

# EU battery investment

Timera webinar

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# ‘EU BESS investment opportunities’ webinar scope

## Agenda

### 1. Investment landscape

- Scale of BESS opportunity
- 6 key markets
- 5 key challenges
- Revenue stack breakdown

### 2. German case study

- Back-testing revenue stack
- Ancillary markets

### 3. Q&A

## Speakers



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Transition



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## **Disclaimer**

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# About Timera Energy

## Specialist energy consultancy

*Focus on power, gas & hydrogen*

## Extensive industry expertise

*Practical knowledge from senior industry roles*

## Pragmatic commercial focus

*Covering investment, value monetisation & market analysis*

## Strong client base

*Leading energy companies (e.g. producers, utilities, traders, funds)*

## Leading industry blog

*30,000+ regular readers, publications, conferences*

Timera clients include



# What does Timera do?

## BESS consulting advice

- BESS revenue analysis (e.g.GB, DE, FR, NL, BE, IT, ES)
- Market & price analysis
- Transaction support & DD
- Investment targeting
- Offtake structuring
- Trading performance benchmark

## Battery subscription service

- Investment tool updated (Qtrly)
- GB BESS Report (Bi-annual)
- Bespoke workshop (Bi-annual)

## Examples of client work

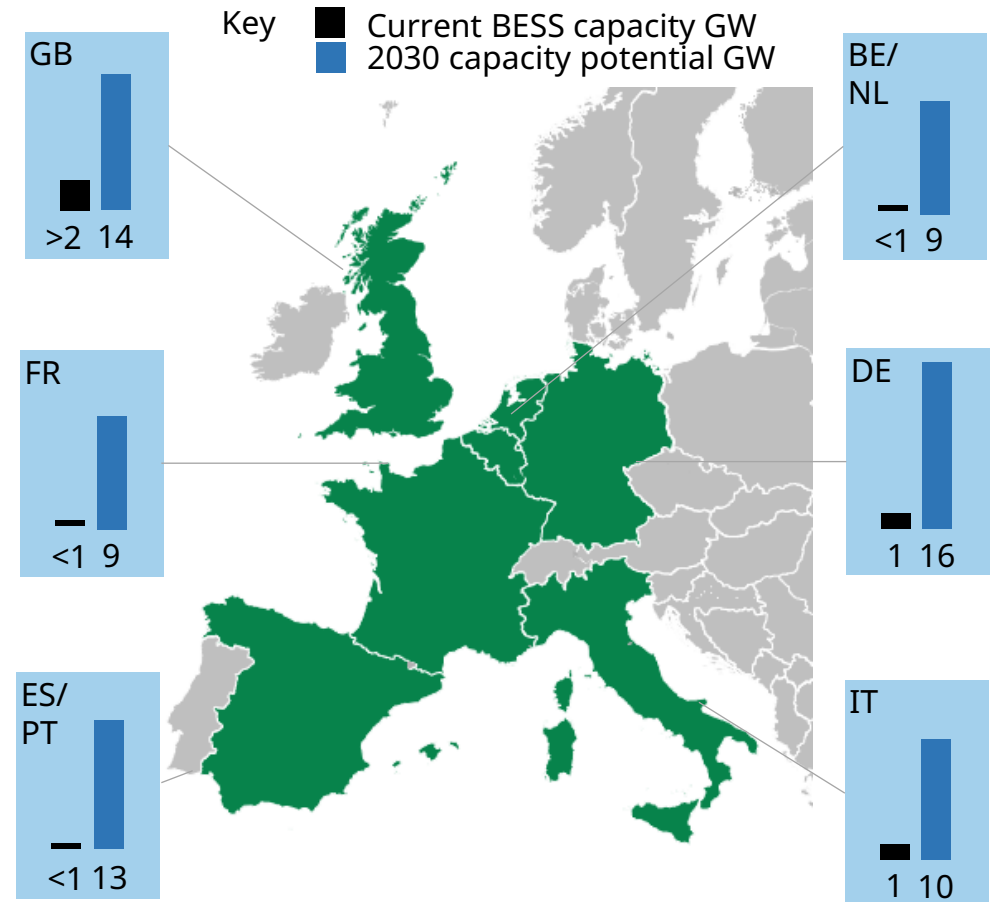
Project	Client	Description
<b>EU BESS platform</b>	Bank	Commercial DD, market & revenue analysis to support large debt & equity investment in EU BESS platform (NW Europe)
<b>ES BESS investment</b>	Fund	Market & margin modelling for both stand-alone and co-located BESS (ES)
<b>IT battery platform</b>	Fund	Commercial due diligence to support investment in large Italian RES + BESS growth platform (IT)
<b>Growth strategy</b>	Fund	Support leadership team define & analyse target markets & growth strategy to scale BESS portfolio (across DE, IT, BE, NL & ES)
<b>ES battery investment</b>	Generator	Analysis of Spanish mkt evolution & battery margin projections & regulatory hurdles (ES)
<b>NL battery &amp; flex investment</b>	Large investor	Detailed analysis of NL power market evolution & multiple grid scale battery investment cases (NL)
<b>IT battery platform</b>	Fund	Commercial due diligence to support investment in large Italian RES + BESS growth platform (IT)
<b>BESS offtake support</b>	Funds	Advice on structuring & negotiation of a master PPA agreement covering BESS optimisation (IT, GB)

# Investment drivers

# GB leading, EU catching up

Stage	Value drivers
<b>GB leading</b>	<ul style="list-style-type: none"> <li>• GB has dominated BESS investment in Europe so far</li> <li>• Clear policy framework &amp; viable revenue stack</li> </ul>
<b>Italy second</b>	<ul style="list-style-type: none"> <li>• Italy following UK given 5 yr 'Fast Reserve' &amp; 15-year capacity market agreements</li> <li>• Further policy support &amp; ancillary reform in progress</li> </ul>
<b>Rest of EU has lagged</b>	<ul style="list-style-type: none"> <li>• BESS investment across other EU markets has been opportunistic (e.g. supported by network contracts)</li> <li>• BESS scaling hampered by policy issues (e.g. network charging rules) &amp; inadequate stackable revenue</li> </ul>
<b>EU 'catch up' underway</b>	<ul style="list-style-type: none"> <li>• From 2022, new revenue streams driving a strong increase in BESS project development across NW Europe</li> <li>• Ancillary / balancing market reforms are a key driver, particularly aFRR market / PICASSO</li> </ul>
<b>Watch for EU acceleration</b>	<ul style="list-style-type: none"> <li>• Energy crisis driving a strong policy &amp; investor focus on flex to enable faster energy transition</li> <li>• This is set to create strong tailwinds for BESS investment across the next 3-5 years</li> </ul>

## BESS capacity growth potential (by 2030)



# 6 key markets to consider

## GB: Rank = 1, Policy hurdles = Low

- High growth / strong competition
- Ancillaries saturated
- Constructive policy framework



Key  
 Current BESS capacity GW  
 2030 capacity potential GW

## BE/NL: Rank = 2, Policy hurdles = Med

- BESS to support RES/gas closures
- Nuke issues driving volatility
- Dominant incumbent competition



## FR: Rank = 3, Policy hurdles = Med

- Lower RES/BESS growth
- Nuke issues driving volatility
- Dominant incumbent competition



## DE: Rank = 2, Policy hurdles = Med

- Big BESS growth potential
- Price signals improving
- Policy reform key (e.g. CM, charging)



## ES/PT: Rank = 2, Policy hurdles = High

- High RES/BESS growth (+ colocation)
- Currently weak ancillary revenues
- Capacity market support key



## IT: Rank = 1, Policy hurdles = Med

- Strong BESS focused policy support
- Price signals can be impacted by gas
- MSD/aFRR reform positive for BESS



# Headwinds shifting to tailwinds

## Structural requirement for BESS to enable RES

- Western Europe likely to require at least 50-70 GW of BESS investment by 2030 alone
- Structural demand for balancing flex to support higher RES
- Investors still face practical challenges (see table)
- However BESS investment momentum has gained pace in 2022-23 as energy crisis unfolds

## EU BESS land grab is underway

- Not all BESS sites are created equal
- Good sites are driven by factors such as revenue stream access, connection, network charging burden & colocation with renewable & EV infra.
- Big incentive for policy makers to better integrate BESS flexibility into power systems.
- BESS is key enabler for achieving the aggressive increases in RES targets announced in 2022
- Expect strong policy tailwinds for BESS going forward

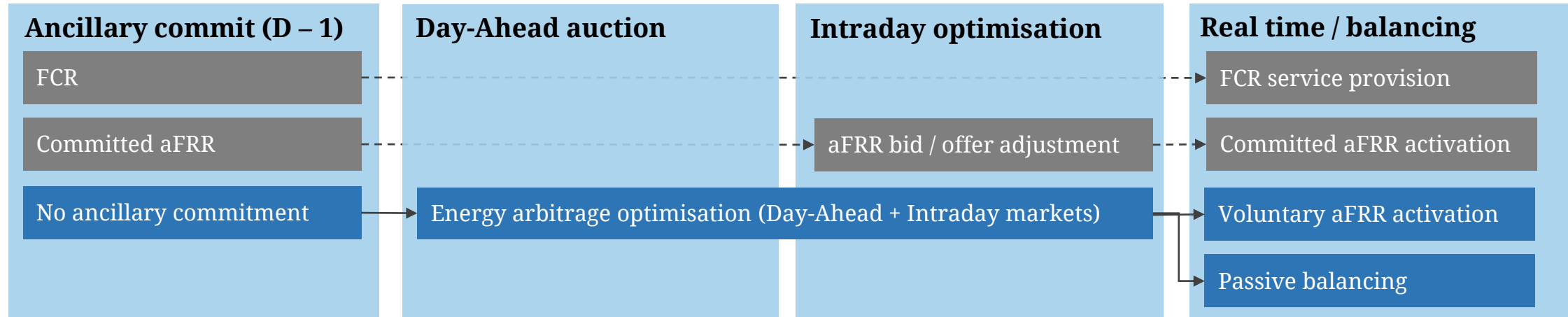
## 5 challenges that have hampered EU BESS investment (vs GB)

Stage	Value drivers
<b>1. Network charging</b>	Unreasonable costs & hurdles imposed on BESS requiring policy amendment e.g. network charging
<b>2. Ancillaries</b>	Strong BESS ancillary dependence with limited market depth (+ hurdles to access energy arb value)
<b>3. Balancing</b>	Constraints on BESS revenue capture from real time system balancing services (their ultimate use case)
<b>4. Congestion</b>	Lack of clear remuneration mechanisms for BESS to alleviate network congestion
<b>5. Capacity</b>	Lack of capacity payments to underpin BESS revenue stack in some markets (e.g. DE, NL, ES)



# European BESS: revenue stack drivers

## Key BESS revenue optimisation decision options

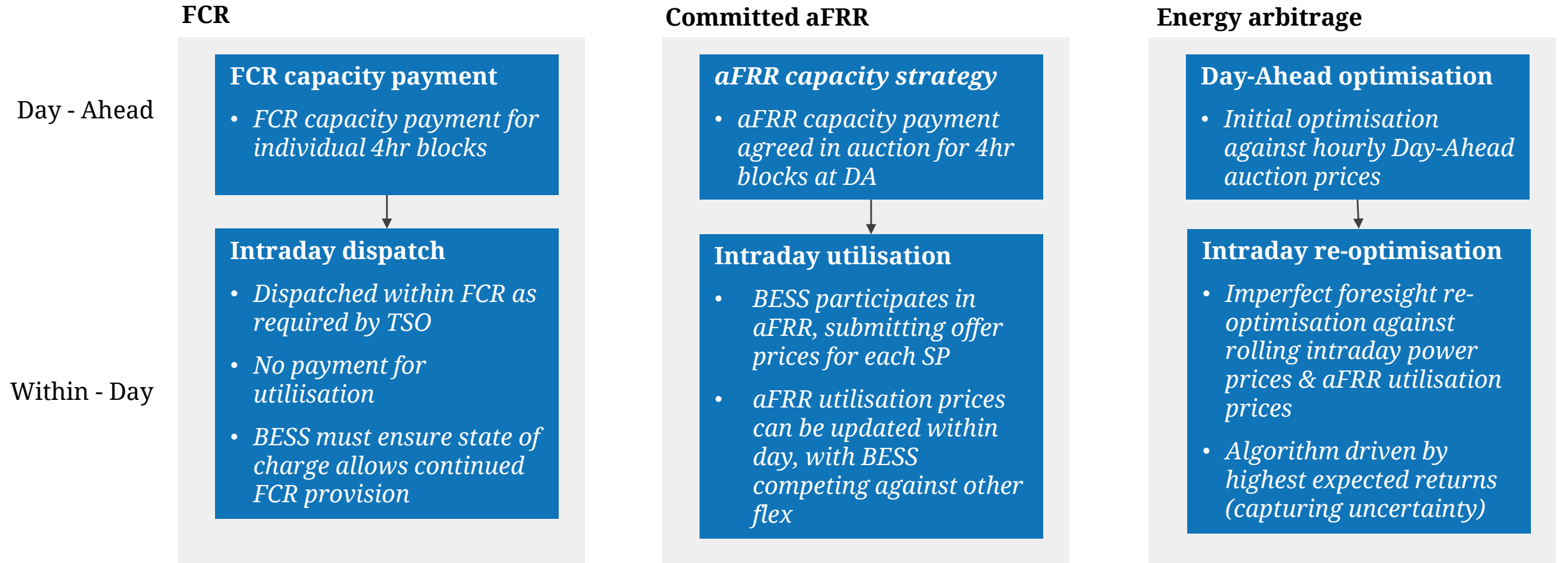


## Summary of different BESS revenue sources

Revenue source	Description
1. FCR	Committing battery at day-ahead stage for 4-hr blocks of FCR provision; planned move to (sub)hourly blocks
2. Committed aFRR Voluntary aFRR	Commit battery at day-ahead for aFRR capacity fee; flex to adjust bids/offers to receive activation fees No commitment of battery (i.e. can access wholesale arbitrage) but receive only activation fees if called
3. Energy arbitrage	Harvesting price spreads & volatility from Day-Ahead & Intraday markets (FCR & Committed aFRR excludes access)
4. Passive balancing	Run battery in imbalance in opposite direction to system balance, targeting cashout price revenues (with associated forecast error risk). Note, this trading strategy is restricted in the DE market.

# 3 BESS optimisation strategies

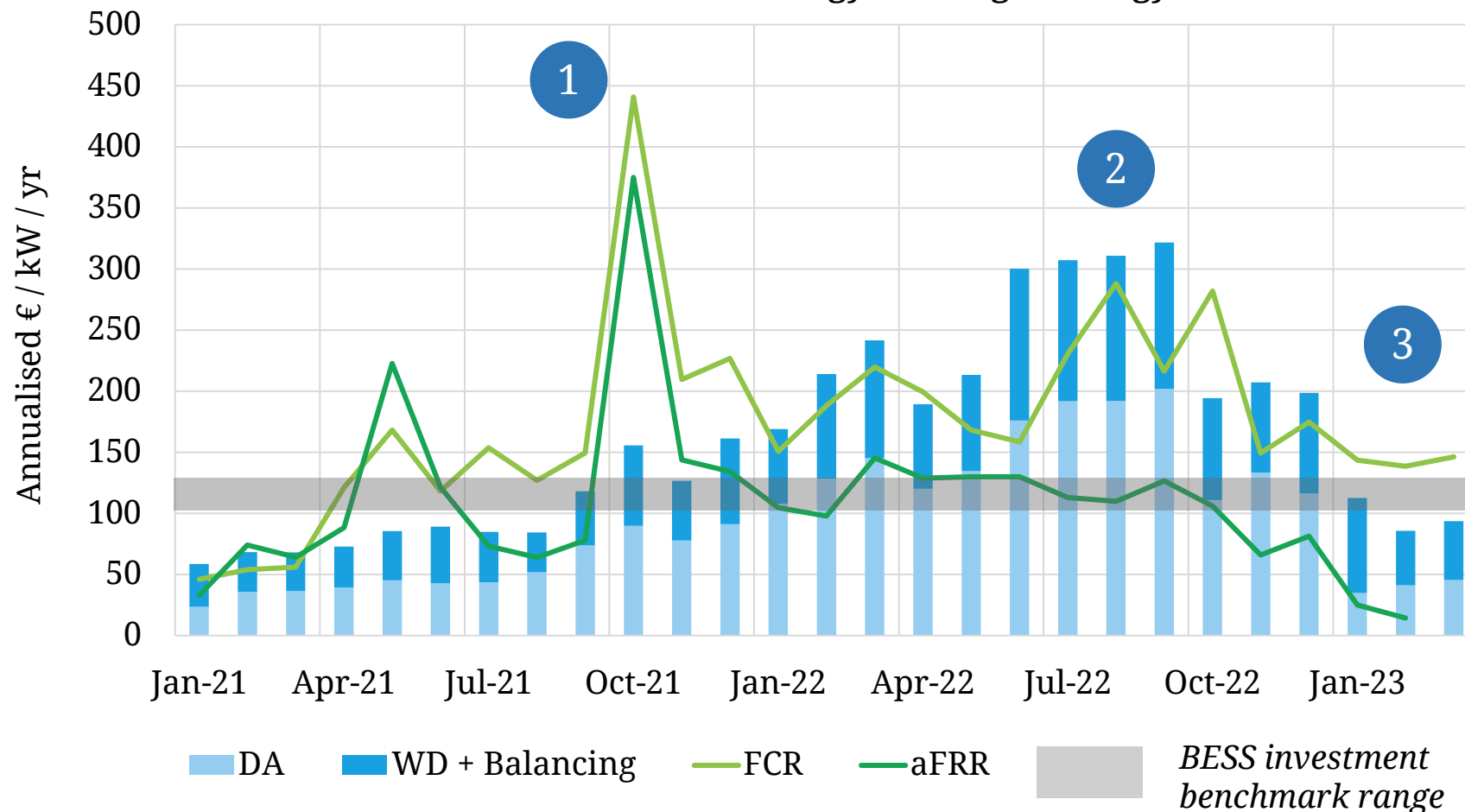
We benchmark 3 key BESS optimisation strategies against historical prices



Trading strategy complexity

# Case study: Germany BESS Revenue stack

Back-tested German BESS returns (energy arbitrage strategy)

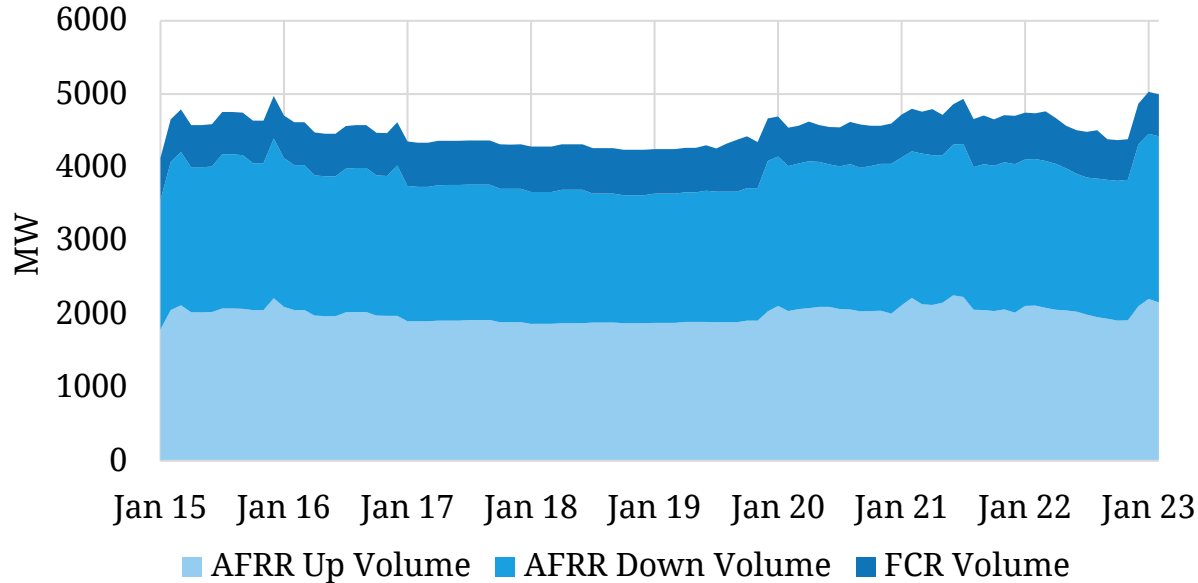


- 1 Ancillary service prices spike on tight gas and power market, winter gas fears.
- 2 Surge in gas & power prices and volatility given RU supply cuts and FR nuclear issues.
- 3 Revenues recede as FR nuclear availability improves, gas prices fall.

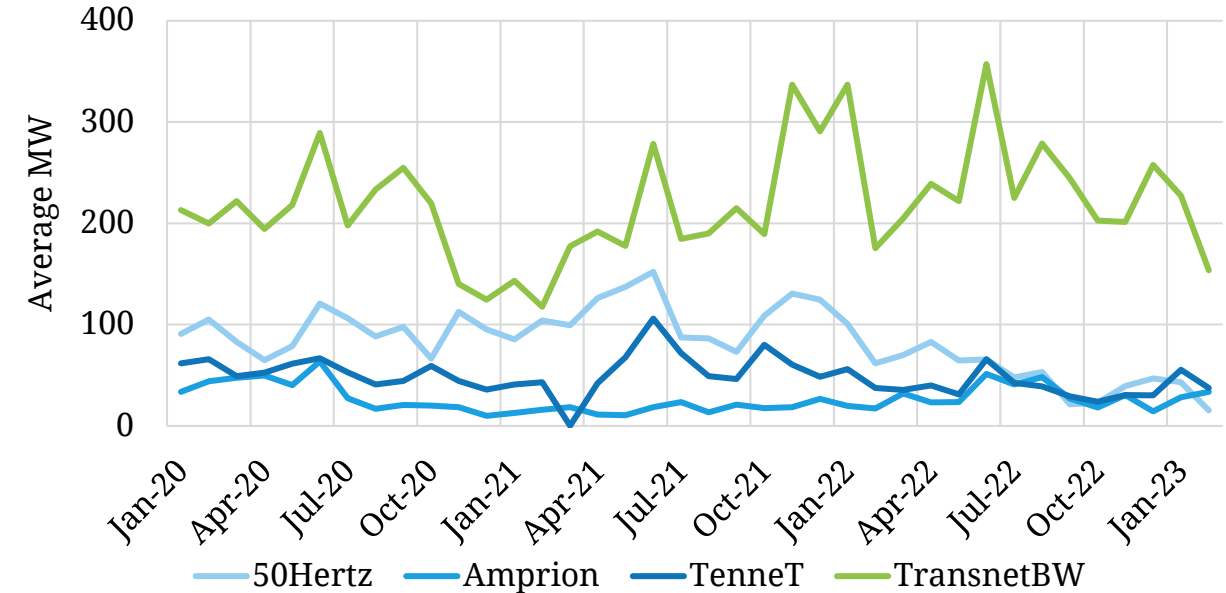
Source: Timera BESS dispatch optimisation model

# Case study: Germany BESS Revenue stack

## Committed ancillary capacity volume



## Activated aFRR up volumes



- FCR market depth is low (~0.6 GW)
- Rapid FCR saturation risk
- aFRR capacity market volumes relatively stable & deeper than FCR (~4 GW with up and down), but activation volumes low
- Competition to provide FCR/aFRR to increase across next 5 years (BESS growth + gas flex)

- Activated aFRR volumes add some additional revenue uplift but vary by region
- Assets situated within the South-West (under Transnet) have seen more activated volumes
- Average activated volumes are low, but there are/ have been infrequent periods of >1-2GW, with accompanying high prices

# 5 key takeaways

Takeaway	Description
<b>1. Crisis driven policy shift</b>	<ul style="list-style-type: none"><li>• Crisis driving policy makers to recognise that BESS plays a key role in enabling RES to support energy independence</li></ul>
<b>2. BESS value capture has surged</b>	<ul style="list-style-type: none"><li>• 2021-23 market tightness has been very supportive of BESS energy arbitrage value across Europe... but revenues softening in Q1 2023</li></ul>
<b>3. Ancillary reform tailwinds</b>	<ul style="list-style-type: none"><li>• Secondary reserve market reform (aFRR) supports BESS revenues, with synchronisation also helping (PICASSO)... ancillaries are a key 'revenue bridge'</li></ul>
<b>4. Challenges remain</b>	<ul style="list-style-type: none"><li>• Many EU markets lag the UK on BESS policy clarity &amp; network charging rules... but 1. is helping</li></ul>
<b>5. First mover advantage</b>	<ul style="list-style-type: none"><li>• As has been the case in the GB market, there are likely to be significant first mover advantages for investors across EU markets</li></ul>

# Audience Q & A

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