

PRESENTATION SUMMARY:

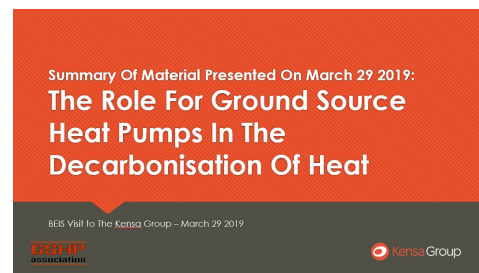
THE ROLE FOR GROUND SOURCE HEAT PUMPS IN THE DECARBONISATION OF HEAT

A SUMMARY OF MATERIAL PRESENTED TO BEIS ON MARCH 29 2019

Following a recent visit from Farood Ahmad and Matt Aylott, the Kensa Group and the Ground Source Heat Pump Association have produced a Powerpoint presentation extolling the merits of the technology.

The presentation can be accessed [here](#).

The purpose of this document is to provide a summary.



Prior to Government interventions, ground source heat pumps were the most popular renewable technology to heat a home. Peculiar policy decisions have meant there has been no market growth since 2008: this must change as ground source heat pumps are the variant best able to play a key role in any decarbonisation of heat strategy.

Compared to air source heat pumps, ground source models are more efficient, more reliable and more durable which means lower carbon emissions, lower running costs and lower ownership costs. More importantly, ground source models can contribute far more effectively to the necessary load shifting initiatives as the source temperature at night does not fall. By contrast, the inferior efficiency of air source models would be further pronounced if they were required to operate at night when air temperatures are typically cooler. Worse, the potential noise pollution would also prevent their deployment in high density housing areas or create issues if planning rules were ignored.

Ground source heat pumps can also provide increasingly necessary cooling in summer by using the coolth in the ground (which has been helpfully cooled during the heating season) to reduce room temperatures via fan coils or fan-assisted radiators. This cooling is provided at zero cost to the householder as the cost of running the circulation pump will be offset by improved efficiencies during the heating system since the ground temperature is being re-charged.

The challenge for ground source heat pumps has always

been, and still remains, the cost of the ground array, typically a borehole. The increasing popularity of shared ground loops is already helping to reduce costs and various projects are underway to combine waste heat and/or cooling to reduce borehole depths/costs even further. If policies create significantly increased demand, borehole costs will fall by 40%, paving the way to mass decarbonisation of heat

The key is increasing demand in a sensible and sustainable manner. Shared ground loops require all households to connect simultaneously so initial policy should target social housing retrofit and all residential new build schemes. Most retrofit schemes will replace night storage heaters or gas boilers (in high rise blocks). As well as the borehole cost savings, heat pump costs should also reduce significantly as they are currently inflated by the extraordinary cost of making any sale.



Once costs have been reduced, it is likely that new business models will emerge to support deployment at existing private housing. Entities will own the heat pump and ground array and will sell heat for a pre-agreed price. These entities

will utilise dynamic tariffs, demand aggregation, load shifting, heat storage and smart controls so they can offer heat at an appealing price even if the householder makes no contribution to the upfront costs.

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