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INTRODUCTION



As more renewable generation is integrated with the grid, and demand from electrified heat and transport increases, the need for more flexibility in our power sector becomes increasingly important.

In its Smart Systems and Flexibility Plan, the department for Business, Energy and Industrial Strategy estimates that we will require around 60GW of flexible capacity by 2050 to meet our carbon targets, half of which will be met by storage and demand side response.

Battery Energy Storage Systems (BESS) will play an integral part of that solution. When developing these assets, investors must have confidence in the capabilities of the route-to-market (RTM) providers they partner with. But what services and markets are available to batteries, and what capabilities should you look for in RTM providers to optimise revenue across them? How will the market evolve and will new opportunities emerge?

Flexitricity has an enviable track record of industry firsts and delivering value for our Energy Partners. In this brochure, we will address these questions and provide an overview of our capabilities. We are on a mission to deliver a smart, flexible power system – one which minimises cost and utilises green energy – and we hope you'll join us on that journey.

THE REVENUE STACK

Optimising revenue for BESS is about agility. By this, we mean the ability to operate the asset in different markets as value shifts between them. But it's not just about choosing the right market at the right time; there are also opportunities to stack services and deliver additional upside.

Accordingly, you'll want to partner with an RTM provider that can provide holistic market access to the various revenue streams available and can demonstrate a track record of being able to deliver that agility to move between and stack services to maximise value.

Here at Flexitricity, we have a data science team that has developed machine-learning algorithms to assess and forecast value across these markets, a trading team to execute decisions and react to market events, and an operations desk staffed 24/7/365 that oversees fully automated dispatch and delivery.

Flexitricity

All of this capability is delivered in-house via a single supply and services agreement. We can also provide full Capacity Market management too, if required – from prequalification through to delivery.

Machine-learning algorithms to assess and forecast value across markets



Flexitricity Automated System for Trading (FAST) with direct access to EPEX and Nordpool wholesale markets via API

Operations desk staffed 24/7/365 to oversee fully automated dispatch and delivery

MARKETS SERVED

Flexitricity has delivered value for asset owners across the following markets:



It's not just about choosing the right market at the right time; there are also opportunities to stack services and deliver additional upside

NEW OPPORTUNITIES

As the power system decarbonises, new markets and services for energy storage are launched and we expect this to continue. It will become increasingly crucial to partner with an RTM provider that can take advantage of these opportunities as they arise.

Flexitricity employs a dedicated Head of Regulation as well as a Head of Supply and Balancing Services, ensuing the company is represented in all standard engagement streams with BEIS, the Electricity Networks Association (ENA), Ofgem and National Grid ESO. We participate in various critical code modification working groups and are members of the Association of Decentralised Energy (ADE) and the Electricity Storage Network (ESN).

This breadth of regulatory and industry engagement ensures our Energy Partners benefit from our continued innovation as services evolve and new markets open. This includes:

- Participating in ESN industry roundtables on performance monitoring and Applicable Balancing Services Volume Data (ABSVD) in the Dynamic suite of frequency services.
- Responded to Capacity Market, Dynamic frequency services and Reserve Reform consultations published by BEIS and National Grid ESO.
- Attended the formal launch of the BEIS-lead Review of Energy Market Arrangements (REMA), subsequently hosting a REMA launch event with the ADE at the House of Lords attended by the Flexitricity Energy Partners, industry colleagues and MPs.

We're proud of our track record of regulatory engagement and industry firsts in the flexibility space, and will continue to work hard to be at the leading edge for asset owners going forward.





MILESTONES AND TRACK RECORD OF INDUSTRY FIRSTS







FREQUENTLY ASKED QUESTIONS – Trading & Optimisation

Do you operate a 24/7 desk?

Flexitricity's trading desk operates from 06:00-22:00 on weekdays and 08:30-17:00 on weekends. The current trading hours allow us to cover all the key day-ahead auctions as well as take advantage of opportunities in-day. Our operations desk is staffed 24/7/365 and oversees automated dispatch and delivery of any overnight trading activity. The operations desk also has visibility of System Imbalance Price (SIP) forecasts to allow them to manage battery state of charge overnight, if required.

Do you have direct market access or use any third-party suppliers?

Flexitricity is a licenced energy supplier and has direct access to the key day-ahead EPEX and Nordpool wholesale markets, as well the M7 continuous in-day market, via API through our propriety trading platform, Flexitricity Automated System for Trading (FAST). For the Balancing Mechanism, we register sites in our own supplier Balancing Mechanism Units (BMUs) our EDT/EDL flows are managed through Quorom's Sentinel platform. We manage tendering for all ancillary services directly with National Grid ESO.

How do you see value shifting for energy storage in the future?

With frequency response markets saturating, having the agility to move assets between markets and stack different revenue streams is crucial for driving value from storage. Wholesale markets, the Balancing Mechanism and imbalance price response are increasingly important parts of an optimisation service, particularly because they can be stacked with delivery in frequency response. Regulatory and market change will also bring new opportunity, so partnering with an organisation with a track record of delivering new services and having wider industry engagement will also drive additional value in future.

Do you take any speculative positions?

All positions taken by Flexitricity across the traded markets are wholly asset backed. No speculatory positions are authorised.

FREQUENTLY ASKED QUESTIONS – Trading & Optimisation



How is AI integrated in your optimisation process and are there any humans in the loop?

Flexitricity's data science team has developed several bespoke inhouse tools that work together to drive optimal decision-making, with our trading team executing on those decisions and reacting to unexpected market events. In-house tools include our dayahead planner, an algorithmic model that combines a variety of internal machine learning tools and external inputs from the likes of MarketWatch and EnAppSys to recommend optimal schedules and predict value from in-day markets, and our Balancing Mechanism Price Recommendation and Optimisation Model (PROM) which predicts and recommends optimal Bid/Offer prices for the Balancing Mechanism settlement period to settlement period. We use feedback loops and back-testing to continually refine these models and enhance capabilities.

How do you mitigate risk?

Asset owners set the parameters within which Flexitricity can optimise, including warranties and limits on cycles, upper/lower state of charge or temperature. Data science models then ensure any schedules and optimisation decisions follow these parameters, although an open dialogue is maintained to determine whether there is any flexibility to capture market opportunity on particularly volatile days. Conversations with asset owners also inform hedging strategies. Formal risk management activities sit within the finance team, acting as a gatekeeper and independent check to trading activities. Our strategies optimise assets without exposing ourselves or asset owners to unnecessary risk.

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FREQUENTLY ASKED QUESTIONS – Assets

How to you communicate with and dispatch sites, hardware or API?

Flexitricity can offer connection via API or hardware. Both options provide identical functionality supported by a common backend infrastructure. Our engineering team would be happy to engage with asset owners to determine the most appropriate and efficient method of onboarding and connecting to sites. We can provide online documentation for our API spec and issue a formal Scope of Works document for on-site hardware, which outlines signal requirements and responsibilities of each party.

Should we be CVA or SVA registered?

Flexitricity is unable to advise on whether your asset should be CVA or SVA registered, but we are happy to discuss the practicalities of either option from an optimisation and billing perspective. We have experience of both CVA and SVA registered sites under management.

How do you handle asset parameters and warranties in your decision-making?

Asset health is the highest priority to Flexitricity, and any optimisation strategies will consider your agreed warranty, cycle limits, asset degradation over an extended period, and any other relevant parameters. At an asset specific level, operational parameters are agreed in advance with each Energy Partner, with this then being translated into an appropriate trading strategy. Ahead of going live with an asset, we require confirmation of a variety of asset parameters to ensure we are maximising value within the operational bounds of the site. Upper and lower State of Charge (SoC) limits, round trip efficiency and cycle limits are all key inputs. An open dialogue is maintained with Energy Partners to ensure that parameters remain up to date in optimisation strategies.

FREQUENTLY ASKED QUESTIONS – Assets



Is there a difference between how you operate co-located, behind-the-meter and front-of-meter assets?

Front-of-meter assets typically have no restrictions on their import and export capabilities and so can operate in a fully merchant manner across all services. For co-located sites, it would be crucial to understand whether any constraint is imposed by the grid connection when the co-located renewables are generating. For example, a solar farm may restrict export from the battery during EFAs 3 and 4 if the solar takes priority at the grid connection (we can also explore models where the solar is curtailed if export from the battery would be more valuable). For behind-the-meter assets, similar to co-location we would need to get a good understanding of the site setup and any restrictions on the grid connection. For example industrial and commercial sites may restrict import to the battery during certain times of the day.

What are your views on optimal duration of assets?

Flexitricity is unable to advise on what duration of asset you should be investing in. In terms of a general market comment, the value on offer in frequency response in the early 2020s meant there wasn't a huge differential in terms of revenue performance between assets of differing durations, especially in such a low throughput service as Dynamic Containment. As frequency response markets saturated leading to more wholesale opportunity and more sophisticated optimisation strategies, such as delivering Dynamic Regulation stacked with wholesale trading, longer duration assets have an advantage over shorter duration assets, especially in relation to state of charge management and fewer cycles from higher throughout services. **LET'S TALK**

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