



# South Mimms, Welcome Break Motorway Services

## Summary

South Mimms was one of the world's first stationary battery storage assets co-located with an electric vehicle charging station. Operational since March 2017, the award-winning site has provided a blueprint for the growth of EV charging infrastructure globally, allowing electric vehicles to be charged quickly and efficiently whilst minimising energy costs and reducing pressure on energy grids, making battery storage and electric vehicle charger co-location commercially viable. Solutions that effectively integrate vehicle charging with battery storage are essential to support the transition to net zero.

Open Energi's Dynamic Demand 2.0 platform continuously optimises the battery's State of Charge (SoC) to meet drivers' needs and manage site constraints whilst maximising value streams from peak price avoidance and grid services.

## Objectives

- Increase on-site energy capacity to accommodate more charging bays without increasing the site's import connection
- Minimise energy supply costs through peak price avoidance
- Maximise value streams through grid services
- Optimally operate the battery within warranty and site constraints, minimising degradation and throughput

## Asset:



**250kW / 500kWh**  
Tesla (Lithium-ion)  
batteries

## Services:



**Peak price  
avoidance**



**Constraint  
management**



**Grid  
services**

# Actions

The site hosts a 250kW/500kWh battery alongside one of Tesla's largest and busiest UK charging locations. Integrating the battery has increased on-site energy capacity from 800kVA to 1050kVA, enabling the site to accommodate more charging bays without increasing the site's import connection. Vehicles can charge from the battery during peak periods instead of drawing power from the grid. This keeps costs down by avoiding peak tariff consumption and capping the maximum power.

Throughout the remainder of the day, the battery charges from and discharges to the grid, earning revenue in return for providing grid services including Firm Frequency Response (FFR), helping the National Grid balance electricity supply and demand on a second-by-second basis.

The battery has also increased site resiliency in the event of a power failure. During a blackout at South Mimms in 2017, the Tesla Superchargers remained up and running when the power supply to all other facilities on site failed.

Balancing the battery to ensure enough stored energy to respond to requests to charge and discharge whilst securing continual supply to meet highly variable EV

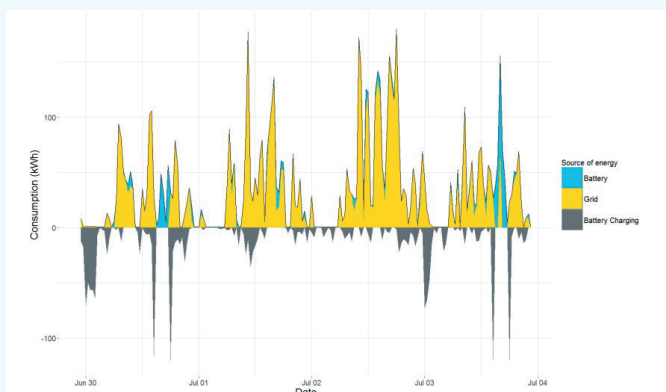
charge demands is complex. The battery must operate within the site, warranty, and operational constraints whilst maintaining the availability to operate grid services following pre-contracted volumes with the National Grid ESO.

Dynamic Demand 2.0's unique, patented SoC management and optimisation system automates actions to the battery to minimise throughput and cycling and reduce degradation. The remote SoC system adds up to 30% more value than manual scheduling and built-in controls.

## Key Outcomes

- Increased on-site energy capacity from **800kVA to 1050kVA**
- Reduced energy costs by avoiding peak tariff consumption and capping the maximum grid power
- Each year the battery helps to reduce UK CO2 emissions by approximately **1,138 tonnes** the carbon equivalent of **saving 5,787,000 miles** in the average (non-electric!) car.

### Site consumption: Battery vs Grid



### How can Open Energi help you?

Open Energi is the trusted global partner for automating and optimising distributed energy, using pioneering artificial intelligence to maximise returns for investors and owners of battery storage and renewable systems.

Our Dynamic Demand 2.0 system uses artificial intelligence to coordinate distributed energy resources in real-time, trading flexibility across any energy market or service.

### Customer testimonial

“Combining batteries and electric vehicles makes vehicle charging part of the solution to integrating more renewables without affecting drivers, unlocking vital flexibility to help build a smarter, more sustainable system.”

**David Hill,**  
Commercial Director, Open Energi



info@openenergi.com  
+44 (0)20 3051 0600  
openenergi.com

 [twitter.com/openenergi](https://twitter.com/openenergi)

 [linkedin.com/company/open-energi](https://linkedin.com/company/open-energi)