

# Be a part of the world's first low carbon transport, power & heat energy superhub

In April 2019 Kensa Contracting and the Energy Superhub Oxford consortium were awarded Innovate UK funding for a £41 million project which will deliver a 50MW grid balancing battery connected to superfast EV charge points, as well as 300 domestic Kensa ground source heat pumps (GSHP) with smart controls.

The project aims to reduce emissions and improve public health by accelerating a switch to electric vehicles and decarbonisation of heating for homes and buildings.

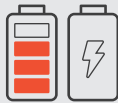
## Energy Superhub Oxford

### Power direct from the transmission system



#### Grid scale battery storage:

48MW/50MWh lithium ion battery  
2MW/5MWh redT flow machine



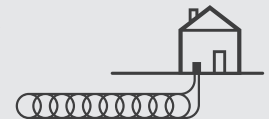
#### EV charging at scale:

Taxis, buses, rubbish trucks, tipper trucks and private vehicles



#### Ground Source Heat Pumps:

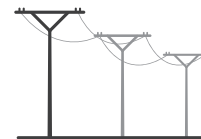
Residential and commercial



### Optimisation and trading, machine learning-based



**Direct transmission connection** at Cowley substation, South Oxford



To reduce project risk, heat pumps connect to distribution system given small initial scale

## What's Involved?

Smart software will manage the energy storage, electric vehicle charging and heat pumps, to reduce strain on the grid and allow it to accommodate more renewables.

Kensa Contracting will install new heating systems consisting of our award-winning GSHP with shared ground loop arrays and Switchee smart controls linked to a new, cloud-based platform, the Kensa Heat Optimisation Platform, that combines property information with time of use tariffs to produce an optimised heating schedule. These heating systems will be the first of their kind in the UK, and the only renewable heating solution capable of delivering domestic heating at a lower running cost than a traditional gas boiler, with no local emissions and the lowest carbon intensity of any heating.

Working within strict comfort parameters, the Kensa heat optimisation platform will use the fabric of the property to store heat energy ahead of peak energy times by raising the temperature of the building when electricity is cheap allowing the GSHP to turn off when electricity is most expensive.

## Benefits for the environment

The carbon intensity of electricity roughly correlates with the cost, as electricity is cheapest when wind and solar generation is high. This means that load shifting of heating immediately reduces the carbon intensity.



### Benefits for end users

Replacing night storage heaters with shared ground loop arrays and individual ground source heat pumps produces lifetime bill savings of £15,000 – £20,000 per property (over a 40 year nominal lifetime using the ECO3 calculation methodology). Combined with a smart thermostat and the Kensa heat optimisation platform, the predicted lifetime bill savings per property rise to £20,000 – £26,000. Consumers will benefit from clean, renewable heat with savings of up to 25% compared to a standard ground source heating system. Properties displacing gas already have cheaper heating and therefore savings will be lower, but even they could see lifetime bill savings of £2,000 – £5,000. For the 300 properties in the Energy Superhub Oxford, we expect total lifetime bill savings of £2.5 – £3.5 million\*.

### Benefits for social landlords

By taking part in this project, our landlord partners will benefit from a reduced system installation cost as the Innovate UK grant will cover the cost of the new wet central heating system and the Switcher smart controls. In addition, all properties will receive new smart meters. Our partners will also benefit from fully funded tenant liaison and information events, delivered by Kensa Contracting and supported by the Energy Systems Catapult and the University of Oxford.

All properties will also be eligible for the Non-Domestic Renewable Heat Incentive, providing a 20 year income for the property owner. Kensa will support our customers to claim the RHI funding.

### About Energy Superhub Oxford

Energy Superhub Oxford is one of four local energy system demonstrators run by Innovate UK. Representing some of the largest industrial innovation grants funded by the UK government, these projects are being supported by multiple government agencies, and are receiving national media interest. **It is hoped that our partners in this project will engage with promotional activities including case studies and televised interviews.**

Energy and Clean Growth Minister, Claire Perry said: "Oxford is set for a smart energy overhaul, with these projects aiming to meet the city's energy needs through greener, low carbon technologies. Backed by government funding, this has the potential to completely change the way people go about their daily lives – from going to work on an electric bus to using the heat rising from the earth to heat your home without gas."

"These projects are an example of our modern Industrial Strategy in action, helping companies and consumers seize the opportunity of the global shift to a cleaner, greener, more flexible energy system."

\* Assuming the 300 property mix consists of 100 night store replacements and 200 gas replacements. Savings could be greater if displacing all night stores (£8 million) or smaller if displacing all gas (£1.1 million).

## GET IN TOUCH

We are seeking to work with social landlords with clusters of housing stock ready for retrofit. To be a part of the world-first Energy Superhub Oxford project, get in touch with your Kensa representative or contact Lisa at Kensa Contracting's head office.

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