

Case Study: Behind-The-Meter Service Stacking in the UK



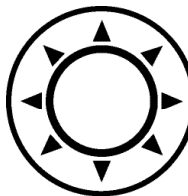
Project Introduction

redT will install a 300kWh machine into a UK Agri-business in order to maximise the amount of PV generation consumed on-site & minimise the amount of electricity imported from the grid.

To maximise the profitability of the project, the machine will also provide ancillary services to the National Grid as part of the service ‘stack’ to produce additional revenue.



Agriculture Business  
South-West England



250kWp of Solar  
Panels  
(Grid Connected)



60kW, 300kWh  
redT energy storage

Key Project Financials

7-10 Years

Project  
Payback

10-17%

Internal Rate of Return  
(Unlevered)

54MWh/Year

Additional PV  
Generation Utilised

Customer Service Stack

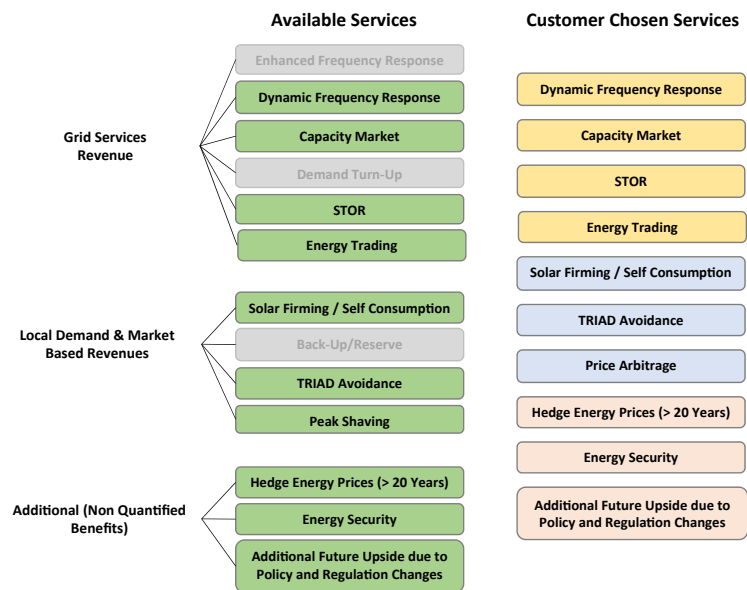


Figure 1: Service “stack” for case study site, indicating the 10 different combination services the energy storage machine is capable of performing

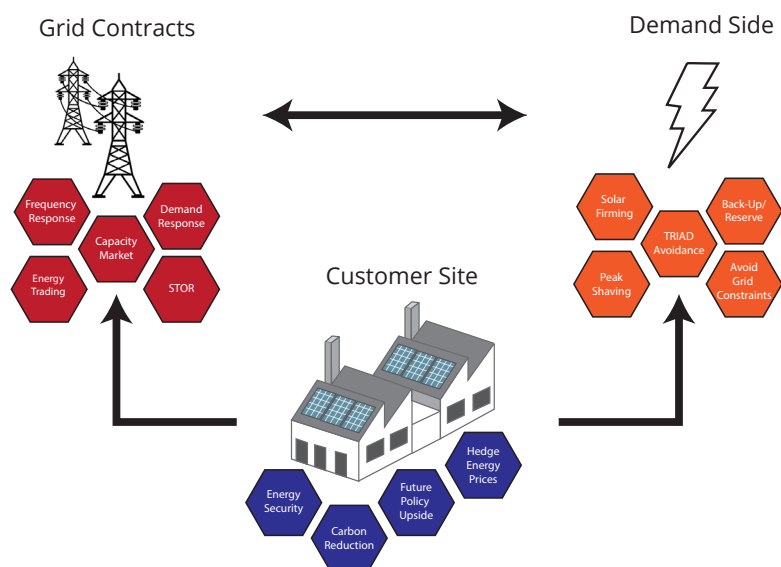
Figure 1 illustrates the composition of the site’s service stack, split by category.

In this use case, multiple services provide a net benefit to the site, by either contributing a discrete revenue (via capacity and utilisation payments from National Grid) or by allowing the site to save money through increased self consumption of solar energy, reducing the amount of energy imported from the grid or a combination of the two.

There are also non-quantifiable benefits derived from the energy storage machine in this use case, including the ability to hedge against electricity price rises for the life of the system, improved energy security and additional future upside from favourable regulation and policy.

## Application: Behind-The-Meter Service Stacking in the UK

**Maximise your energy. Make the most of your renewable generation and create additional revenue & benefits streams for your business**



**Less than 10 Years**

Project  
Payback

**More than 10%**

Internal Rate of Return  
(Unlevered)

**Up to 50% / Year**

Additional PV  
Generation Utilised

Figure 1: Energy storage applications (Behind-The-Meter) for C&I sites in the UK

### Explained: UK Behind-the-Meter Applications

Situate storage Behind-the-Meter (at your site, alongside local generation) to perform balancing services which create additional revenue via availability and utilisation payments from the National Grid and/or use the machine on the demand side to reduce the overall consumption of energy on your site.

#### Frequency Response (Enhanced or Dynamic)

Get paid to provide energy back to the grid for up to 30mins to help regulate the frequency of the network

#### Demand Turn up

Get paid to increase your demand for typically 3-4 hours to help regulate the frequency of the network

#### Capacity Market

Provide up to 4 hours of power as extra capacity to the grid for times when there is a shortage

#### STOR

Provide Operating Reserve to balance the grid when supply is low

#### Peak Shaving

Discharge your energy storage during peak times to avoid having to consume expensive energy from the grid

#### Energy Trading & Arbitrage

Use storage to take advantage of volatile energy prices, sell electricity when prices are high, and buy it when prices are low

#### Solar Firming

Shift excess solar generation into the evening to create 'firm', stable, 24/7 solar energy

#### TRIAD Avoidance

A significant proportion of your annual bill is determined by TRIADs - use storage to greatly reduce the cost of your annual bill

#### Back-Up / Reserve

Retaining energy in reserve as contingency power for essential machinery and operations

#### Grid Constraint Avoidance

Most sites have a restricted grid connection. Use energy storage to utilise excess energy

#### Energy Security & Fix Prices

Become independent from the grid with your own energy infrastructure & fix energy pricing for 20+ years

#### Carbon Reduction

Use renewable generation + storage to reduce your carbon footprint

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