

Electrify Heat Coalition submission on The Future of Distributed Flexibility Call for Input

Moving to a smarter, more flexible electricity system will be instrumental to achieving net zero and delivering cheaper, cleaner power to people across the UK. These changes must be made in step with significantly higher investment in the grid, in sync with wider Government ambition, and in recognition of the importance and potential of heat pumps which can help grow renewables and enhance system flexibility. Grid constraint has already prevented heat pump deployment on future housing developments in some parts of the UK, which is inconsistent with the Government's aim to see 600,000 heat pumps installed per year by 2028, and with the Climate Change Committee's carbon budgets.

For such deployment rates to be achieved, it is imperative that CE/CA marked heat pumps¹ can be connected without any advanced compliance administrative burdens being necessary prior to their installation. Such an approach has worked successfully for the deployment of solar PV and the same principle should apply to heat pumps certified to operate to the load and harmonics characteristics specified in product standards.

The network upgrades required to reach net zero are significant, with Government estimating a total required investment of ~£150bn for the distribution and transmission system by 2050²; and the Climate Change Committee projects that ~£50 billion will be needed by 2035 for electric vehicles and hybrid heat pumps for

¹ Certification that a heat pump has reached the EU directive safety and security requirements.

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https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1096248/electricity-networks-strategic-framework-appendix-1-electricity-networks-modelling.pdf

the distribution system alone³. A range of measures could reduce these costs significantly, such as widespread smart charging, improved energy efficiency of homes, controls and voltage regulation, smart planning, and active network management techniques. In the Government response to the 2022 consultation on interoperability and cyber security of energy smart appliances and remote load control, titled 'Delivering a smart and secure electricity system', the significant value that heat pumps and smart thermal stores can provide to a more flexible energy system is highlighted.

A flexible system is needed that *enhances* the experience of heat pump ownership and actively encourages uptake, not one that by cost or constraint of supply disadvantages those who seek to invest in clean heat. To this end, the flexibility framework should place emphasis on allowing consumers (through aggregators), to be able to respond to price signals that allow for them to be rewarded when their heating systems assist in relieving local grid pressure. The emphasis should be on this additional reward element, rather than allowing for District Network Operators to be able to interfere with a consumer's heating control system unless the consumer has specifically (including indirectly through their supplier or other aggregator) agreed to the commercial terms for allowing this.

Key points:

- **Flexibility is an essential pillar of a 'heat pump' ready grid.** As we shift to an electricity system more reliant on renewables and with greater demand on supply, flexible management of electricity will be key to maximising efficient use of power and keeping bills lower as investment increases. Whether through permitted automatic load shifting, clear tariff variability price setting, or simply fixed rate payments to consumers, there must be a

³ <https://www.theccc.org.uk/wp-content/uploads/2019/05/CCC-Accelerated-Electrification-Vivid-Economics-Imperial.pdf>

negotiated and uncomplicated financial incentive for heat pump users both domestically and for businesses. This incentive could, for example, be in the form of clear smart metre price signalling (showing when turning down the heat pump could be more cost effective), or from a cheaper tariff offer where the consumer will enjoy savings if they choose in advance to participate in a more flexible way, such as consuming away from times of peak electricity consumption (e.g., overnight pre-heating).

- **Standards, recommendations, or mandates for flexible heat pump use should remain in line with EU standards and must go hand in hand with an uplift in grid investment and coordination.** While heat pumps have great potential to improve the electricity system through distributed and demand side flexibility, this should not be seen as a substitute for essential investment in the grid. Investment is needed now on reinforcement of national energy infrastructure and reforms which simplify the network elements of heat pump installations, such as increased capacity and gas network disconnection. Market reform, continued smart meter rollout, and wider introduction of time of use tariffs will also be important.

It is also important to recognise that the heat pump manufacturers supplying the UK market also manufacture heat pumps which will be sold in other markets internationally (including the EU). If it is mandated that heat pumps in the UK require additional product standard requirements to ensure flexibility can be achieved, this will create a separate set of manufacturing conditions for import to the UK compared with other countries (and the EU). This will ultimately raise the cost of manufacturing 'UK standard' heat pumps and increase their unit price on the UK market.

- **Standards, recommendations, or mandates for flexible heat pump use should not create a barrier to adoption.** Heat pumps can provide demand-driven alleviation to the grid, either through pre-heating, timed hot water

storage, compressor control or dedicated thermal storage, which should benefit the consumers who choose to participate but not disadvantage or hassle those who do not or cannot participate. Ofgem should adopt an approach in line with the Department for Energy Security and Net Zero's smart mandate for heat pumps which will not "create a barrier to the Government's ambition to deploy 600,000 heat pumps a year by 2028"⁴.

- **The UK electricity system needs regional and future planning.** Through the creation of the Future Systems Operator and local energy planners, the grid will benefit from an understanding of local needs and pressures as well as increased collaboration between District Network Operators and local authorities. This will also introduce a greater degree of accountability, more equal access to data and can de-risk investment.
- **Any vision for a future energy system must reflect government ambition and deployment targets for heat pumps.** District Network Operators forecasts, and system projections, must be directly informed by government ambition to deploy greater numbers of heat pumps and electric vehicles. Digitalisation and transparent data sharing with suppliers and flexibility service providers must be encouraged or legislated for.
- **The degree to which the UK does or doesn't have an "energy conscious culture" is a red herring.** While efficient use of electricity is important (for heat pumps and electric vehicles but also all electric appliances), this document does not provide any evidence to support the assessment that UK consumers are generally wasteful with energy. In the current climate of significant fuel poverty, high awareness and acceptance of the damage of carbon emissions, and historically high electricity prices we feel this is inaccurate. This is also a confusing narrative as electric heating systems

such as heat pumps are considerably more fuel efficient than non-electric technologies, such as gas boilers.

- **The description of heat pumps as parasitic load is both technically inaccurate and pejoratively unhelpful.** Early adopters of heat pumps should not be labelled “parasites”. Parasitic loads on electricity networks are those loads inherently necessary to the running of the network – line, cable and transformer losses, the energy needed in compressors for switchgear and other substation load, for example. Heat pumps are not such a load, they are a different type of consumer demand. Moreover, the term “parasitic”, irrespective of its incorrect use here, fuels an incorrect, and unhelpful negative attitude towards heat pumps.

Consumers have a right to adopt clean, efficient heat pump technology and it is at odds with the Government ambition to increase heat pump deployment to label those who may not choose to participate, or who cannot participate, in demand side flexibility services as parasitic. In relation to the future grid and carbon emissions, a ‘non-participatory’ heat pump user is still preferable to a gas boiler user. And, the wider benefits of flexibility, even if directly enabled by some households, benefit all households through a reduction in required energy system capacity.

- **Fairness and accessibility should be at the heart of distributed flexibility planning.** Not all consumers are able to take advantage of, or participate in, flexible energy markets. Demographics including lower income households, those using prepayment metres, lone parents, private rented sector tenants, occupants who are disabled, less mobile or elderly may all be less able to consume energy flexibly or contribute to wider systems flexibility. Work will need to be undertaken to build a fuller picture of protection gaps, and to understand where consumer confidence is lacking.

Finally, this subject is inextricably linked to the Department for Energy Security and Net Zero's work on Secure and Smart Energy Systems, which is being taken forward in consultation with the Electrification of Heat Task Force. Many supporters of the Electrify Heat coalition submitted responses to that consultation that made clear that whilst there is general support for including the necessary technology components in heat pumps to allow their full flexibility to benefit consumers in the future, that the use of that flexibility technology needs to be consumer benefit-led, not "network-imposed".

We would welcome the opportunity to work with Ofgem to build upon positive steps already taken to supercharge clean, efficient heating at scale. Please contact Leo.Vincent@e3g.org to set up a meeting.