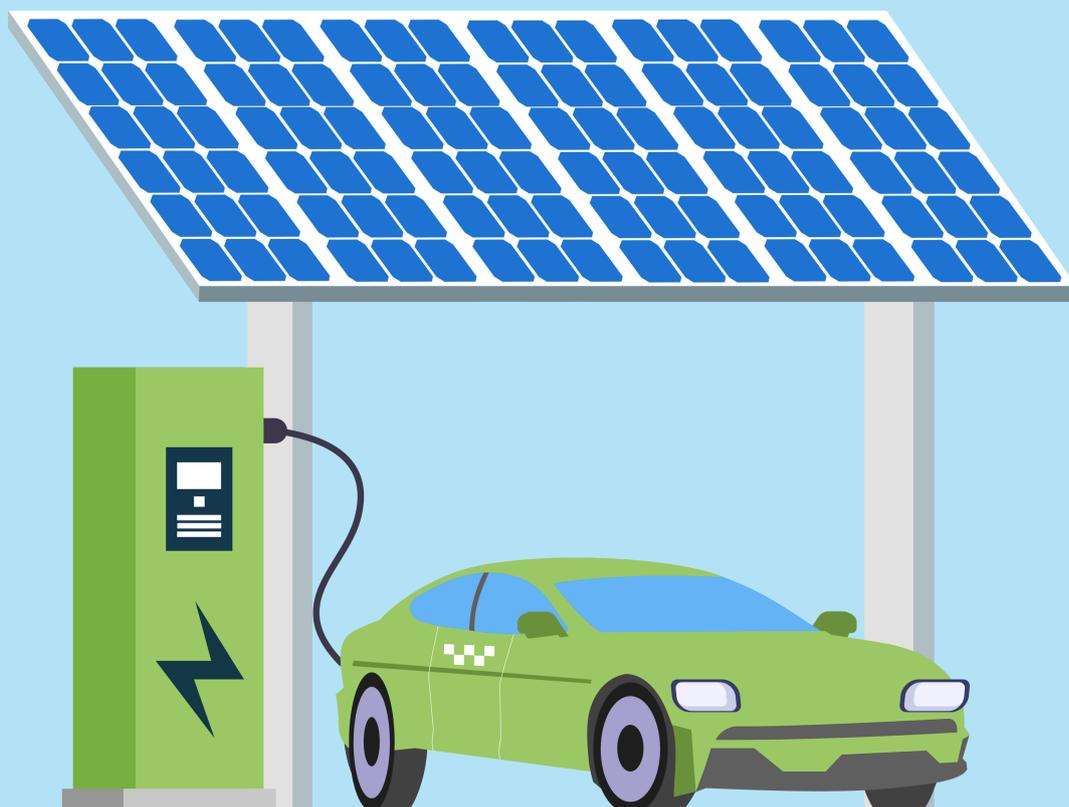




Case Study Hyperhubs



Summary

- **Location:** England, Yorkshire
- **Capacity:** 2x 110kWp
- **Type:** Solar carport, battery and EV charging
- **Developer:** European Regional Development Fund
- **Owner:** City Of York Council
- **Panel type:** Monocrystalline
SOLAR PV SYSTEM SIZE: 110KWP
BATTERY SYSTEM SIZE: 348KW/507KWH
EV CHARGING POINTS: 30 FAST (7KW)
4 RAPID (50KW), 4 ULTRA RAPID (150KW)
- **Completion date:** July 2022



EvoEnergy is the UK's leading renewable energy company. We offer a range of complementary services and technologies to secure our client's energy future and carbon targets. We consult, develop, design, construct, monitor and maintain projects to deliver financial savings and renewable energy for leading brands all over the country.



Overview

EvoEnergy designed and constructed a new innovative 'Hyperhub' alongside Monks Cross Park and Ride in York. The Hyperhub consists of 4 Rapid (50kW) and 4 Ultra Rapid (150kW) charging points, covered by a solar canopy (100kWp) and supported by a Tesla battery system (348kW/507kWh).



Project Summary

The City Of York Council was seeking to find a solution to reduce carbon emissions, increase air quality, pave the way for infrastructure that will support the next generation of electric vehicles throughout their region, all whilst offering better than market pricing for charging an EV.

Outcomes

EvoEnergy exceeded these requirements constructing a new 'Hyperhub' alongside Monks Cross Park and Ride in York, with the site going live at the end of July. The Hyperhub consists of a 30 fast (7kW), 4 rapid (50kW) and 4 ultra rapid (150kW), charging points, covered by solar canopies (110kWp) and supported by a Tesla battery system (348kW / 507kWh). The system will initially operate as an asset to Northern Power Grid, offering demand side response and grid services via the batteries onsite, powered by the solar PV, whilst drawing very little energy from the grid and charging Electric Vehicles. The system was designed and sized to evolve with the anticipated increase in EV usage and the batteries are capable of being switched to peak shaving or load shifting modes depending on demand and grid opportunities.

The batteries flexibilities and EV rapid charging features will future-proof the sites from further developments in car battery technology, as it is equipped with the capacity to support the uptake of the next generation of EV's that will have larger battery capacities and are capable of increased charging speeds.

Design Process

The total consumption and PV generation data were fed into a 5-direction site energy model, factoring in all the changeable parameters, such as fluctuating consumption, variable generation, potential battery capacities and powers. This refined the multi technology system model, which was able to extrapolate into possible future scenarios and be applied to future Hyperhub sites.

From best estimates, our model show that the amount of self-generated solar energy used on site would increase by 50% in 2021 to almost 100% in 2030, meaning that all the energy produced on site will be self-consumed



Benefits Of Battery & Solar Combination

Having a battery and solar PV allows the site to be more flexible as it can pull energy from multiple sources when required. For example, the battery can maximize the solar used on site and also ensures that the electricity used by the EV charging is from a low carbon source.

In addition, the site will be able to generate energy during the daytime via the solar PV canopies. We anticipate that initially the usage of the Hyperhub will be sporadic, so we set the battery to participate in Grid Service markets (operated by National Grid), which allows the battery to accrue revenues from National Grid's artificial energy markets through aggregator Grid Beyond. This will be reviewed in the future, so when demand increases for the Hyperhub, the battery usage pattern will be re-evaluated to either load shift, peak shave or continue to offer Grid Services.

In addition, the site is future-proofed and easily upgradable when the demand for 350kW charging arises years down the line.

Results

Ultimately, the development of this system will support the UK's transition to electric vehicles. It will encourage both local and non-local car owners to make use of the new charging point facilities available, with an easily replicable system to be deployed across many sites.

Local Benefit

Reduced Carbon Emissions: The Hyperhub project helps the City of York Council in their goal to reduce carbon emissions by providing charging infrastructure for electric vehicles (EVs). By promoting the adoption of EVs, the project contributes to lowering emissions from transportation, which is a significant source of carbon emissions. Improved air quality: Increased use of EVs supported by the Hyperhub leads to a decrease in air pollution caused by conventional combustion engine vehicles. This benefits the local community by improving air quality and reducing the negative health impacts associated with poor air pollution.

Infrastructure for Next-Generation EVs: The Hyperhub is designed to support the future generation of EVs with larger battery capacities and faster charging speeds. By providing charging points and battery systems capable of accommodating these advancements, the project ensures that the local community is prepared for the evolving technology in the EV market. The Hyperhub aims to offer better than market pricing for EV charging. This benefits local EV owners by providing cost-effective charging options, making EV ownership more accessible and affordable.

Community Benefit

Replicable System for Multiple Sites: The success of the Hyperhub project paves the way for similar charging infrastructure deployments across many sites. By creating a replicable system, the project benefits not only the local community in York but also other communities across the UK seeking to establish similar EV charging facilities.

Revenue Generation for City Council: The City of York Council receives revenue from various sources due to the Hyperhub. They earn income from the energy exported to the National Grid, fees collected from road users for charging their vehicles, and revenues from participating in Grid Services. These additional revenues can support local initiatives, services, and investments in the community.

Support for Carbon Neutrality Goals: The renewable energy system provided by the Hyperhub aligns with the City of York Council's objective to achieve carbon neutrality by 2030. By actively exploring more sites and expanding the project, the council demonstrates their commitment to sustainability and renewable energy adoption, benefiting the entire community. First Park and Ride with EV Charging Infrastructure: The Hyperhub establishes the Monks Cross Park and Ride as the first park and ride facility in the UK to offer EV charging infrastructure combined with onsite renewable generation and battery systems. This distinction not only brings pride to the local community but also showcases their commitment to clean transportation solutions and sustainable urban development.



Learn more about what's happening at EvoEnergy at www.evoenergy.co.uk



Published in the United Kingdom by Solar Trade Association
6 Langley St, London WC2H 9JA, The Conduit
© Solar Trade Association 2024

www.solarenergyuk.org