



Batteries in the Nordics - where and when?



Here and now!

Flexible energy resources under management > 140 MW (May)



- Tvååker (14)
- Västkustvägen (0,4)
- Flisan (0,5)
- Mantum (0,25)
- Golfklubben (0,1)
- Residential size (0,03)

15 MW
VE assets



- VPP's Residential (28)
- VPP's C/I (10)
- Large scale (15)

53 MW
Customer assets



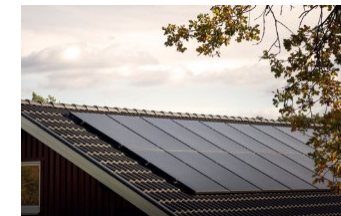
- Wind turbines (56)
Approx. 20 turbines

56 MW
Combined



- EV charging (11)

11 MW
Customer assets



- Solar (5)

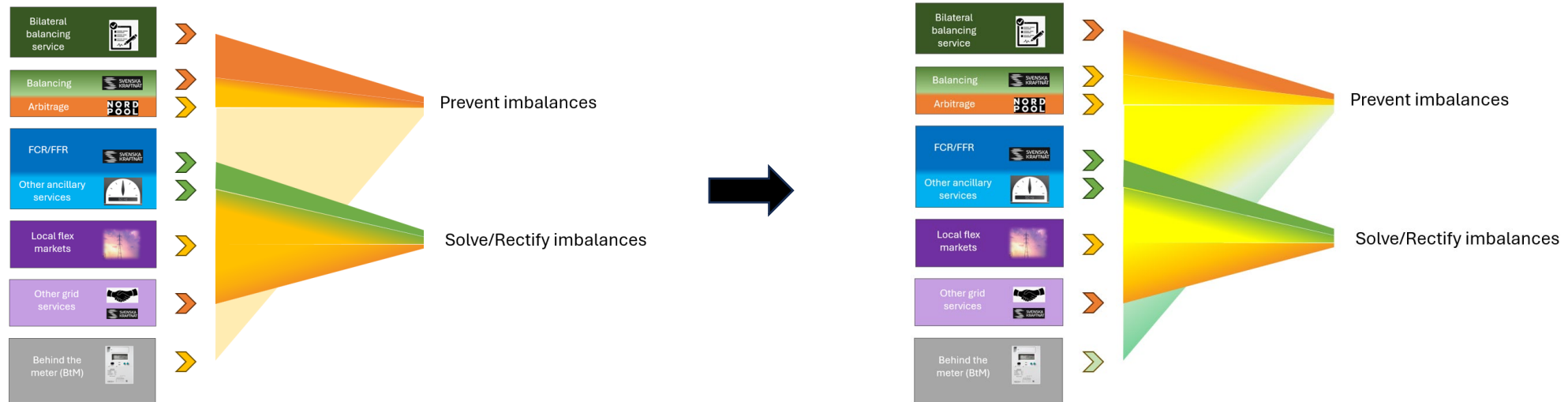
5 MW
Customer assets

Focus for Batteries

- **Market Access**
- **Multi-market optimization**
- **Behind-the-Meter (BtM)**
- **Battery health**
- **Business models / Predictability**

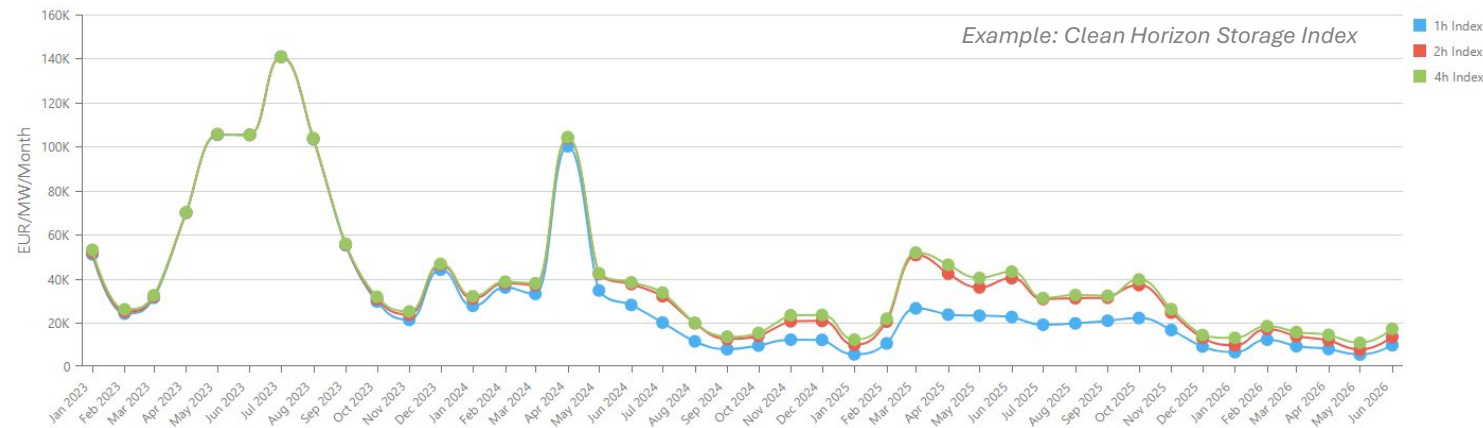
Market Access

- There is a wide range of vendors/optimizers offering market access to owners of flexible energy resources
- They have a wide range of technical solutions in order to offer market access to almost all markets.
- They don't always have the business models or experience in order to offer market access to all markets.
- The combination of technical solution, business model and experience is the key.



Multi-market-optimization

- All vendors/optimizers offer multi-market-optimization
- Most of them optimize primarily between FCR, mFRR and BtM.
- Some of them also include spot, intraday and active balancing (mFRR EAM) strategies. (* aFRR is not accessible in Sweden)
- Very few have the skillset to combine number 2 and 3.
- There are finally easy accessible benchmarks to evaluate optimizers against each other.



Behind-the-Meter (BtM)

- **In Sweden BtM value exploded going into 2026 with the tax credit for small-scale renewable power generation being discontinued.**
- **Despite lower prices in ancillary services residential customers could see their flex value remain unchanged or even increase somewhat.**
- **As previously mentioned most vendors/optimizers combine FtM och BtM services in order to maximize profitability.**

Battery health

- **Until 12-18 months ago battery health was more or less a non-prioritized topic.**
- **With the introduction of mFRR EAM batteries in general went from stand-by to a combination of stand-by and energy utilisation. As a result, battery health is becoming a much more important parameter when choosing between BESS suppliers and optimizers.**
- **We expect this topic to be much more highlighted in official benchmarks going forward.**

Business model / Predictability

- - 2024 Fully merchant business models with gross revenue share. (no/minimal predictability)
- 2024 - 2025 Revenue share models were supplemented with monthly fees and consultation fees as a result of lower prices on ancillary services. A few examples of net revenue share. (no/minimal predictability)
- 2025 - 2026 Individual examples of tolling agreements (fixed revenue). A combination of revenue share and monthly/consultation fees still dominates. (Occasional predictability)
- 2027 - We hope that Hybrid PPA equivalents will make tolling agreements much more common in order accelerate deployment of large scale BESS installations. (Some predictability)

We would also like to see Svenska kraftnät introduce a capacity market in Sweden over time, similar to the model currently in place in Poland. Such a development would significantly enhance market predictability and improve access to long-term investment capital.

Hybrid PPA

- **Combines renewable power generation with flexibility from large scale BESS.**
- **Renewable producers sells pay-as-produced PPA's**
- **Large-scale BESS owners receives fixed revenues (tolling agreement)**
- **Industrial consumers buys "base-load" profiles, sourced from the combination of above mentioned agreements.**
- **Risk is mainly mitigated in the deal structure and not by a single market participant.**

Hydro and Varberg Energi enter pilot agreement for hybrid power supply

Hydro Energi AS and Varberg Energi have signed a hybrid power contract where Varberg Energi will deliver electricity from its own wind and solar generation, complemented by energy storage capacity to Hydro.



Photo: Varberg Energi