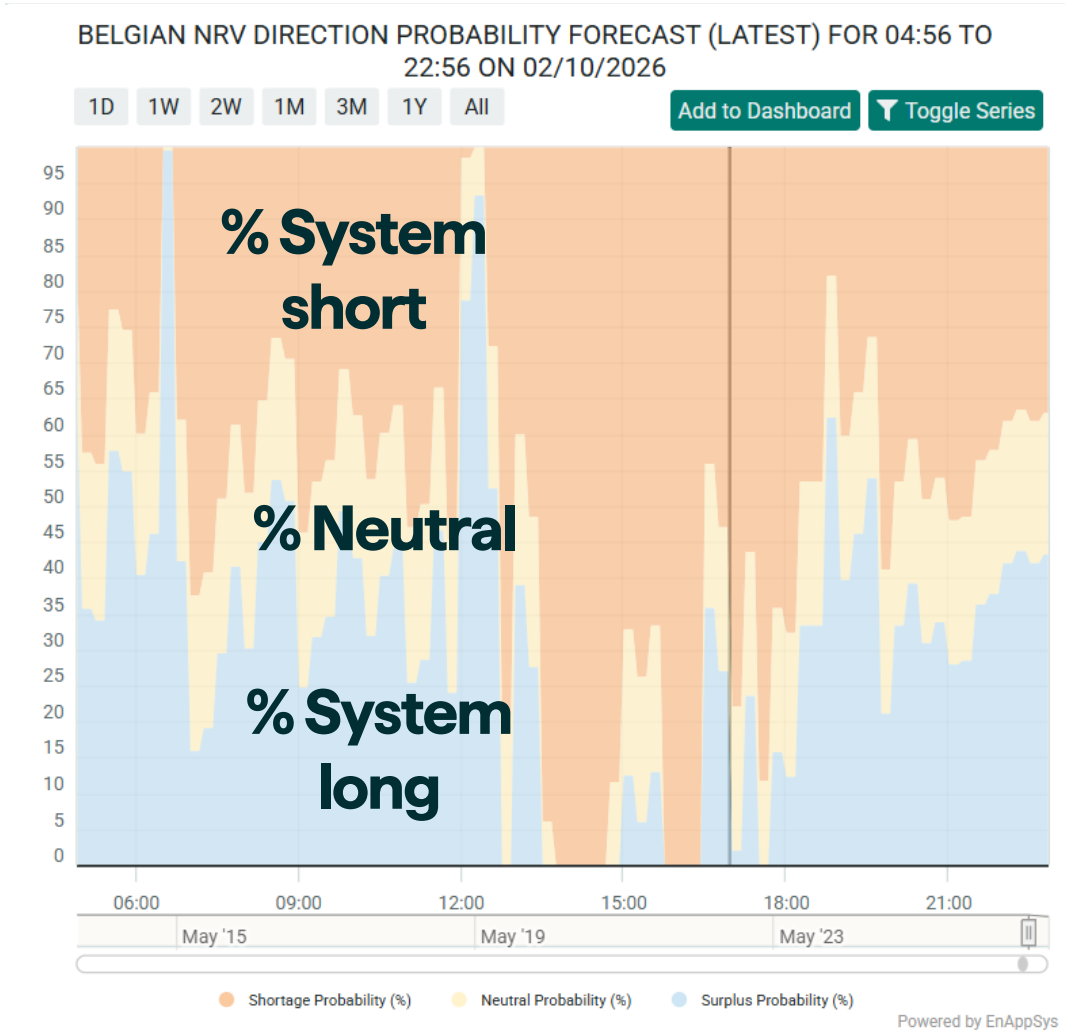
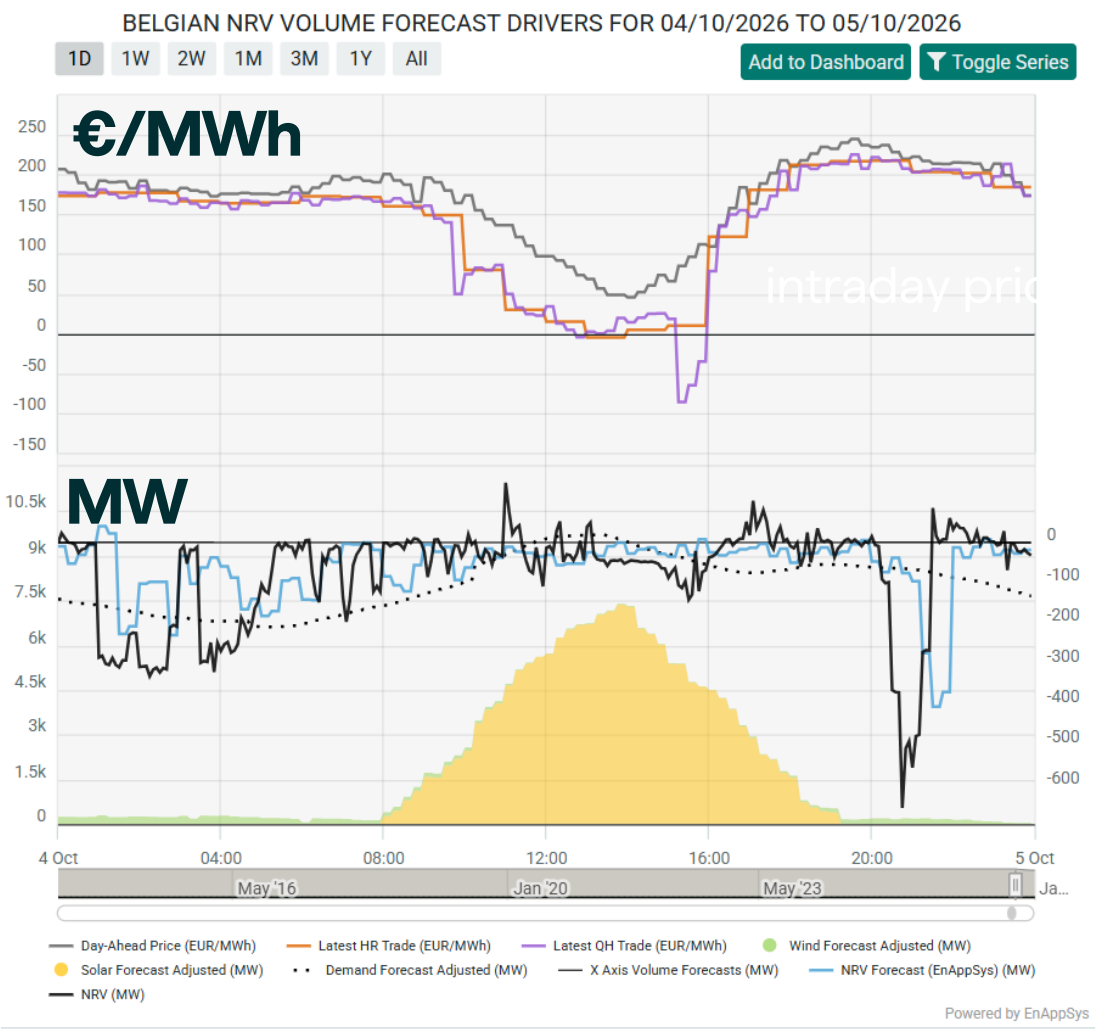
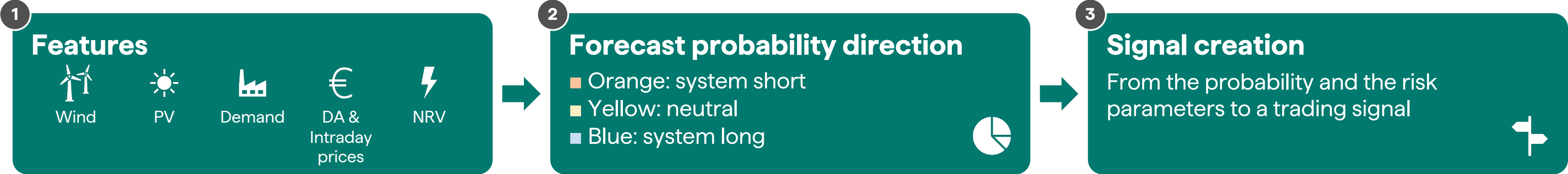
Risk tolerance parameter

Three settings:

- High risk (NRV: 10 MW)
- Average risk (NRV: 20 MW)
- Low risk (NRV: 30 MW)

EnAppSys forecasts NRV, the driver of the imbalance price, from 4h to 15m before delivery with three risk settings

The balancing forecast is creating a trading signal



Drivers feed a probability of system short, neutral or long; the risk setting turns it into a trading signal

Following the signal is producing a positive PnL over a long time period

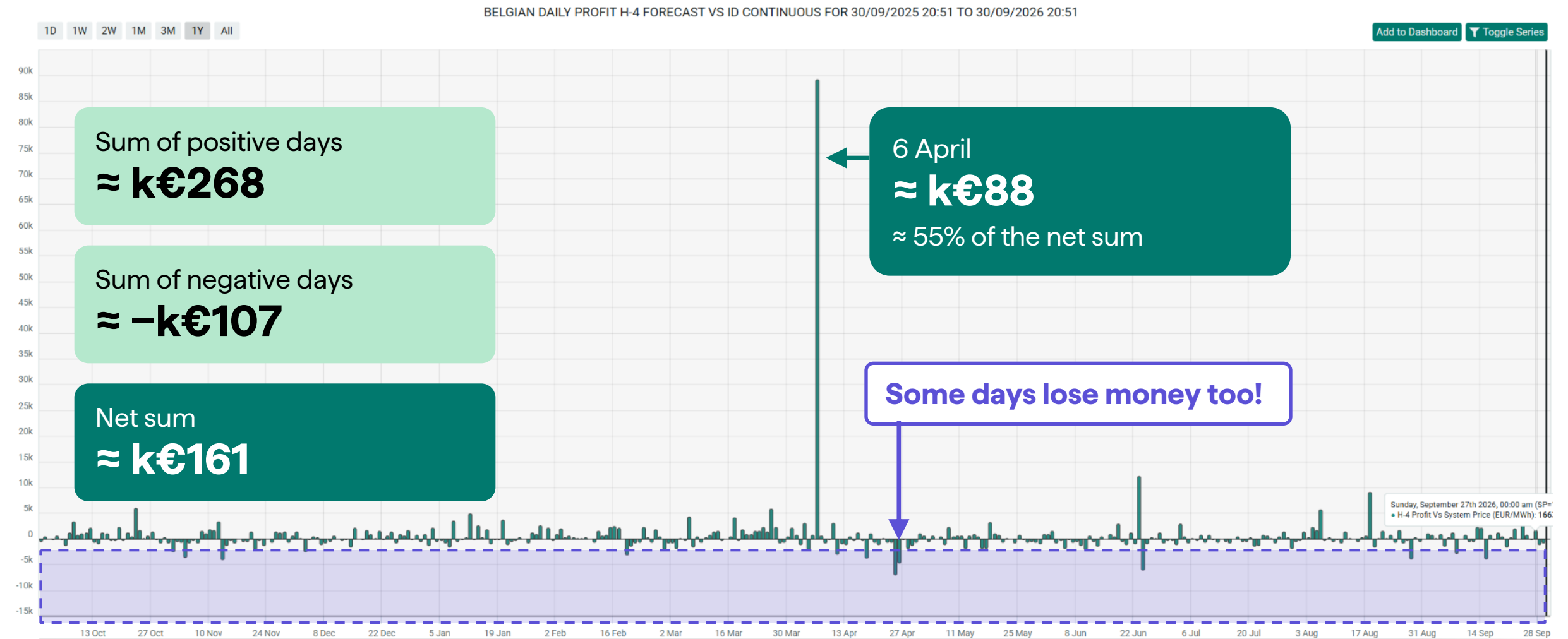
Daily PnL over the period 30/09/2025 to 30/09/2026 for BE

Assumptions

- Entry: intraday market, last trade at the time of forecast creation
- Exit: imbalance price
- 1 MW traded on each non-neutral trading signal generated by the model

Caveats

- PnL is a theoretical maximum
- Execution will deliver less in reality, for example because of higher volumes being executed



Recap: April 6th: Easter Monday
-> PV overshooting and MARI activations pushed the imbalance prices to -15k€/MWh for 90 minutes



Following the signal nets ≈ €161k over 12 months, but 6 April alone delivers ≈ 55% of it

Sensitivies: Yearly PnL by horizon and risk tolerance.

Belgium • H-x forecast vs ID continuous • Oct '25 – Oct '26



The trade-off
Later forecast: better quality, but a lower spread to earn
Higher risk: more PnL, but more exposure

Shorter horizon wins.
Every hour closer to delivery adds PnL. H-1 earns 73–83k more than H-4 at the same risk level.

Risk tolerance pays.
High risk beats low risk by 32–50k at every horizon, with no exceptions.

April carries the year.
April '26 alone is 37–53% of each total. H-1 and H-2 have no losing month.



Closer to delivery and higher risk both pay: H-1 at high risk earns ~€242k, almost twice the ~€123k of H-4 at low risk.

Net monthly PnL summed, Oct '25 to partial Oct '26. Values read from EnAppSys charts, accurate to about ±2k per cell.

Fine Tuning: Accuracy drops as the forecast moves away from delivery.

Belgium · NRV forecast accuracy (%) · Oct '25 – Sep '26 – for System imbalance > | 100 MW |, average risk ⚠️ ≤ 60% Elia threshold

	Oct '25	Nov '25	Dec '25	Jan '26	Feb '26	Mar '26	Apr '26	May '26	Jun '26	Jul '26	Aug '26	Sep '26	Year	Year, unfiltered
LATEST	81.6	79.1	83.0	80.3	81.8	84.3	84.2	82.3	78.2	74.4	75.5	82.5	80.5	72.9
M60M15	74.5	71.0	80.6	76.6	76.2	80.8	78.2	75.8	72.3	67.3	71.8	78.7	75.2	68.4
M60M30	69.2	64.5	76.9	74.3	72.8	80.3	73.4	71.9	70.4	64.3	68.4	76.3	71.9	65.6
M60M45	67.2	60.8	74.1	72.8	69.5	76.8	71.0	69.4	67.1	60.6	67.3	74.1	69.2	63.6
H24M01	69.1	64.7	75.8	74.1	70.8	78.2	72.5	70.4	69.6	62.6	68.6	76.1	71.1	64.8
H24M02	65.7	57.7	65.2	66.9	64.5	72.3	65.8	65.9	66.5	58.1	63.6	69.7	65.4	60.3
H24M03	66.1	56.0	65.9	65.2	57.9	72.9	63.8	65.1	65.1	57.9	61.1	64.2	63.7	58.9
H24M04	62.6	53.1	63.9	60.2	52.0	72.3	62.2	64.5	63.8	56.1	63.7	63.9	62.1	57.7

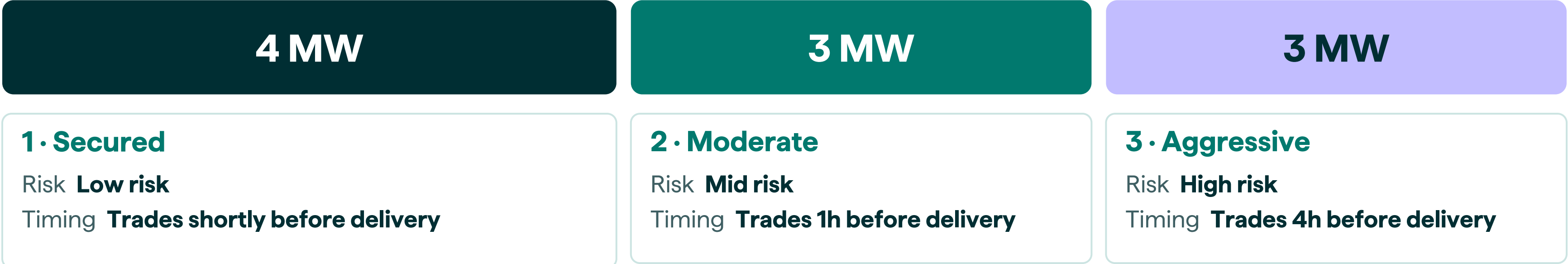


Balancing forecast created H-1 before delivery meets the criteria all year long.

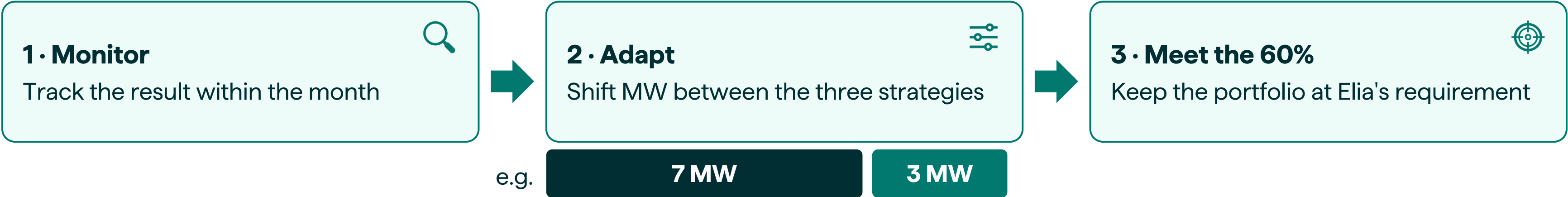
Accuracy = actionable and correct ÷ actionable (non-neutral) forecasts, 15-minute periods. Year column uses all periods, not an average of months.

Fine Tuning: combining forecast creation and monitoring

With 10 MW of flexibility, three strategies share the risk



Monitoring over a month and dynamic adaptation



Mixing three strategies spreads the risk across 10 MW, and monthly monitoring keeps the portfolio at Elia's 60%.

Illustrative split of 10 MW; the shares can change with each month's monitoring result.

Benelux Deep Dive

Thanks for listening

Meet us today and tomorrow



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Q&A

What questions do you have?

Thank you