



Environmental Audit Committee: technological innovations & climate change – heat pumps

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CREDS responds to consultations and calls for evidence from government, agencies and businesses, providing insight and expertise to decision-makers.

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CREDS Consultation 018

Q1 What steps can the Government take to increase uptake of heat pumps?

- Amend the Building Regulations and make use of Development Control to require the use of heat pumps in new housing, on and off the gas-grid.
- Continue to offer financial support for heat pumps off-gas-grid.
- Work with the [MCS](#) standards organisation to improve MCS procedures and associated training for heat pump installers.
- Commission field trials of heat pumps in conjunction with district heating and grouped heating schemes, as a way of developing a market for large, multi-dwelling heat pump installations that would complement the market for individual dwelling solutions.

Q2 How can we ensure that the regulatory frameworks in place work together to guarantee heat pumps are used in the most effective places, alongside other technological solutions?

- It is not obvious that this is a useful question, as posed. In the light of profound uncertainties about costs of emerging energy technologies, and with respect to the structure of future energy markets in the UK, regionally and globally, there can be no such guarantee. What can be done is to develop a strategic vision which acknowledges both the goals of energy policy, the attendant uncertainties, and the desirability of maintaining technological diversity of heat supply to support the evolvability of the energy system, and which seeks to chart a pragmatic course through the next three decades in that light.

Q3 What steps can be taken to lower heat pump installation costs?

- Continuously improved rules for heat pump sizing, taking account of dwelling heat loss, radiator sizing and heat transfer capacity, domestic hot water storage volume, etc.
- Improving our understanding of the technical potential for and consumer acceptability of increasing the duration of heating in cold weather, to allow the use of smaller heat pumps and minimise the need to increase radiator capacity needed to achieve comfort.
- Encourage and support the development of clusters of businesses capable of installing and maintaining heat pumps.
- Implementing policies to increase the volume of work for the whole of the heat pump supply chain, with the aim of achieving increased competition, faster learning, and reduced unit costs. Mechanisms might include use of Building Control and Development Control to favour heat pump installations in specific areas. Different packages of measures would be needed in new and existing homes, on- and off-gas grid. Use of heat pumps in new homes in on-gas grid areas would be encouraged by

ensuring that costs of providing gas connections to new homes are not bundled with electricity, thus allowing developers to benefit from the avoidance of the need to provide a gas connection to new homes which are fitted with heat pumps.

- Undertaking and reporting the results of regular studies of performance and consumer acceptability of heat pumps.

Q4 What role should gas or hybrid heat pumps play in helping the UK reach the target of net zero emissions by 2050?

- Hybrid heat pumps may well have a role to play in supporting the decarbonisation of heat in areas and where electricity grid capacity is constrained. District and communal heating systems provide a strategic opportunity to implement hybrid functionality, deploy emerging exergy-efficient conversion technologies such as fuel cells fuelled with natural gas and/or hydrogen, build-in flexibility and resilience, deploy storage, and achieve reduced whole system costs.
- Hybrid heat pumps (individual and in association with district and communal heating) may also have a role in supporting the electricity system during periods of grid or capacity constraints – for example caused by exceptionally cold weather, or failure of part of the supergrid. Under such circumstances, the effect of hybrids switching to gas (natural and/or H₂) is similar to the construction of conventional peaking capacity, and even closer to the effect of industrial demand-side flexibility which already provides significant additional “negawatts” under contract. A possible problem with individual hybrids is that, depending on control strategies implemented, they may effectively be in gas-mode in ordinary colder weather. And because of that and the fact that they are buried in the distribution system, and not under contract, they may be invisible to NationalGrid. There is therefore a risk is that NationalGrid will factor them in as a general reduction in the temperature sensitivity of electricity demand, and they will not then be available for once-in-a-decade (or rarer) events such as the Beast from the East. It is likely that more work will be needed to ensure that hybrids in individual dwellings genuinely contribute to system flexibility and resilience. Such work may include the extension of dynamic electricity tariffs to dwellings with hybrid heat pumps, possibly as part of a general move to such tariffs for all consumers. The latter is intellectually beguiling, but could have significant unintended consequences.

Q5 How can the Government tackle the current skills gap for designers, builders and installers of heat pumps?

- Increase support for heat pump conversion courses for plumbers and gas fitters. There is significant overlap between the basic skill sets of people involved in design,

installation and maintenance of gas-fired heating systems and those needed to support heat pumps.

Q6 How can public awareness of heat pumps be improved?

- A maxim of the Passivhausinstitut in the 1990s was “No German should live more than 10 km from a Passivhaus.” The assumption was that proximity would lead to familiarity and ultimately acceptability through the diffusion of information through social networks. The same approach would be a way to increase public awareness of heat pumps. A critical factor in any such strategy would be the perception that heat pumps worked well, and delivered comfort reliably and with acceptable running costs. Government could help to ensure a positive perception of heat pumps as a heating option by undertaking regular studies of performance, cost and acceptability.