

Welcome

From Cost to Profit:

Integrating battery storage with site operations



GridBeyond®

theenergyst



APRIL 2026

FROM COST TO PROFIT: BATTERY STORAGE + SITE OPERATIONS FOR COST REDUCTION AND REVENUE

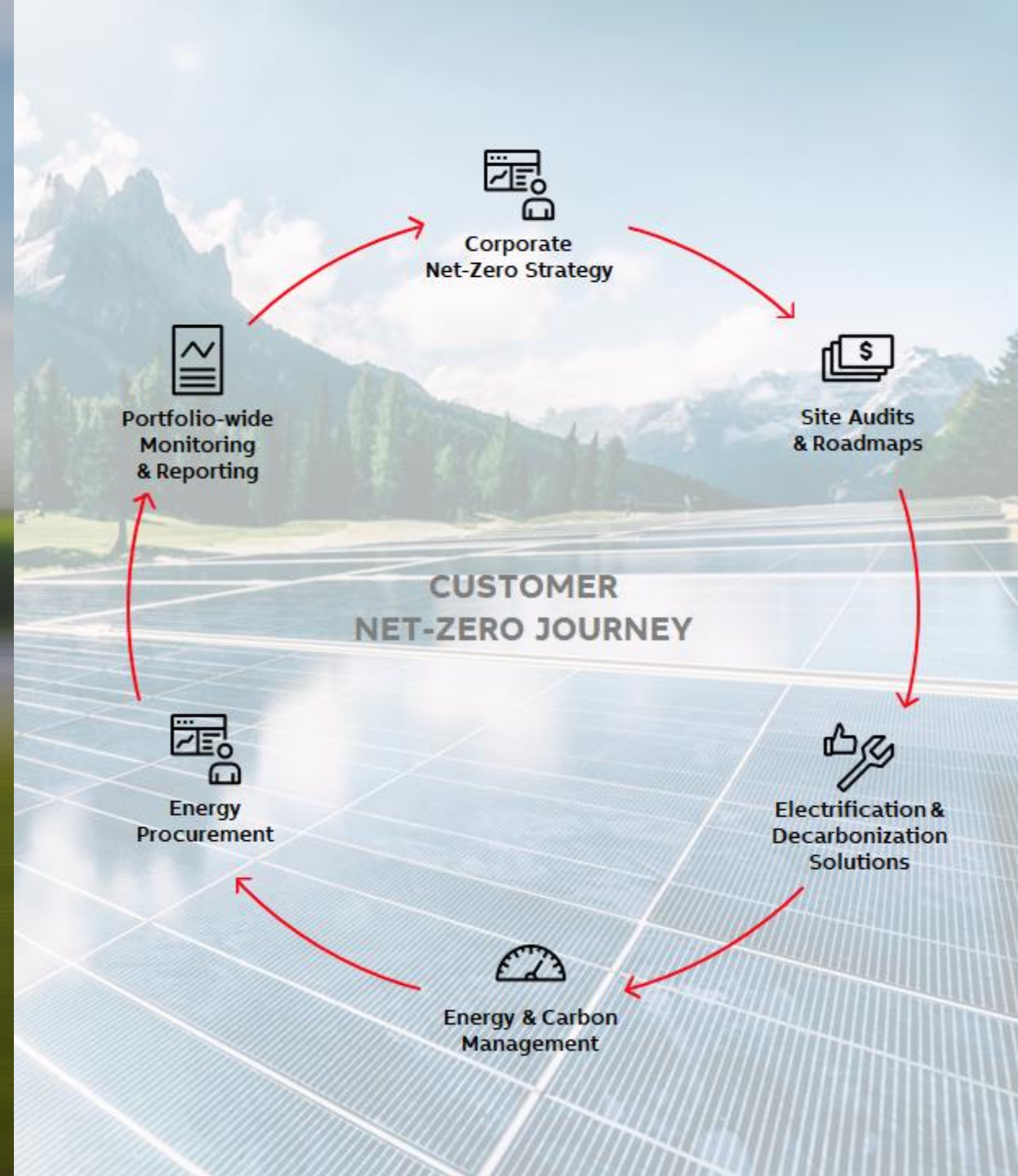
Alexandra Hope
Energy & Carbon Services

ENGINEERED
TO OUTFIT

Energy & Carbon Services

Who are we?

The partner of choice for commercial and industrial customers in achieving net-zero emissions through innovative electrification and decarbonization offerings.



The energy trilemma facing industries

Balancing power, price and planet

Energy security



Continuous and
stable power supply

Energy affordability



Lowering energy
costs

Energy sustainability



Path to net zero



Every day, unstable energy is disrupting industries

Outages cost up to \$540,000/hr

1% downtime rate costs over \$5 million annually

Buildings contribute 34% of global CO₂ emissions

Peak-hour EV charging can trigger grid congestion & blackouts



Data centers



Oil & Gas / Mining



Commercial & industrial premises



Electric vehicles & fleets

Why energy storage is a game-changer for the grid and industry

1

Ensuring power reliability



- Reacts in milliseconds to grid disturbances
- Provides immediate backup power Smooths out demand spikes
- Stabilizes voltage and frequency

2

Driving cost efficiency



- Eliminates costly downtime from outages
- Actively reduces consumption during peak hours
- Uses stored energy when prices surge

3

Accelerating sustainability



- Enables seamless renewables integration
- Supports cleaner energy use
- Reduces emissions
- Cuts the need for diesel generators



Batteries are powering everything – and ABB is helping to lead the charge



Delivering uninterrupted uptime in data centers



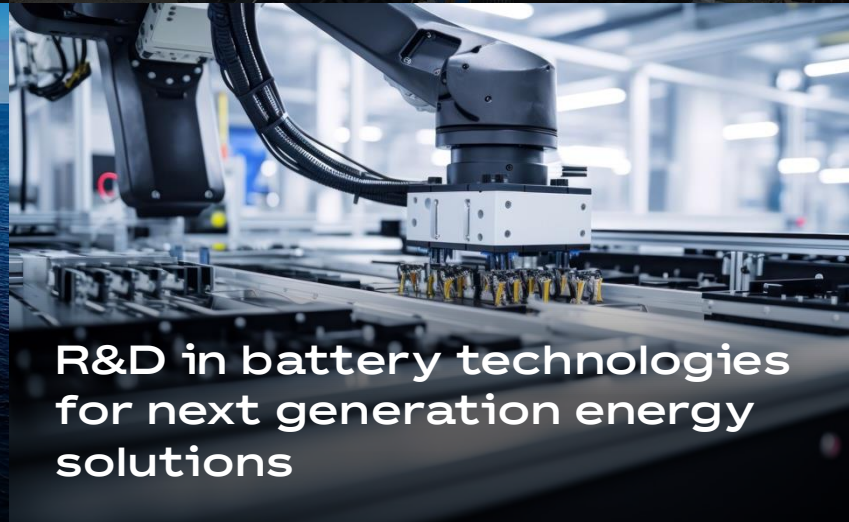
Replace diesel engines with batteries on mining sites



Electrifying transport with traction batteries



Decarbonizing marine and port operations with battery deployment



R&D in battery technologies for next generation energy solutions



Decades of BESS expertise, advancing storage technology and grid integration

Front-of-the-Meter



Behind-the-Meter



Front-of-the-Meter

- Energy arbitrage
- Capacity firming & generation support
- Grid stability (frequency & voltage control)
- Disturbance mitigation & power quality
- Black start capability

Behind-the-Meter

- Renewable integration
- Cost optimization (peak shaving & time-of-use management)
- Reliable, uninterrupted power supply
- EV fast charging enablement

Introducing BESS-as-a-service



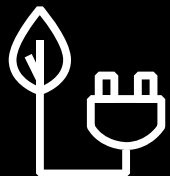
Energy reliability

- Advisory services
- Startup, installation & commissioning
- 24/7 predictive monitoring, maintenance & optimization



Financing journey to net zero

- Quarterly subscription fee
- Insurance backed performance
- Positive cash flow
- + Energy arbitrage



Driving sustainability

- Energy optimization
- Advanced ESG reporting
- ABB lifecycle management & recycling

**TAKE CONTROL
OF ENERGY**

Powering performance:

How battery storage energized a business park



\$
80%

Reduction in
electricity costs



\$200,000/year
benefits from
day one




Customer maximizes
the economic return of
its photovoltaic system



Boosted property value &
tenant appeal through resilient,
clean energy offerings




Powering mobility: BESS empowers EV operators



+75%


Additional revenues
from EV charging due
to BESS-as-a-Service



\$200,000/year
of energy costs
savings



Customer overcomes
limitations of grid
connections to enable
EV fast charging



Delivers up to 50% better
financial performance –
lower costs, faster ROI and
new revenue streams



Powering production:

BESS supports food & beverage operations

 **73%**

Return on investment from BESS-as-a-Service

Avoided 90.34 tons of CO₂/year



CO₂

Customer reduces energy cost and supports their decarbonization journey

\$



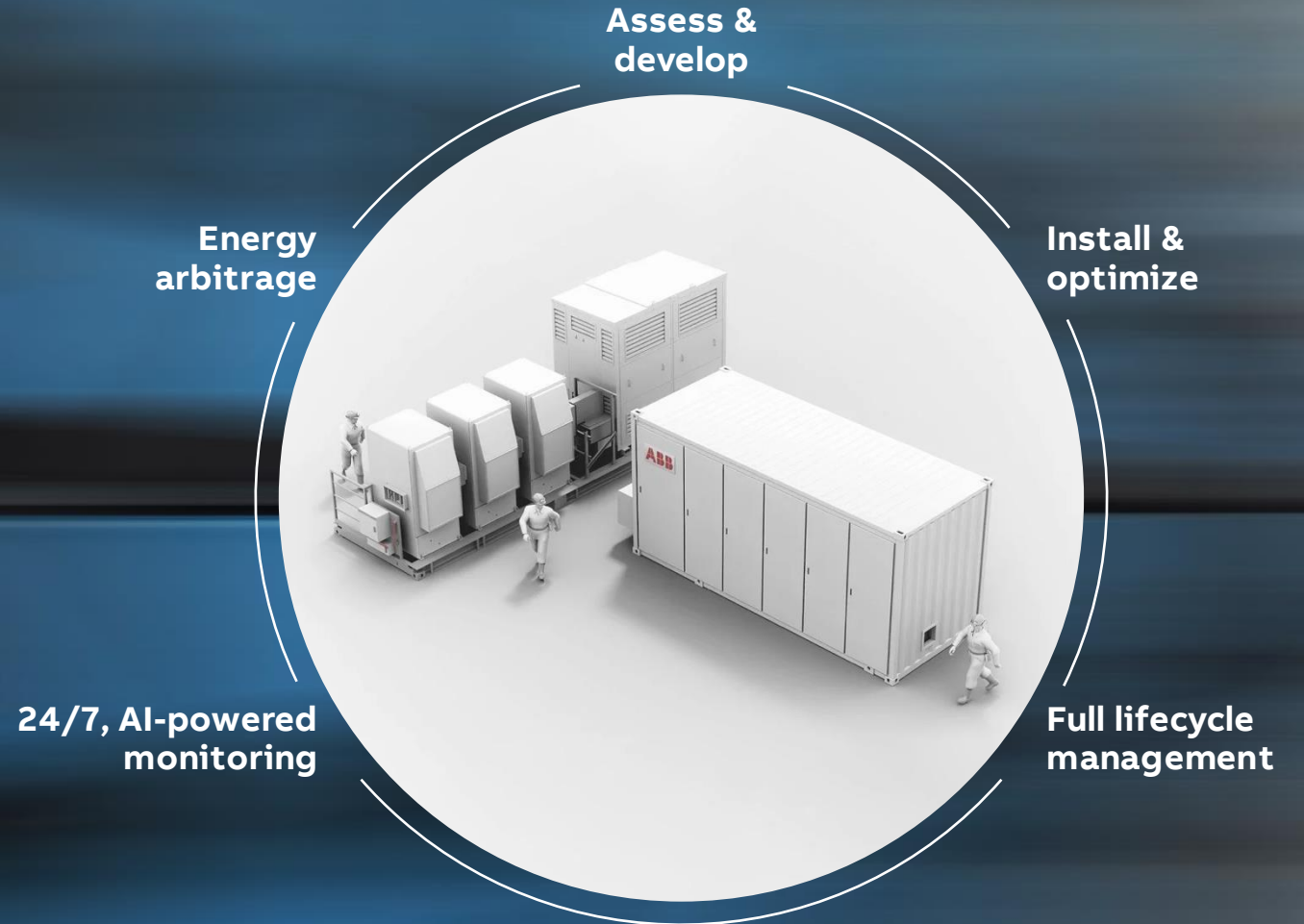
Up to 100% continuity during outages - cuts spoilage & production losses by up to 90%



BESS-as-a-service

Powering your possibilities

- 1** Enhance power reliability, reduce energy costs and advance sustainability – all with one solution
- 2** Turn energy from a cost center into a revenue-generating asset through smart battery optimization
- 3** Start profiting from day one – without upfront capital, operational complexity or risk



AABB



GridBeyond™



GridBeyond Who We Are

We Transform Energy Into Opportunity For The Entire Ecosystem

Where We Operate



Operating across 4 continents, we empower energy users, generators, fleet operators, and renewable owners/developers to uncover additional **revenue** streams, lower **energy cost/OPEX** and drive **sustainability**.

Founded in

2010

Global

Offices in the US, Ireland, UK, Australia, Japan

2.4GW

Load portfolio

900+ MW

Of batteries under contract

160+

Employees

900+

Customers and partners

Partners:

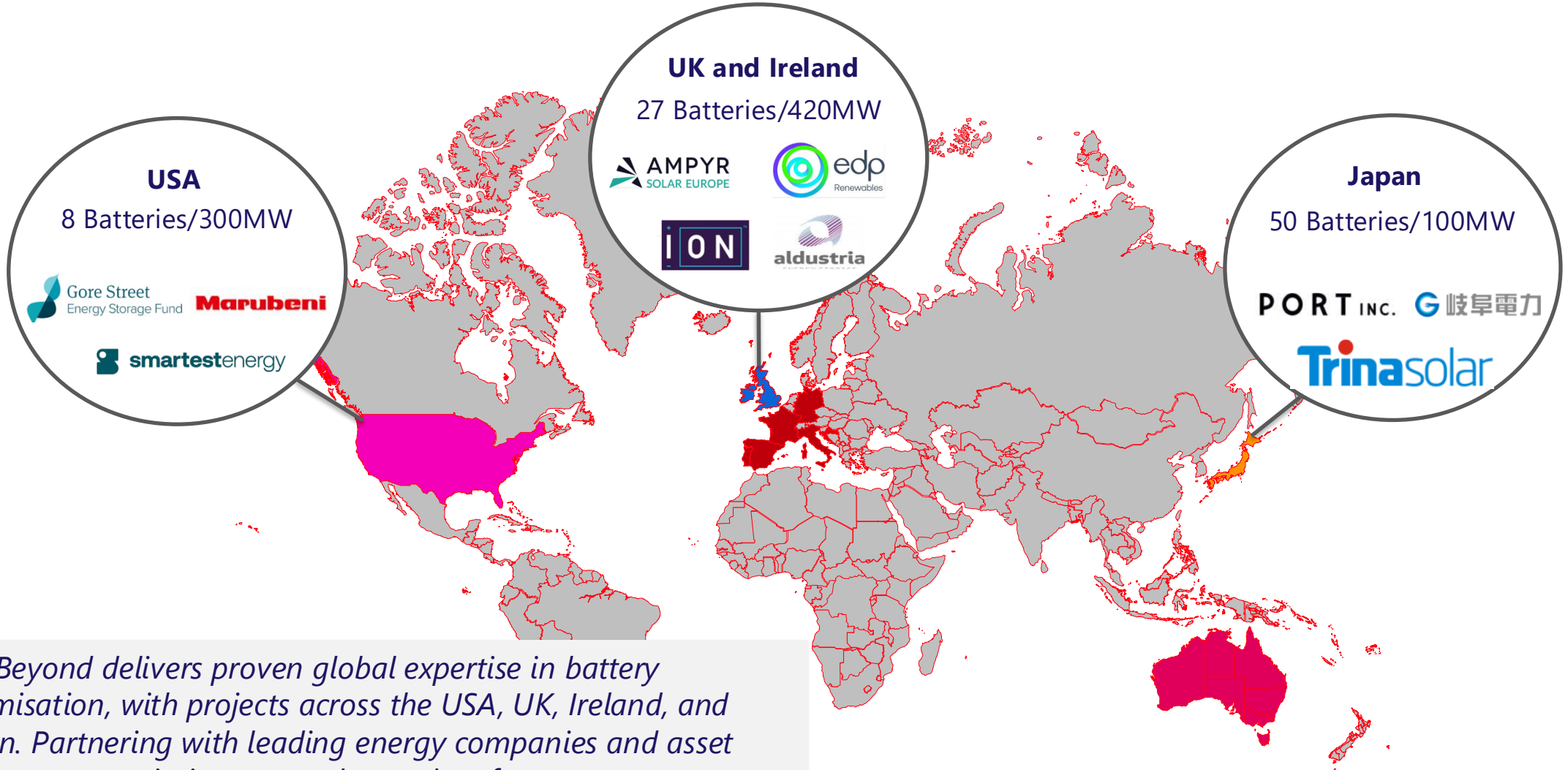




GridBeyond

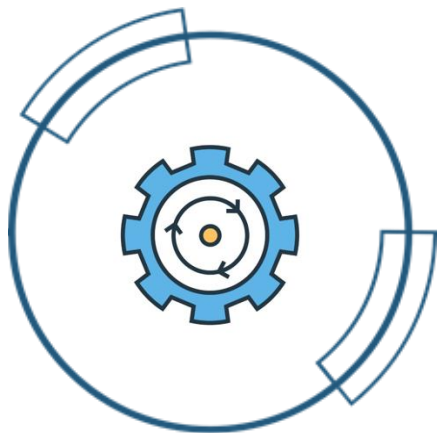
Experienced in Battery Optimisation

GridBeyond – Transform energy into opportunity



GridBeyond delivers proven global expertise in battery optimisation, with projects across the USA, UK, Ireland, and Japan. Partnering with leading energy companies and asset owners, we maximise asset value and performance.





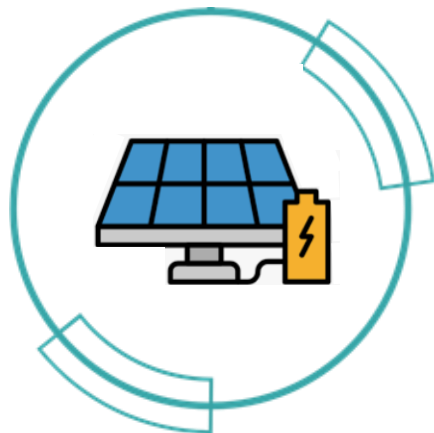
Intelligent Demand Response

Flexibility (VPP)

Process Optimisation

SAAS

Local Flex Markets



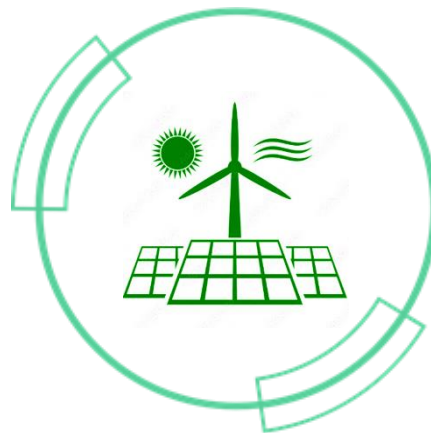
On-site Assets

Battery & Solar

Asset Funding

Connection Management

Resilience



Renewable Energy Purchasing

PPA Marketplace

Automated Portfolio Management

Advisory

EAC Trading



24/7 Carbon Free

Hourly Energy Matching

Real Time Consumption

Energy/Carbon Dashboard

Granular EACs



GridBeyond Demand Response – BTM (Our Experience)



Cement / Quarries

MW	Sites Automated	Flexible Assets
170	80	Cement Mill, Raw Mill, Crushers



Paper/Wood

MW	Sites Automated	Flexible Assets
150	14	Refiners, Grinders, pulpers



Metal

MW	Sites Automated	Flexible Assets
500	35	Arc & Induction Furnaces, Rolling Mills



Glass

MW	Sites Automated	Flexible Assets
40	6	Furnace Boosters



Water

MW	Sites Automated	Flexible Assets
20	50	Pumps, Aerators



Chemicals

MW	Sites Automated	Flexible Assets
130	7	Compressors, Refiners, electrolyzers



Domestic

MW	Sites Automated	Flexible Assets
50	1000's	EV / Heat Pumps / BESS



Cold Store

MW	Sites Automated	Flexible Assets
75	150	Refrigeration Units



CHP

MW	Sites Automated	Flexible Assets
470	70	Turbines, Engines, natural gas, biogas, biomass fueled.



Commercial/Retail

MW	Sites Automated	Flexible Assets
50	1500	HVAC, Generators, chillers, heat pumps, BESS

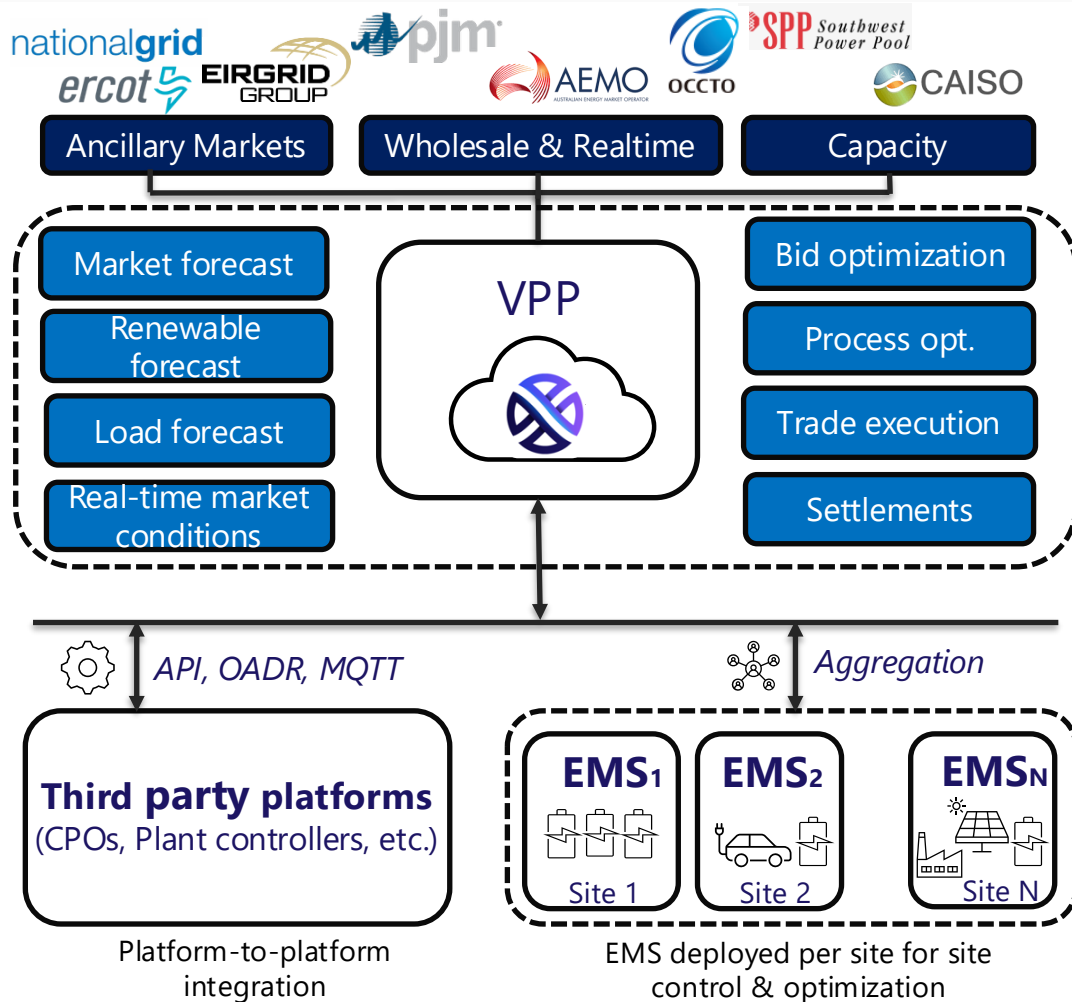


GridBeyond™

**BESS + EMS + Site
Strategy**

*Reduce costs through intelligent, real-time energy
orchestration and predictive analytics*

Distributed Energy Resource Management System offering end-to-end solution starting from site energy management to revenue generation



VPP platform

- Registered balancing party in multiple markets
- Full Market access (Ancillary, wholesale)
- Bid optimisation across various markets
- Aggregation & performance management
 - (ICCP, OpenADR, OCCP, Modbus, ...)

EMS

- Asset monitoring, orchestration, remote control
- On-prem asset controllers for fast control
- Optimization options: Demand charge management, tariff optimization, battery health management, emission optimization, etc.
- Microgrid level control for resiliency

Third-party platforms

- API-driven (platform-to-platform) integration with partners such as chargepoint operator platforms, HVAC, Heat pumps, cement mills, etc.



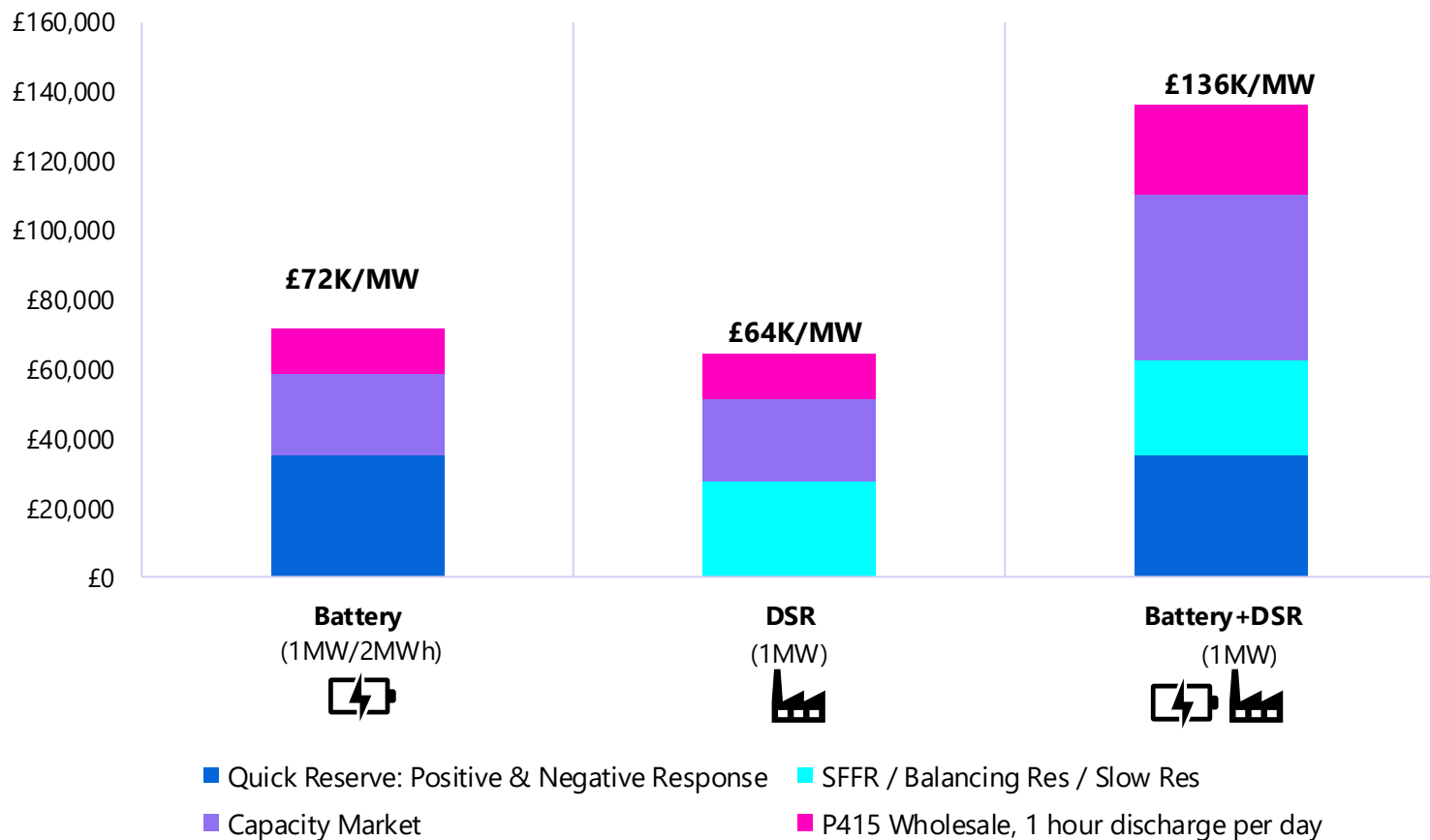
Maximising Flexibility Value — Together

By combining ABB's battery technology with GridBeyond's AI-driven optimisation and DSR capabilities, we unlock the *full* value stack per MW across Balancing, Wholesale and Capacity markets and where applicable, DNO flexibility.

Outcome for I&C customers:

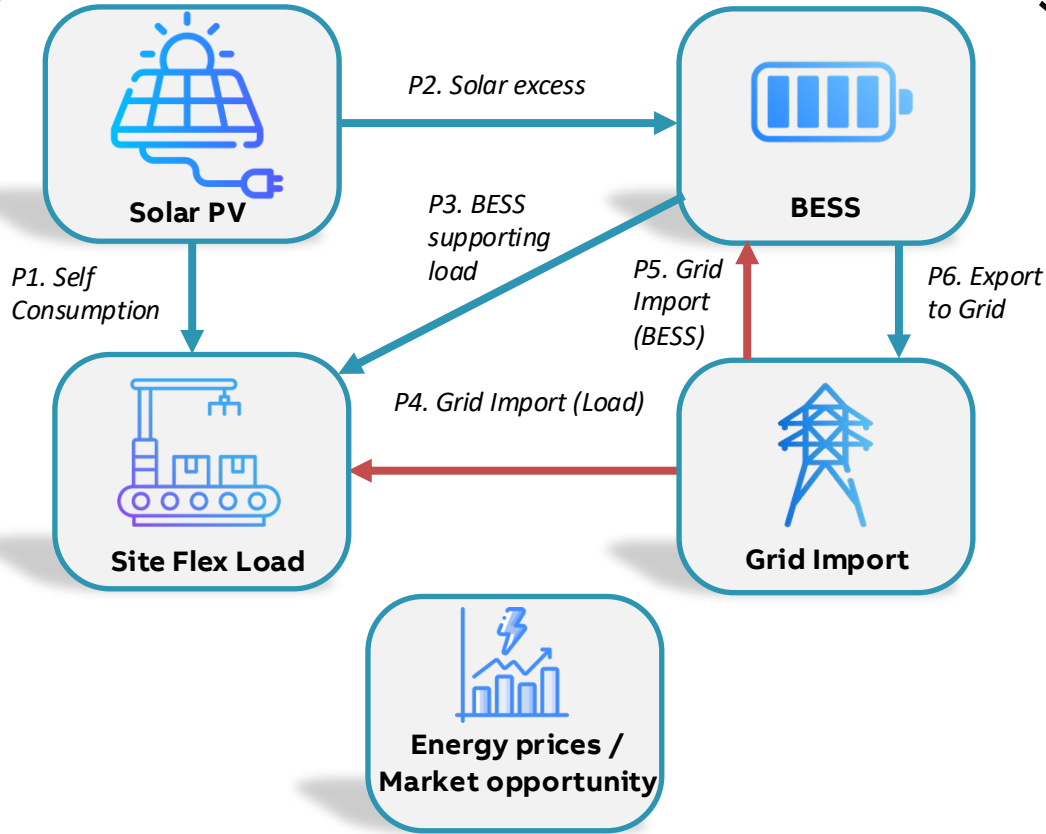
- 1.) Faster payback of capital outlay
- 2.) Additional Revenue Stream/Lower energy costs
- 3.) More resilience and decarbonisation from every MW.

Value Stack for Battery and DSR (per MW/Year)





Static SCADA Control is not enough in a Dynamic energy environment



DERs on an industrial site

Complex energy management needs a dynamic approach to managing cost and exploiting opportunities

Why Managing Energy Has Become a C&I Challenge

Fragmented control across diverse assets

- Solar, batteries, EV charging, flexible loads and process equipment often operate in silos.

Competing priorities and constraints

- Cost, production, peak demand and sustainability objectives often conflict without coordination.

Reactive energy management

- Without proper forecasting – you can't proactively identify opportunities and manage risk.

Underused flexibility

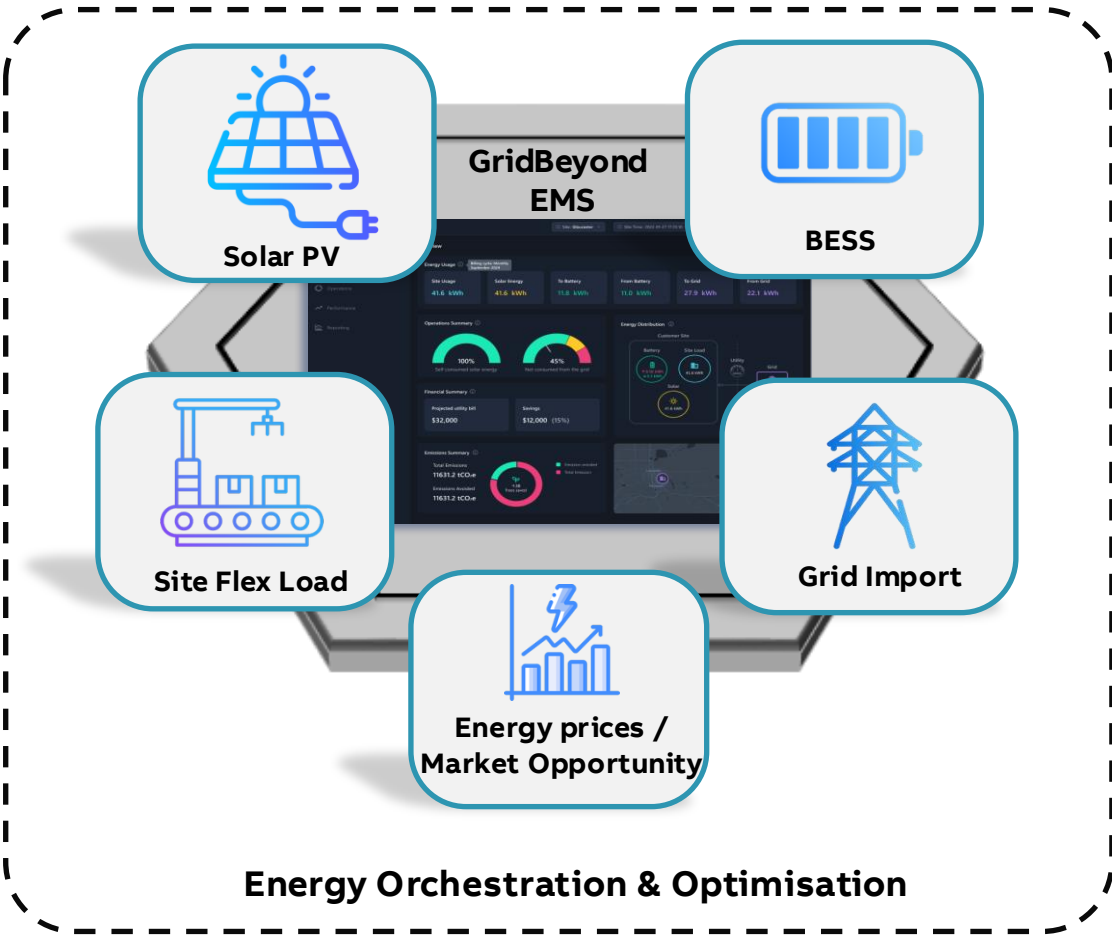
- Effective orchestration transforms underused assets into active sources of value.

No clear route to market value

- Flexibility exists on-site but is difficult to monetise without the right systems and expertise.



Static SCADA Control is not enough for dynamic energy cost control



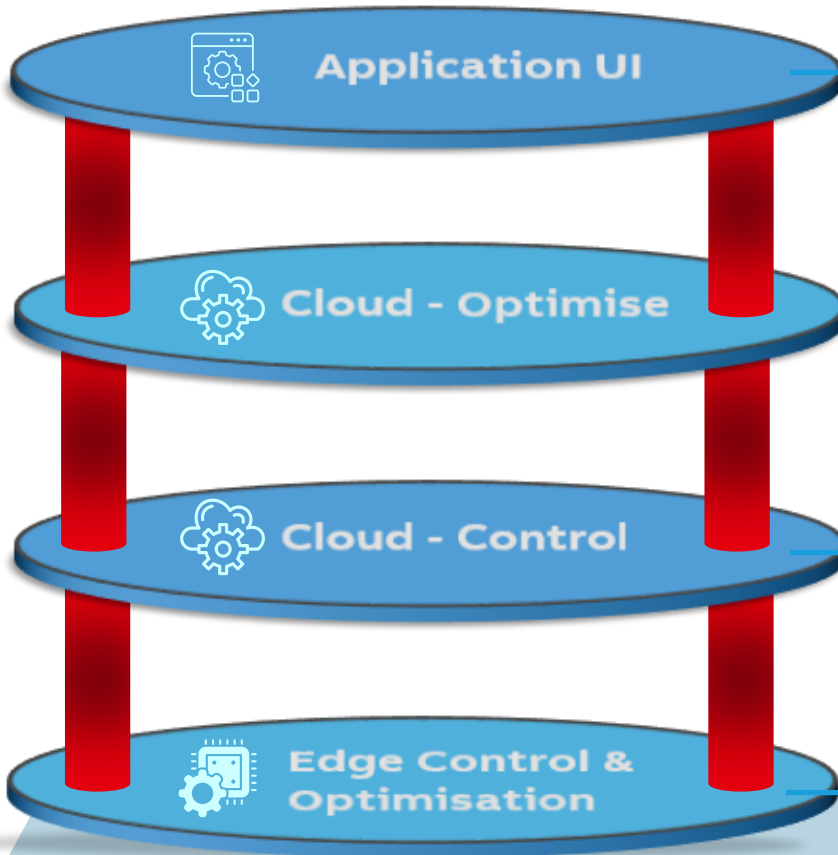
What GridBeyond EMS does

Integrated Energy Orchestration Platform

- Real-time monitoring of load, storage, EV charging and onsite generation (gensets, renewables)
- Automated optimisation of self-consumption and peak demand
- Predictive control using weather, price and load forecasting
- Battery science (Warranty management, Rack imbalance)
- Island mode support – Microgrid option

Benefits

- ✓ Lower energy procurement and peak tariff costs
- ✓ Plug-and-play market access with GridBeyond VPP
- ✓ Higher self-consumption of renewables – PV runtime extension
- ✓ Manage carbon intensity of your energy usage

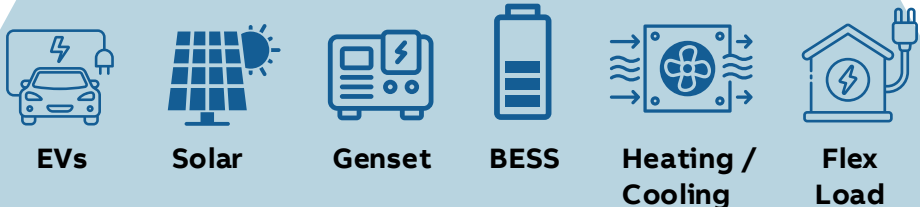


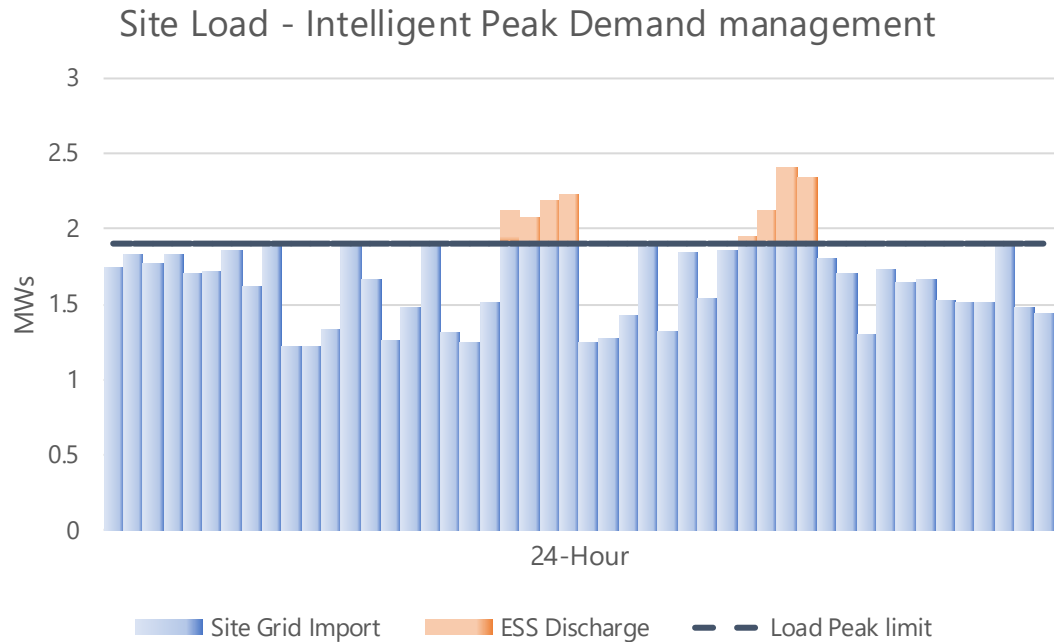
User Interface / Application layer
 User Dashboard; Asset monitoring; Battery health management; Alerts & notifications

Energy Flow Optimisation layer
 Maximise self consumption; Minimise energy costs; Tariff optimisation; Forecasting (load, weather, prices); Peak avoidance (Transmission, Distribution, Tariff)

Data & Orchestration layer
 Enables cloud-based control and management of multiple assets; Market compliance; Telemetry handling

Edge Control Layer
 Local control for grid-connected or off-grid assets with the ability for fast, offline control. With local forecasting and optimisation.





Lower demand charges by flattening peak demand with **load forecasting** and intelligent ESS **SoC management**

The Challenge

Many commercial & industrial tariffs include demand charges based on the highest kW draw in a billing period - often driving a disproportionate share of the monthly bill.

The Opportunity (Avoided Cost)

Peak-demand shaving uses on-site energy storage to cap or reduce peak demand, directly lowering demand charge exposure.

How GridBeyond EMS Delivers Value

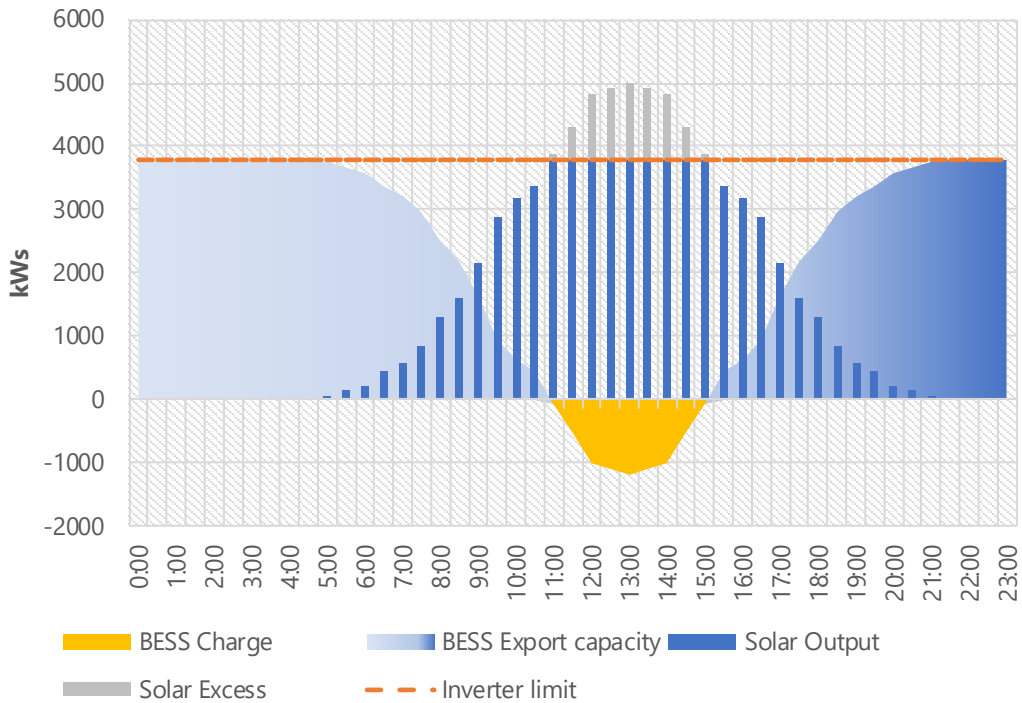
- *Forecasts site load and identifies upcoming peak events*
- *Dispatches the ESS in real time to suppress peak kW demand*
- *Optimizes performance without disrupting site operations*

Customer Benefit

- ✓ *Lower monthly utility bills*
- ✓ *More predictable energy costs*
- ✓ *Maximum value from installed storage assets*



Maximise Solar Capture



Use more of your own clean energy

The Challenge

Many net metering frameworks **devalue exported solar energy**, meaning excess PV generation is compensated at a reduced rate

The Opportunity (Avoided Cost)

Self-consumption strategies use storage to **capture excess solar generation** and reuse it on-site rather than exporting it at a discount..

How GridBeyond EMS Delivers Value

- Prevents unwanted PV export by dynamically charging the BESS
- Prioritizes on-site consumption of renewable generation
- Balances solar, storage, and site demand in real time

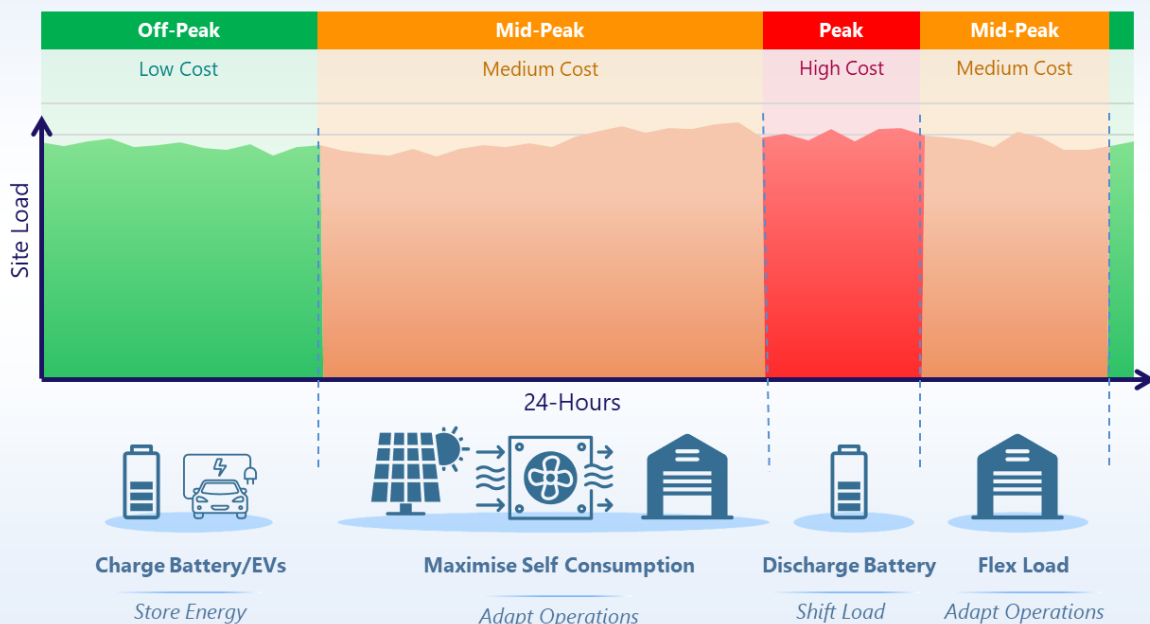
Customer Benefit

- ✓ Higher value from solar PV assets
- ✓ Reduced reliance on grid imports
- ✓ Improved sustainability and emissions performance



Optimising Time-of-Use (TOU) Tariffs with GridBeyond EMS

Automate Energy Usage to avoid peak costs and maximise off-peak savings



The Challenge

Energy prices fluctuate significantly across peak and off-peak periods. Industrial loads often operate on fixed schedules, not price signals. Manual intervention cannot reliably respond to daily price variation resulting in missed opportunities to optimise storage, EV charging and flexible load timing

The Opportunity (Avoided Cost)

- Align consumption with lower-cost off-peak windows
- Charge batteries when prices are low, discharge during peak periods
- Intelligently shift non-critical loads without impacting operations
- Automate response to TOU structures using predictive forecasting..

How GridBeyond EMS delivers value

- ✓ Reduced exposure to peak pricing
- ✓ Lower overall energy bills through automated optimisation
- ✓ Improved asset utilisation and flexibility value
- ✓ Greater cost predictability and operational confidence



GridBeyond™

Appendix



GridBeyond WHY ABB USE GB's Battery Optimisation Capabilities

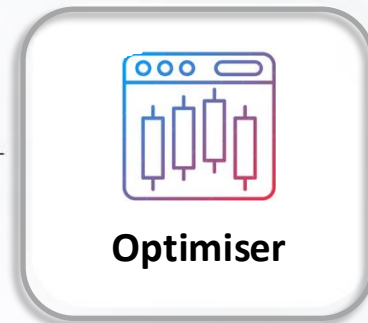
- Advanced ML forecasts built on hundreds of real-world data points
- Industry-leading accuracy for stronger trading decisions
- Smarter market actions that maximise profitability



- Physics-based digital twins tuned to each site and cell chemistry
- Accurate tracking of battery health and charge behaviour
- Considers marginal depth of discharge and true marginal cost
- Maximises trading profit without compromising long-term asset life



- Real-time optimisation of battery performance
- Corrects rack imbalances to protect efficiency and lifespan
- Precise charge/discharge control for maximum usable capacity
- Improves safety while increasing profitability



- Real-time intelligence drives the most profitable market positions
- Every bid reflects true asset capability and opportunity
- Forecasts, constraints and trading signals aligned in one platform
- Smarter dispatch decisions that maximise returns with confidence

UK Balancing Services Overview

Flexibility Market	Services	Suitable Assets	Average Value	Stackable with Other Services	Delivery Specification
Response	DC, DM, DR, SFFR	Battery	~£50,000/MW (Availability)	Energy Markets Capacity Market DNO Flex	1 sec response 15-60 min duration
Reserve	STOR, Balancing Reserve, Quick Reserve, Slow Reserve	Battery, CHP, DSR	Turn Down demand: Up to £75,000/MW (Availability) Turn Up demand: Up to £44,000/MW Utilisation value to add on top	Energy Markets Capacity Market DNO Flex	1-20 minutes response 13 - 120 min duration
Energy Markets (P415)	Day Ahead, Intra-Day, Balancing Mechanism	All	£38,000/MW – 1 hour shift pa	All	N/A
Capacity Market	1 Year and 4 Year	All	T-1 (25/26):£20,000/MW T-4 (28/29):£60,000/MW	All	4 hours notice No CM event since 2008
Local Constraints/DNO Flex	Region Specific	Renewables, Battery, CHP, DSR, EV	Region Specific – up to £150k/MW	All	Region Specific
Demand Flexibility Service	DFS	All	£18K/MW	Capacity DNO Services	3-5 hr notice 30 – 180 min duration

Thank you

To register for regular copies of The Energyst magazine please visit theenergyst.com and to contact the speakers use the emails below:

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