Energy Storage:
Building a Bankable Project

Bird & Bird

Regulatory Environment

Recent years have seen considerable interest in energy storage, and battery technologies in particular. These technologies have the potential to provide real-time flexibility to the UK's electricity network to allow the economic and efficient integration of renewable generation and manage the increasing electrification of certain sectors (transport most notably).

There have been a number of historic barriers to developing battery storage projects and initially the technology sat uncomfortably within the regulatory framework. Developments over the past few years mean these regulatory issues are in the process of being resolved and workable investment structures are coming to fruition.

Generation Licence for storage

Towards the end of 2020, Ofgem confirmed its approach to amend the form of generation licence to include statutory definitions of:

i. electricity storage: *'is the conversion of electrical energy into a form of energy which can be stored, the storing of that energy, and the subsequent reconversion of that energy back into electrical energy';* and
ii. electricity storage facility: *'means a facility where Electricity Storage occurs'.*

Ofgem has also confirmed the introduction of a new storage specific condition E1 'Requirement to provide storage information'. Together these changes aim to clarify the role of electricity storage while ensuring that relevant licence holders provide accurate information regarding their electricity storage facilities to their relevant suppliers. Ofgem further notes that it has added references to 'electricity storage' to the definitions of 'generation business', 'generation set', 'generation station' and 'generating unit' in order to better clarify that the licence conditions in the electricity generation licence apply to electricity storage more generally. These changes took effect from 29 November 2020. This concludes a process that started in 2016 and provides regulatory certainty that storage is to be treated as a subset of generation with a specific form of generation licence.

These changes are being progressed alongside various updates to codes and regulations, and taxes such as the climate change levy to recognise the way storage facilities operate and address the risk that storage facilities could face 'double charging'. There have been other developments as well to the planning regime to allow larger storage facilities (>50MW) to sit outside of the NSIP regime.

While the policy intent has been relatively clear for some time, these developments taken together provide for a much more certain regulatory regime in which storage projects operate.

"It is an exceptional and perfectly structured organisation," reports one client. The lawyers have "a broad knowledge of smart energy-related laws and upcoming policies."

CHAMBERS UK, 2020

The Investment Environment

Building a Bankable Energy Storage Project

A key challenge for storage projects is creating a revenue stack that provides sufficient long term and stable income to encourage investment. The revenues from a storage projects are somewhat different from other generation plant which primarily create incomes through offtake arrangements and, historically in the case of renewables, through government backed-financial incentive schemes. The revenue streams from a storage facility are fundamentally different and reflect in part the fact that an energy storage facility is not generating its own electricity- rather energy storage technologies allow electricity generated from another source to be used at the most efficient time. Additionally, storage can also be used to absorb electricity from the system at times of excess supply. Therefore, energy storage can be seen as a more reactive resource that generates income by exporting or absorbing electricity as the need arises.

Given these unique characteristics, financial models for a storage project have generally considered the need to 'stack' revenues from multiple sources and markets. After an initial wave of interest where a number of storage projects were developed with revenue streams built on the Capacity Market and National Grid services such as EFR, the position has changed, for example:

- storage is now subject to de-rating in the Capacity Market meaning that longer duration batteries are more valuable; and
- certain grid services such as EFR and FFR have seen the clearing prices achieved at auction continue to fall (in one sense demonstrating the market appetite to deliver such services) while other new grid services such as Dynamic Containment are being developed.

The ever-evolving market for energy storage has created a hurdle for developers and potential investors alike as they seek to assemble a project structure that provides a bankable revenue stream over the asset lifecycle. However, the appetite seems to remain (both from the perspective of developers and financers, as well as Government and system operators keen to push the value of flexibility in the UK's energy system) and we have recently advised on the contractual structures for a number of large scale storage projects that are now moving towards operation in the UK. We explore below some of the principles on which storage projects are currently being developed and how developers and investors can build the case for developing storage projects in future.

As highlighted above and in previous summaries we have published, the revenue stack has been a key consideration for battery storage projects for a number of years and has evolved over time. Potential revenue streams are numerous and may depend on the individual circumstances of a battery installation, including its location, connection to the grid, and the capacity and discharge characterises of the battery itself. Typical revenues include:

- Ancillary or grid services to National Grid and increasingly to DNOs in their DSO role.
- Peak avoidance/shifting and TRIADS.
- Capacity Market.
- Price arbitrage.
- Direct contractual agreements - direct supply, load shifting, backup power.

It is important to recognise that this isn't an exhaustive list and potential new markets will likely continue to become available, for example: inertia services; services supplied directly to DNOs as they take on system operator roles; and through new mechanisms such as the Virtual Lead Party (VLP) which potentially opens up the Balancing Mechanism to smaller providers.

When compared to more traditional generation and renewables projects, there appears to be an additional degree of complexity for energy storage in putting together a financial model for multiple and evolving revenue streams, particularly when considering the complex nature of these markets, the lifecycle of the asset, and the relatively short term of many of the revenue streams. One way some operators have worked around this is through an 'offtake model' by contracting with a third party that has expertise in taking part in markets that might be available to battery storage.

The Offtake Model

In most cases, the owner designs and builds the battery and is responsible for day-to-day operation and maintenance in order to grant a third party 'buyer' the right to use the capacity of the battery. The battery owner receives a baseline payment in return by way of a capacity fee. The buyer can then seek to take part in various market mechanisms using the capacity from the battery and the parties agree if and how any revenues from such markets may be shared between them. In other scenarios this has been framed as more of a services contact where the asset owner makes the battery available to an offtaker to provide agreed optimisation services in relation to various market mechanisms through which the offtaker seeks to maximise revenues from the asset.

At the heart of these approaches are two key themes:

1. The asset owner secures a guaranteed baseline payment for making the battery available - this guaranteed income can provide the base on which a financial model is constructed, and finance obtained.
2. The complexity of taking part in multiple markets simultaneously and reacting to changes in these markets is outsourced to a third party with the relevant expertise, with the parties typically seeking to share revenues received.

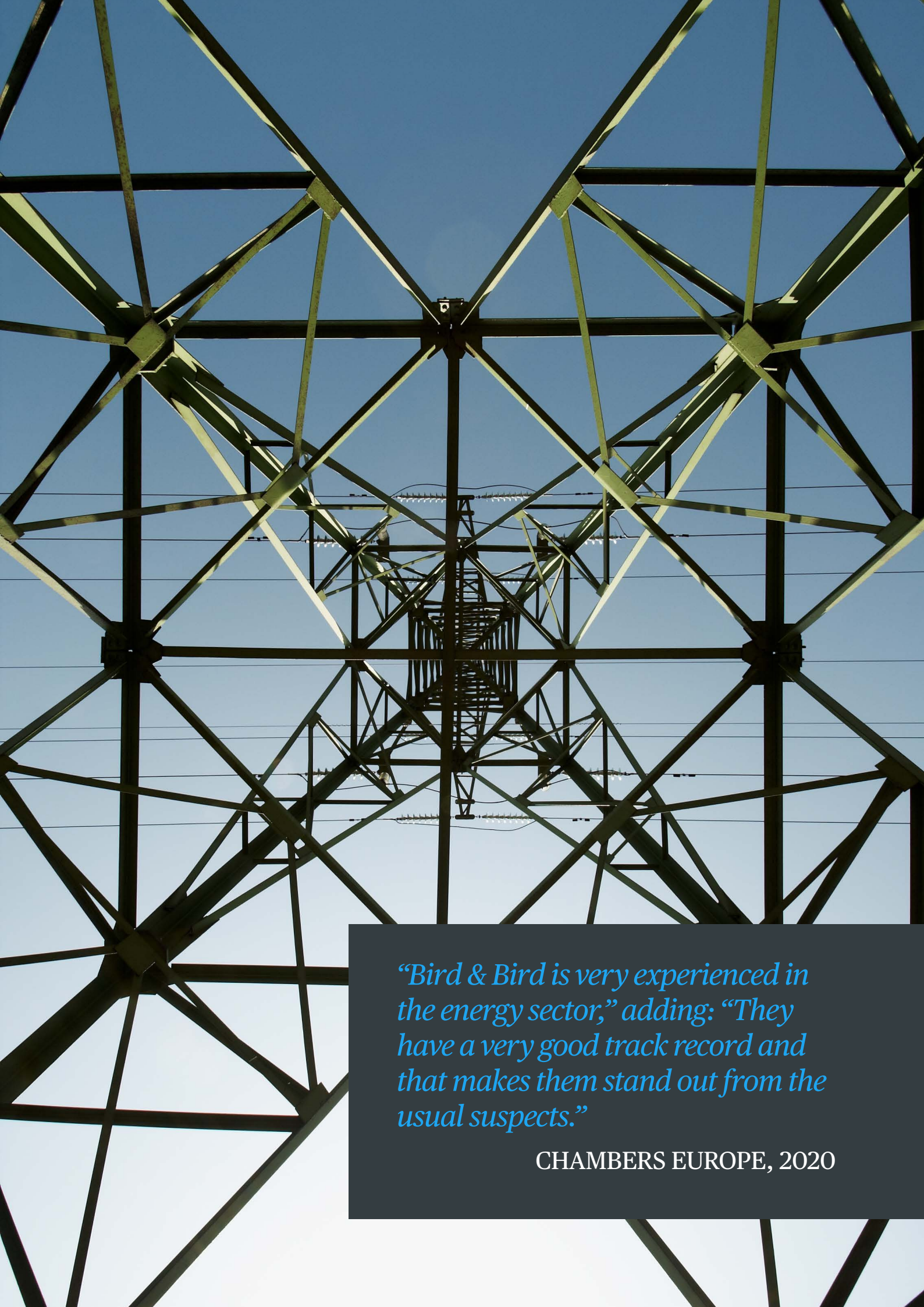
'The partners and associates are highly engaged and always client-facing, with a good overview of the market. Their international connections shape and augment the London offering.'

LEGAL 500 UK, 2020

There are a number of commercial considerations to taken into account in developing a contractual structure for a storage project based on the offtake model including:

- What is the capacity /baseload payment and how is it structured?
- What is the appropriate split of revenues from other markets?
- Is the arrangement intended to be exclusive or for a limited scope of the battery output?
- How are any related industry charges, taxes and embedded benefits accounted for?
- Does the buyer have rights to operate the plant in certain circumstances or to install equipment and software to allow it to perform its obligations
- Does the buyer have the ability to instruct the owner how to operate the plant (for example to take part in grid based ancillary services) and what are the limits of the owner's duty to follow the buyer's instructions.
- Following on from the above, is there a separate payment for the owner's routine O&M activities or specific activities in following any instructions of the buyer - this may include accounting for the costs involved in discharging or charging the battery in order to maintain its charge or participate in a particular market.
- What sort of governance regime is required to ensure co-ordination between the owner's and the buyer's activities?
- How is responsibility for regulatory compliance and metering apportioned?
- How does the contract seek to deal with new industry charges/rules and/or potential revenue streams?

The liability and termination regimes in particular will also need to be carefully considered in light of the agreed split of risks and responsibilities regarding the above.



"Bird & Bird is very experienced in the energy sector," adding: "They have a very good track record and that makes them stand out from the usual suspects."

CHAMBERS EUROPE, 2020

Your Trusted Advisor

Bird & Bird has advised investors, funders and developers on energy projects in multiple jurisdictions for a number of years and we understand the commercial drivers and contractual structures necessary to get a project over the line. Last year we advised on a number of storage projects which in aggregate provide over 200 MW of capacity to the grid.

Our broad experience in the energy sector aligned with our specific expertise on energy storage projects means we are able to assist clients in both compiling an appropriate team to develop a storage project and bring that project to execution through suitable contractual arrangements.

If you have a potential project or an interest in this sector, get in touch and see how we can help.

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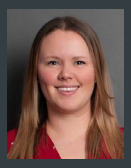

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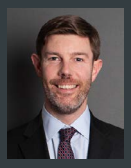

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