

# West Sussex County Council installs battery storage assets to help reach environmental targets

Local authorities have been required to meet substantial environmental targets to reduce carbon emissions. One public sector organisation that npower Business Solutions, Energy HQ (nBS, EHQ) is working with, has made significant steps towards realising this target by installing grid-connected renewable and storage assets on a previously used landfill site.

West Sussex County Council (WSCC) has developed one of its disused landfill sites at Westhampnett, near Chichester, into an energy park by co-locating a large-scale Lithium-ion battery with a 7.4MW solar PV array, maximising return on its real estate while reducing its carbon footprint.

## Appointment of nBS, EHQ and requirements gathering

In partnership with LASER, a public sector buying group, nBS, EHQ worked closely with WSCC to gain a comprehensive technical and commercial understanding of the council's challenges and ambitions for the site.

Overlaying these requirements with nBS, EHQ's in-house expertise in complex market forecasting and revenue modelling, Demand Side Response (DSR) and Power Purchase Agreements (PPAs), WSCC was presented with an operating strategy optimised over multiple benefit streams.

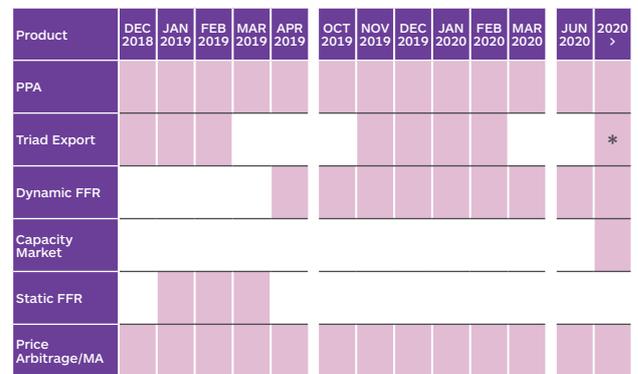
The multi-faceted strategy, delivered through nBS, EHQ's in-house aggregation platform and award-winning Optimisation Desk, ensured benefits between the PV array and storage asset were commercially optimised.

The strategy included:

- Sale of power and embedded benefits via a PPA
- Access to DSR including:
  - Triad export benefit
  - Firm Frequency Response (FFR), both Static and Dynamic
  - Capacity Market (CM)
- Price arbitrage and targeted activity in wholesale markets

## nBS, EHQ operation of assets

With the strategy in place, nBS, EHQ began the delivery of value for WSCC in winter 2018/19.



\* up to 2021/22

The principal combination of a flexible PPA, targeted discharge against Triad warnings, contracting to National Grid's FFR service and securing contracts in the Capacity Market auctions aligned with nBS, EHQ's original strategic recommendations to WSCC. The asset was also one of the first batteries to commence participation in National Grid's new weekly FFR auction trial, at the beginning of 2020.

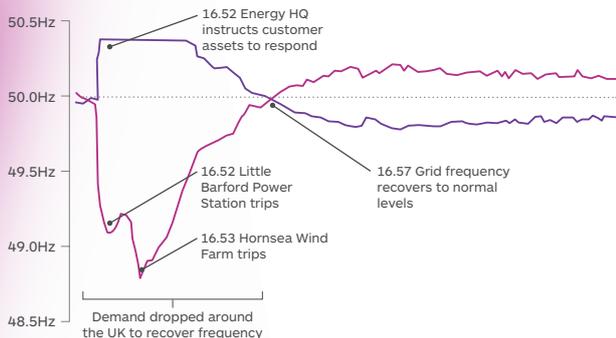
Coupled with this strategy, the modelling of the DSR markets by nBS, EHQ yielded increasingly valuable results which helped drive the recovery of Static FFR prices back to the highest levels since 2017. Once the asset had participated in the Dynamic FFR market it achieved the highest accepted tendered price in 2019 of £60.42/MW/hour, a price that made delivery of Dynamic FFR more lucrative than targeting Triads.

### Highest accepted availability price in 2019



**Figure 1** An example of nBS, EHQ success with the WSCC asset. Achieving a £60.42 availability price in TR118, the highest in 2019.

The asset has also delivered as expected in support of stability of the network. This was most apparent during the large national power outage on 9 August 2019, with a loss of generation of nearly 1,700MW, when the asset responded within two seconds to help reduce the sudden shortfall in supply.



**Figure 2** The near instantaneous reaction of the WSCC asset to the power outage on 9 August 2019 discharging capacity to help mitigate the drop in frequency caused by multiple reductions in national generation capability.

Dan Jerwood, Demand Side Response Manager at nBS, EHQ, commented on the performance of the asset: “Through this innovative, flexible approach, we have seen WSCC achieve significant success against its sustainability and financial objectives for the site. It was a big investment but, at a time when public sector costs are being scrutinised alongside challenging net zero targets, they are continuing to reap the rewards.”

Daire Casey, Energy Services Manager at WSCC added: “nBS, EHQ suggested the best approach to DSR and has been with us each step of the way to get everything up and running, keeping us updated with regular performance reporting. They worked with us on the financial modelling, creating an accurate and robust business case for investing in the solar farm and battery solution in the first place.

“To help us assess the first financial year of operation of the battery, we commissioned a report from independent consultants, Cornwall Insight. This provided a glowing overview of the optimisation strategy and overall performance against the market. Of particular interest was the conclusion that once the battery was fully up and running in the second half of the year, it secured the second largest weighted average FFR price for that period compared to similar assets in the market”, Daire concluded.

### Support for wider project work

As part of WSCC’s ongoing energy strategy, nBS, EHQ has supported a number of additional battery energy storage projects for the council, building on the success of the Westhampnett project. This includes revenue and financial modelling, asset specification recommendations, operational strategies and training on market context, industry and policy risks. Despite a challenging market landscape, these projects are being developed as part of WSCC’s ongoing sustainability targets.

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