

Project Lead: Green Energy Options (geo)

Funding:

Partners: ScottishPower, Vaillant

£474,703



The problem: Heat pump assessments for homes are lengthy and too expensive

The current process to determine if a home is suitable for a heat pump includes a 2-3 hour in-person building assessment, and the next steps can make the customer journey feel lengthy, disjointed and inefficient. Time lag and expense of the survey can damage the business case for suppliers and installers.

The solution

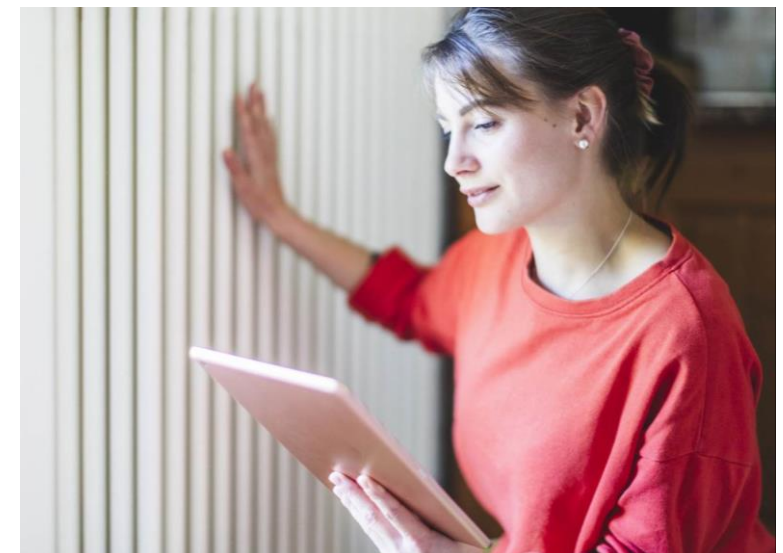
geo has developed a solution to remotely assess a home's suitability for heat pumps. The technology uses data to build a model of a home's energy use, and can be used by project partners ScottishPower and Vaillant to make a rapid assessment of heat pump suitability, resulting in an improved customer journey.

Enabling accurate remote assessments will smooth the customer journey, improve the turn-around time and accuracy of proposals, and by automating the process will save significant time for installers meaning more installations can happen each year.

“ The AI Smart Heat Pathway project aims to contribute to breaking down the barriers to heat pump adoption, a critical component of the UK's drive to net zero. ”

Thomas Whiffen

Product Manager, geo



Remote assessment of homes using energy digital twin technology and smart meter data

What are we going to do?

The project is gathering data from smart meters and smart thermostats in a trial with 150 homes. geo's transformational energy digital twin technology will use that data to build a model of the home's energy use to identify if the home is heat pump ready.

This data will be validated by a ScottishPower heat pump surveyor and Vaillant's own tools.

Why is this an improvement on current solutions?

Solutions providers, like ScottishPower, offer in-home assessments to determine if a property would be suitable for a heat pump, but they can be costly and time consuming.

Remote assessment, removing the cost of an engineers visit, significantly changes the process for the better.

What would success look like?

A successful result will prove geo's energy digital twin technology is able to provide an instant answer on whether a home is heat pump ready and for solution providers such as ScottishPower and Vaillant to use the information to provide the customer with next steps, associated costs, and the potential financial and carbon saving benefits, quickly and efficiently.



How will this project help towards the target of installing 600,000 heat pumps per year by 2028?

The AI Smart Heat Pathway will help reduce upfront costs and time associated with home surveys. This will encourage higher consumer uptake, and help provide a viable pathway towards net zero heat.

Whilst the project will be piloted across 150 homes, the aim is to subsequently scale the AI Smart Heat Pathway nationwide.

The Optimised solutions development stream of the Heat Pump Ready programme supports the development of innovative tools, technologies and processes to overcome specific barriers to heat pump deployment in the UK. This stream supports solutions aiming to reduce the life time cost and increase the performance of domestic heat pumps, minimise home disruption whilst providing high quality installations, develop and trial financial models to support heat pump deployment, improve the heat pump consumer journey and provide a smart and flexible home energy system.

Heat Pump Ready is funded by the Department for Energy Security and Net Zero through the NZIP programme. The Collaboration & Learning stream is managed by the Carbon Trust with support from Ipsos and Technopolis. We give no warranty and make no representation as to the accuracy of this document, and accept no liability for any errors or omissions.

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Key Findings

- Public interest in having a heat pump installed is limited to a small proportion of the population at large, although this is still sufficient to overwhelm the current surveyor and installer base.
- Households surveyed say they will not switch to heat pumps in the next few years because of the high perceived costs of install, the perception that their property is not suitable, and insufficient knowledge of the technology.
- Installers spend lots of time assessing properties for heat pump readiness that do not progress. A way to filter out disinterested homeowners at the first step would allow installers to focus on more quality leads.

AI Smart Heat Pathway Project update (Autumn 2023)

What progress have we made so far?

Phase 1 of the project is now complete. We have developed a beta digital tool to calculate a property's peak thermal demand and identify the most appropriate heat pump for it from measured energy and temperature data.

We have also secured over 100 trialists and collected the necessary heat and energy meter data for our digital twin model to calculate the heat loss coefficient of each trialist's property.

What barriers have we identified and how has this changed our approach to delivering our project?

Recruiting sufficient trialists with compatible home setups in ideal locations has been challenging. Additionally, installation cost increases have made new installs unviable within the project budget. By utilising geo's existing connected customer base, we've been able to secure a sufficient number of eligible trialists; we've also shipped the additional technology required and remotely supported a self-install model.

Surveyor availability continues to limit progress. An output of the project will be a tool that better utilises surveyor capacity, by improving customer conversion rates.

What are our next steps?

Before April 2024, we will have:

- Completed all data capture from the trial properties
- Generated over 100 heat pump sizing designs via novel tools
- Evaluated the novel tools against the industry benchmark approach to sizing heat pumps

