ALL THINGS BATTERIES

Marketer perspective

From ancillary services only to cross-market optimisation

Clarissa Irion
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Entelios
we are moving energy

About us: Entelios AG

Pioneer & market leader in industrial Demand Response

Founded in

2010

Offices in

MUC BER

More than

700

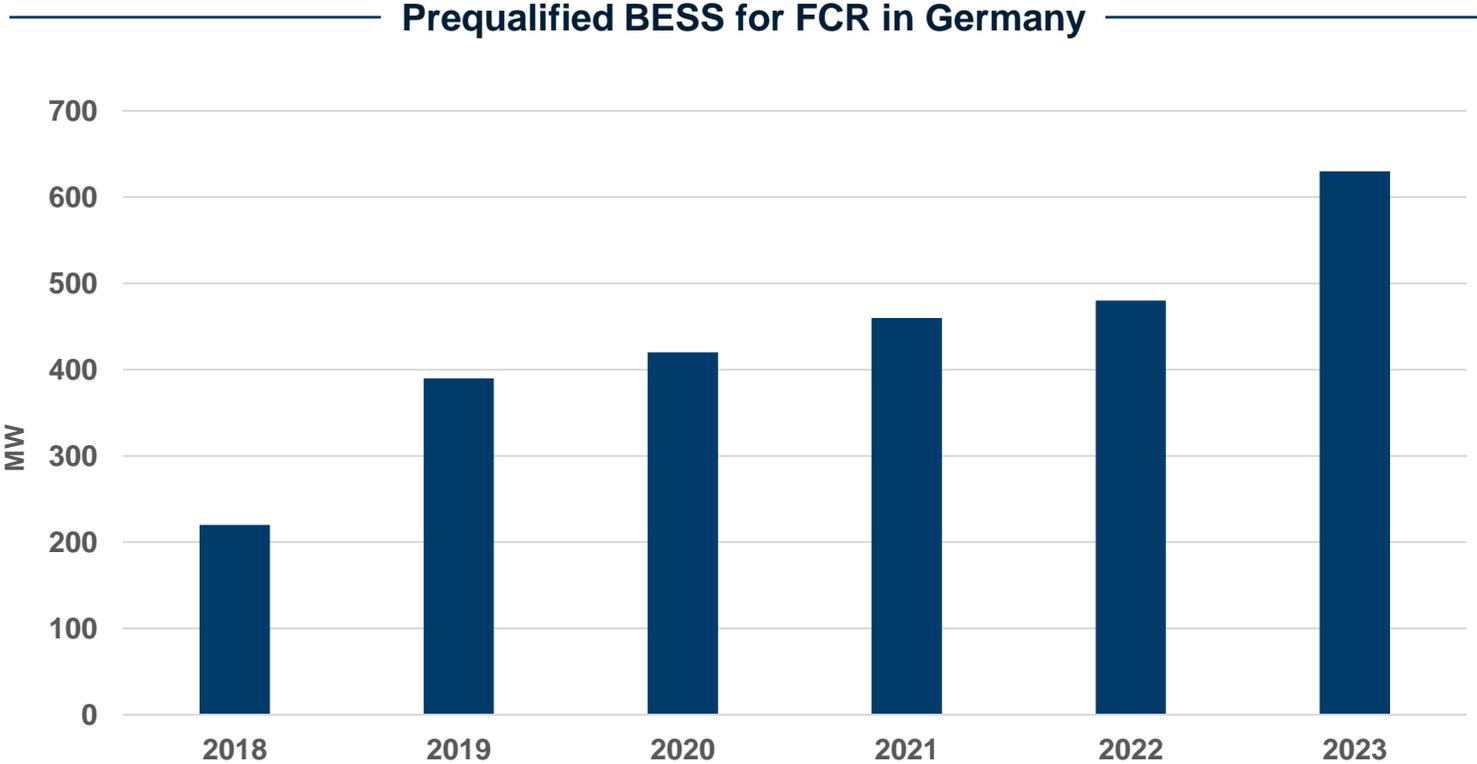MW of flexibility

Loads Generation Storage

Cross Market Flex

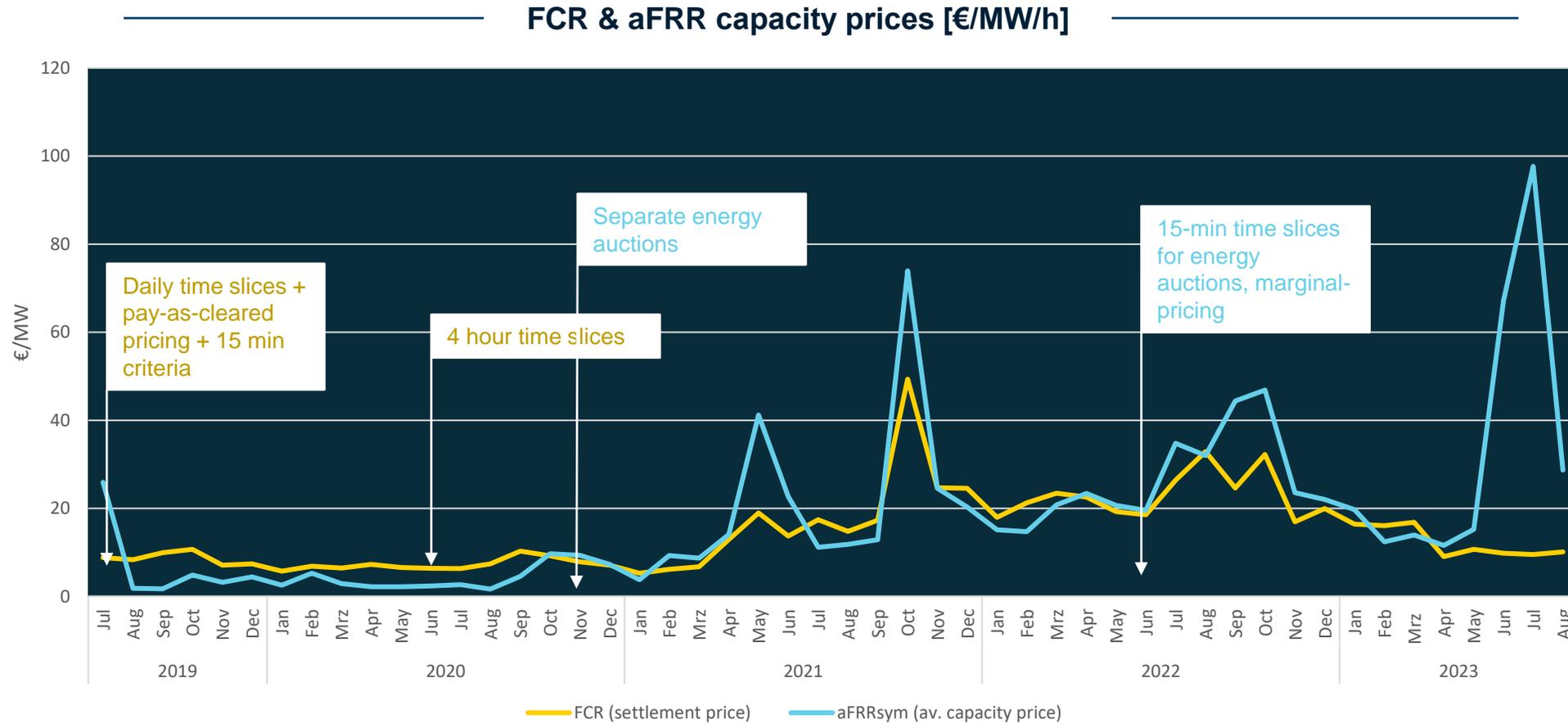Ancillary services Wholesale

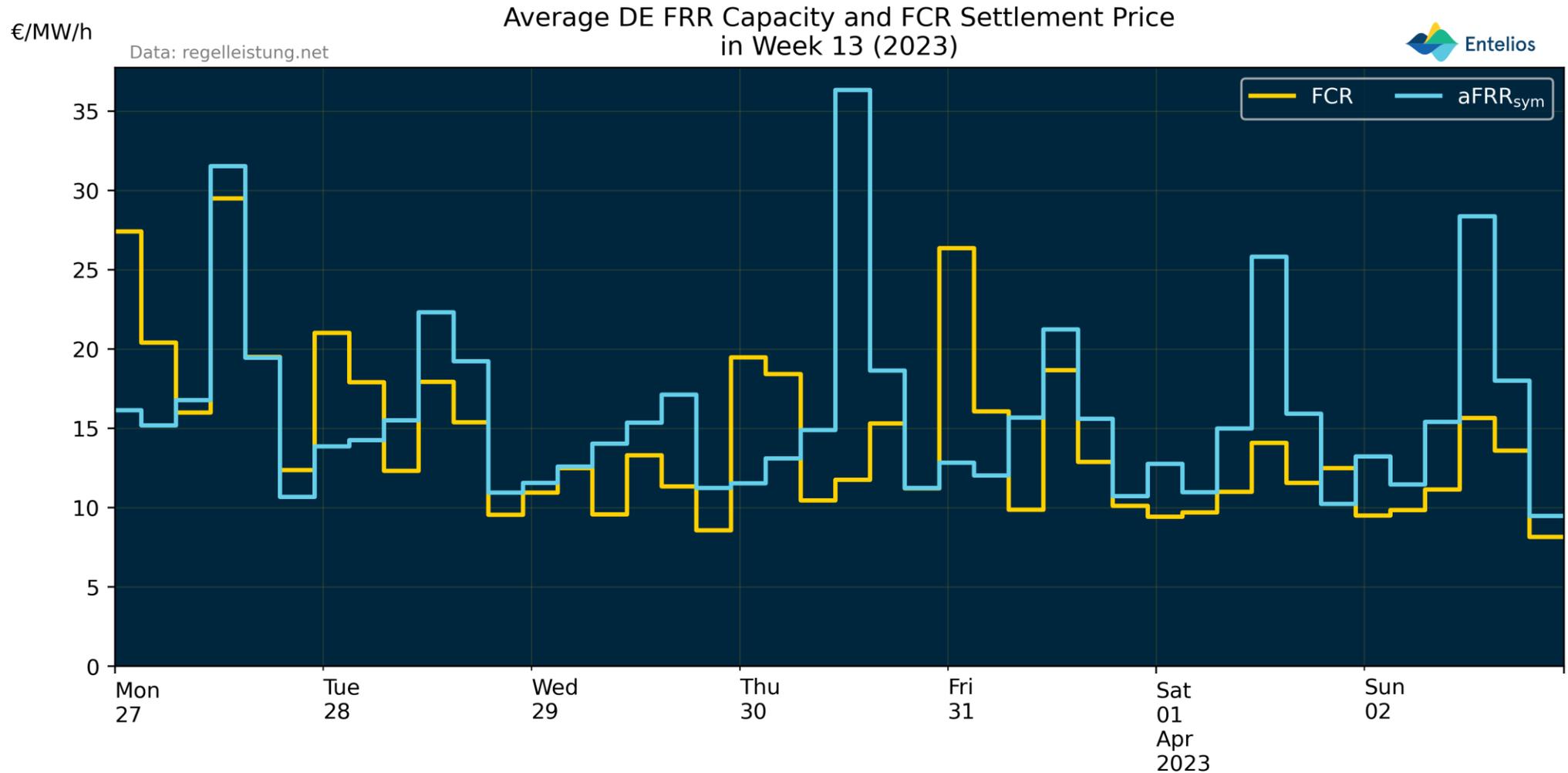# Market development in Germany

BESS expansion over the years

Prequalified BESS for FCR in Germany

Market development in Germany

More granularity in the market design

FCR & aFRR capacity prices [€/MW/h]

Daily time slices + pay-as-cleared pricing + 15 min criteria

4 hour time slices

Separate energy auctions

15-min time slices for energy auctions, marginal-pricing

FCR (settlement price) — aFRRsym (av. capacity price)

Market development

Performance opportunities within the day

Average DE FRR Capacity and FCR Settlement Price
in Week 13 (2023)

Data: regelleistung.net

€/MW/h

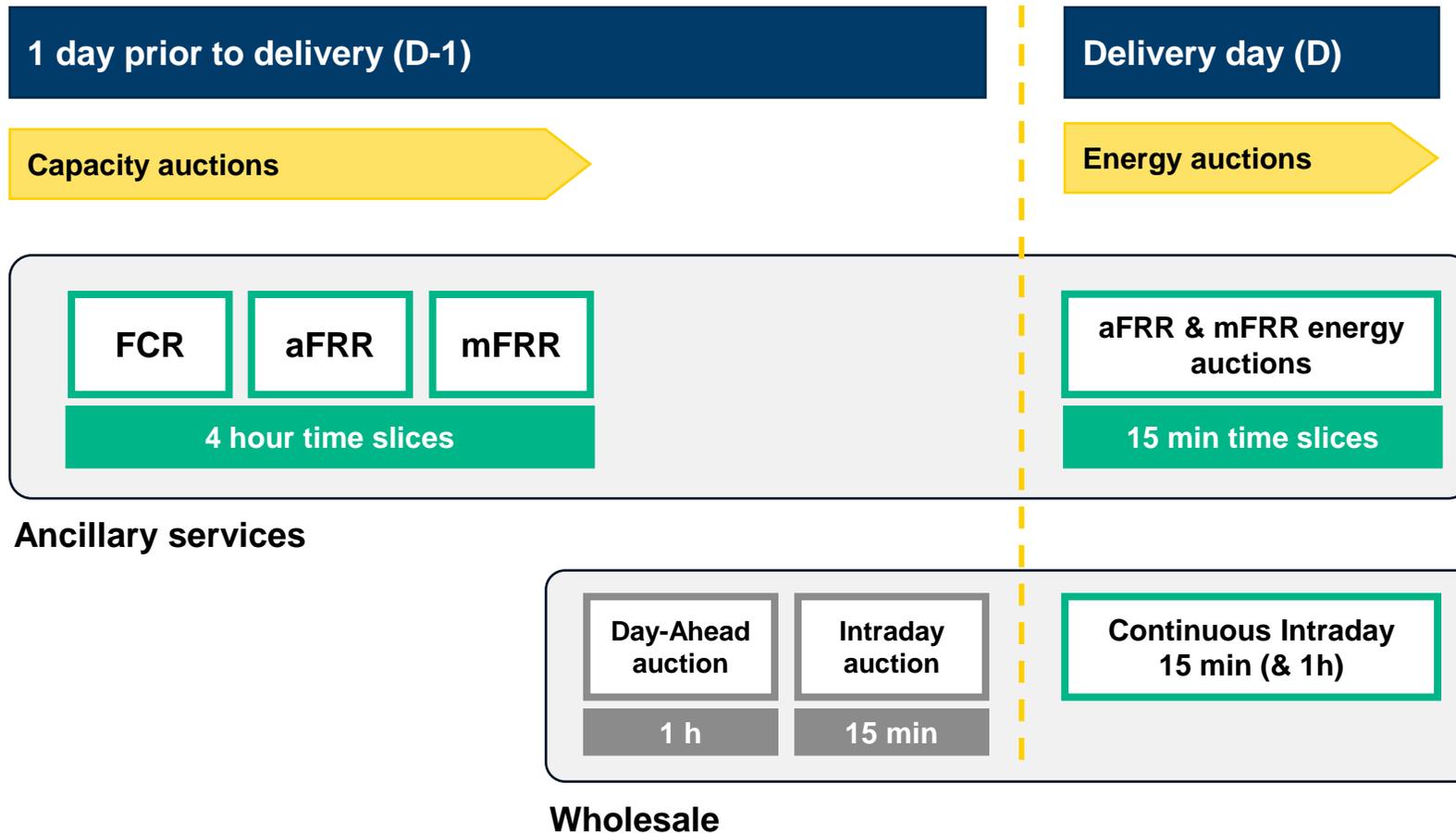Legend: FCR, aFRR$_{sym}$

ANCILLARY SERVICES & TRADING

ENTELIOS CROSS-MARKET OPTIMISATION

Cross-market optimisation

Resilience & opportunity through diversification

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Market cascade

1 day prior to delivery (D-1)	Delivery day (D)

Capacity auctions

Energy auctions

Ancillary services

FCR	aFRR	mFRR

4 hour time slices

aFRR & mFRR energy auctions

15 min time slices

Wholesale

Day-Ahead auction	Intraday auction
1 h	15 min

Continuous Intraday 15 min (& 1h)

Value stacking of flexibility products

0-4 h	4-8 h	8-12 h
WS	WS	WS
FCR		FCR
	FCR	aFRR

Value stacking

Combine advantages of different markets

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+ FCR

- permanent activation within medial SoC range
- marginal pricing

+ WS
Wholesale

- arbitrage trading
- low restrictions
- rising market volumes

+ aFRR
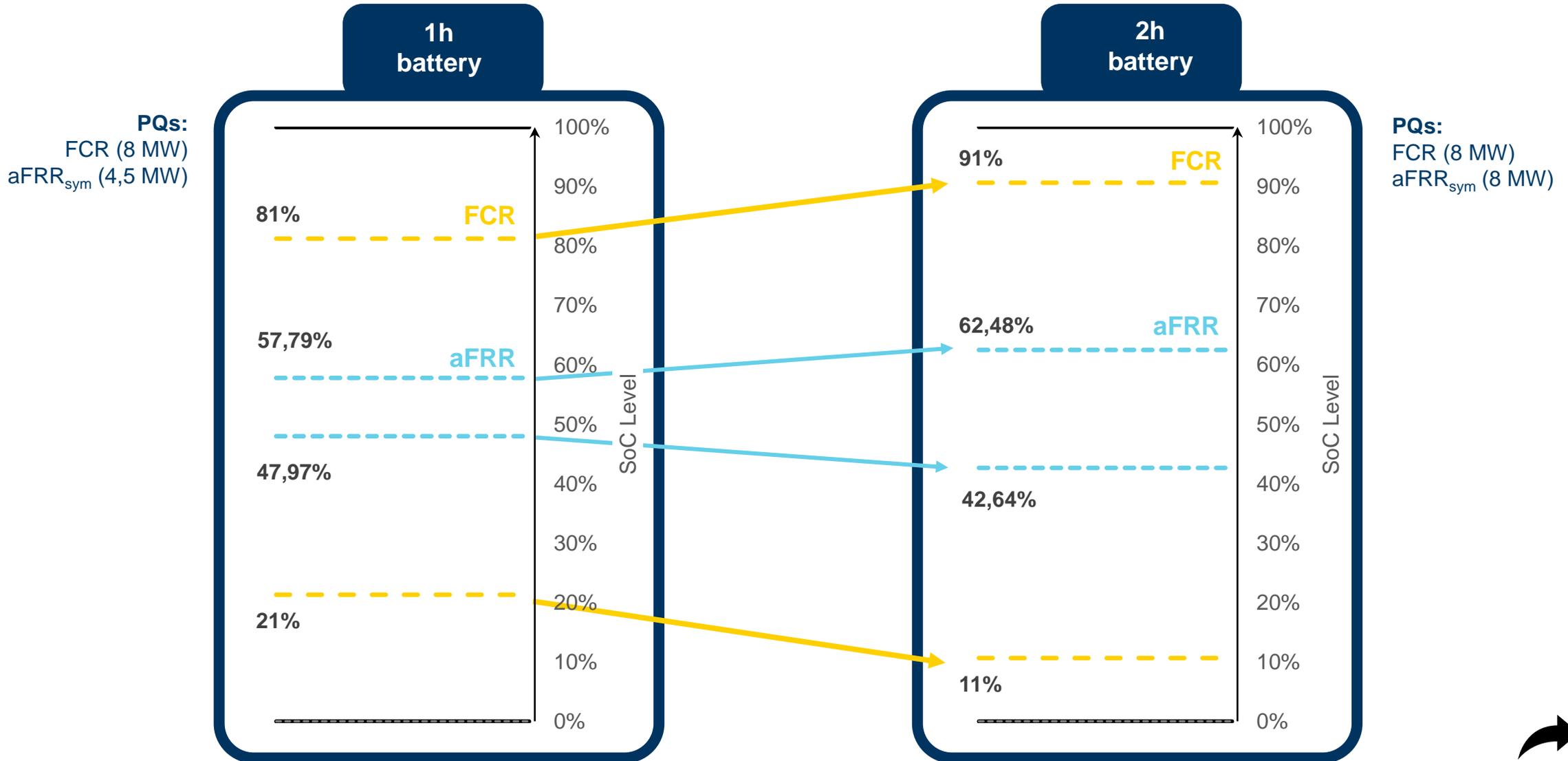
- relatively big market (2GW in each direction)
- separated capacity and energy market
- cycle-saving strategies
- SoC-management optimisation
- highly lucrative activations

By combining the advantages of all markets,
you can achieve the best possible result for your flexibility.

Future-proof battery design

Choice impacts cross-market optimisation

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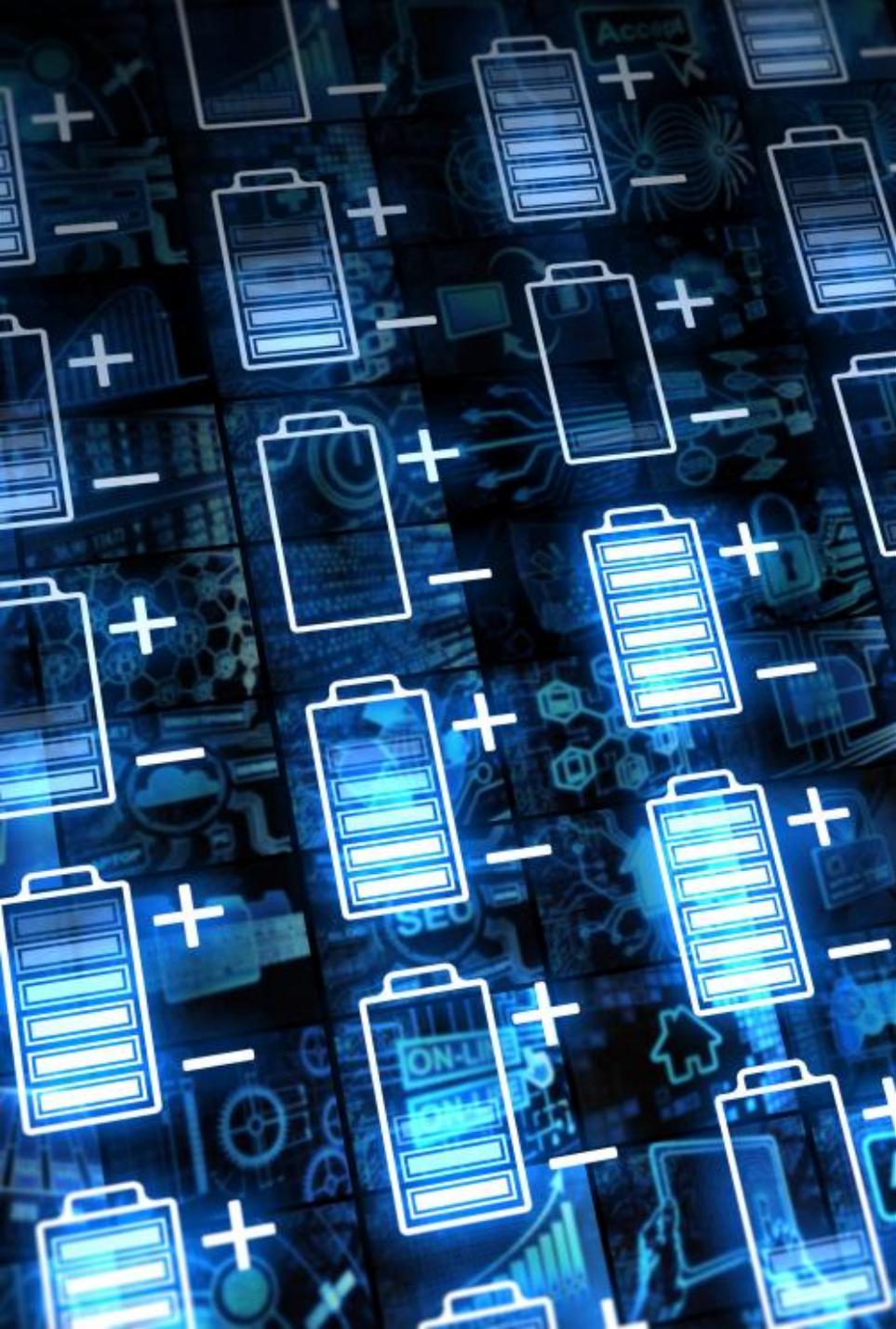|	1 hour battery	2 hours battery	3 hours battery
BATTERY TYPES			
USE CASES	• Peak shaving • FCR	• Peak shaving • FCR • Wholesale + • aFRR +	• Peak shaving • FCR • Wholesale ++ • aFRR ++

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