

Written evidence submitted by Matthew Hill (DHH0002)

A summary of key issues

1. Building Heat Loss

The need for improved fabric insulation and controlled ventilation has to be seen as integral to any successful strategy for domestic heat decarbonisation. This is particularly the case for properties installing heat-pump systems.¹

Jenny Hill's evidence to you supports this. However for many dwelling types the high cost of "deep retrofit" will be a barrier that requires more than the offer of a low interest loan system.

2. Air Source and Ground Source Heat Pumps

The recent history of heat pump installations in England shows that there have been a considerable number of poorly designed systems operating inefficiently (ie with a low Seasonal Coefficient of Performance). Improved guidance and minimum design standards for registered contractors are required.

The following disincentives to heat pump installations need to be addressed:

- The small impact on EPC ratings from heat-pump installations due to the outdated Carbon emission factor for electricity used in the SAP calculation (which is long overdue for revision).
- The large cost differential between gas and electricity
- Lack of installers competent in design and installation

3. Community Heating

The use of low temperature community heating powered from GSHP or other non-fossil fuel sources is a sensible choice for blocks of apartments and similar closely spaced groups of properties. More research is required to establish whether district/community heating is an optimum solution for other groups of dwellings where suitable space is not available for individual heat-pump installations.

4. Hydrogen

The use of "green" hydrogen produced by electrolysis for domestic heating is clearly less efficient than simply using electric resistance heating in dwellings, and a lot less efficient than use of heat pumps. Large scale use of "blue" hydrogen for domestic heating would require carbon capture and storage on a massive scale and continued extraction of natural gas.

The committee are therefore advised to be wary of arguments for a regional or national hydrogen gas grid from organisations likely to profit from this. The high cost of implementing a hydrogen gas grid (eg those published by the H21 project) could preclude

¹ To ensure good seasonal performance, the design radiator temperature should be <45deg.C, which compares to 60-70deg.C for gas-fired systems. The very large radiator sizes needed for poorly insulated houses could thus be impractical.

investment in options that are more environmentally sustainable in the long term. Hydrogen may become a useful energy store from excess renewable electricity production, but this should be prioritised for industry and transportation.

5. Need for Action

The progress towards decarbonisation of heating in the UK is painfully slow. For example, recent statistics show that over one million gas boilers a year are still being installed in dwellings. Meanwhile the long-delayed revision to building regulations for new build and retrofit proposes standards that are lower than those proposed for a 2016 revision which was never implemented.

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I am a retired Chartered Building Services engineer and a Registered Professional Energy Consultant who has spent most of their working life reducing energy use in buildings. A founder and director of Leeds Environmental Design Associates, I have published journal articles and presented conference papers on the decarbonisation of heat. I am a founder member of Zero Carbon Headingley.

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