

Response ID ANON-HVE2-CENW-2

Submitted to Phasing out fossil fuel heating in homes off the gas grid
Submitted on 2022-01-12 16:02:01

About you

What is your name?

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What is your organisation?

Organisation:
Institute of Acoustics

Are you happy for your response to be published?

Yes

Would you like to be contacted when the consultation response is published?

Yes

An end to new fossil fuel heating installations in homes off the gas grid from 2026.

1 Do you agree with the principle of working with the natural boiler replacement cycle as the key trigger to deploy low carbon heat?

Not Answered

Please provide evidence to support your response. :

This response comes from the Institute of Acoustics (IOA). We have only answered questions where we can offer authoritative comment. Where we have not answered a question, we will enter N/A in the evidence text box.

The Institute of Acoustics is the professional body for those working in the field of acoustics and noise management. Our members include consultants, academics and regulators. Our activities include working for the building industry, developers and local authorities in all matters associated with sound and noise management in the built and natural environment. This response has been compiled by members of the Institute.

2 Would a 2026 end date for new fossil fuel heating installations in homes off the gas grid give industry and consumers sufficient time to prepare for the regulations?

Not Answered

Please provide evidence to support your response. :

N/A

A 'heat pump first' approach to replacement heating systems from 2026

3 Do you agree with a heat pump first approach to replacement heating systems in fossil fuel heated homes off the gas grid that can reasonably practicably accommodate a heat pump?

No

Please provide evidence to support your response. :

We have answered 'no' because we are not convinced that the potential noise issues have yet been properly addressed. If we were content that the noise issues associated with the widespread installation of heat pumps will be properly managed in line with Government Noise policy, our answer would be 'yes'.

It is noted that the word 'noise' appears just once in the consultation document and once in the Impact Assessment. In the former, the quote is:

"In 2019, BEIS launched a £14.6 million Electrification of Heat Demonstration Project. The project aims to raise awareness and demonstrate the feasibility of a large-scale rollout of heat pumps by installing them in a representative range of up to 750 homes, alongside new products and services designed to overcome many of the key barriers to deployment, such as operating costs, space, disruption, thermal comfort, noise and aesthetics."

Where can details of the noise aspect of that research be found? Has the work been completed? What were the results? Have they been peer reviewed?

In the Impact Assessment, the quotation is:

"Modelled technical suitability of electric low temperature heat pumps is based on consideration of thermal and electrical constraints at dwelling levels. This does not consider additional constraints such as space, noise, aesthetics and the implications for the low voltage network."

It is clear that the potential constraint of noise has not yet been fully evaluated and addressed.

It must be made clear that the Institute of Acoustics (IOA) recognises that fossil fuel heating systems contributes to climate change. However, we caution against assuming at this stage that heat pumps are the obvious solution. As the IOA said to the Parliamentary and Scientific Committee at a meeting in 2020, for most domestic situations, replacing a gas boiler with a heat pump is changing from a small fan that operates indoors to a larger fan that operates outside. There are potential noise and vibration impacts that could affect both the user of the pump and their neighbours.

The noise issue was recognised when heat pumps attracted permitted development rights around 12 years ago. The noise element of the Microgeneration Certification Scheme (MCS) was developed to help reduce adverse impacts that might arise from the installation of such pumps. It was designed to be a relatively simple approach, but that inevitably meant that compromises had to be made in the detail. So the IOA urges the Government not to think that this MCS can simply be rolled out as a means of managing the noise now. The issue of noise from heat pumps needs much more consideration.

In response to this consultation, the IOA canvassed views of some of its members regarding their experience of noise from heat pumps. From their responses, five conclusions can be drawn:

1. The use of heat pumps does cause adverse noise impacts and at times significant adverse impacts, both of which must be addressed to comply with Government policy;
2. Installing heat pumps such that the noise is effectively managed will at times require specific mitigation in the form, for example, of acoustic enclosures;
3. Undertaking retrospective mitigation for pumps installed under permitted development rights can be hindered by the rules associated with the size of the units;
4. There is no consistency in the format of the data published by manufacturers regarding the noise emission from their units. The data is sometimes limited to either sound power or sound pressure levels. Information about the frequency spectrum of the noise emission and the directivity characteristics are sometimes missing. The lack of such data makes assessing the potential noise impact and what, if anything, needs to be done to mitigate it very challenging; and
5. Heat pumps can exhibit acoustic characteristics, e.g. tonality and impulsivity, which can exacerbate the adverse impact perceived and which are not reflected in single overall noise level values.

A paper published by one of our members in 2019 explores further some of these issues:

SOUND FROM DOMESTIC AIR SOURCE HEAT PUMPS: A CASE STUDY by Matt Torjussen, Proceedings of the Institute of Acoustics, Vol. 41. Pt. 1. 2019.

Please do contact us if you would like a copy of this paper.

Given the importance of this issue, the IOA has also commenced a survey of acousticians, regulators and the general public regarding their experience of noise from air source heat pumps. It is early days for the survey, but again, the Institute would be happy to meet with you to discuss our findings.

In any event, with the wealth of experience that some of our members have on this issue, the IOA is keen to meet with you to try to identify the necessary solutions so that noise from heat pumps does not become an obstacle to addressing fossil fuels as a means of heating a home. Please do contact us.

4 Do you have any views on the design or content of guidance that will help households and installers determine whether it is reasonably practicable to install a heat pump?

Please provide your answer in this space. :

It is very important that the processes to be followed to manage effectively the noise from heat pumps is clearly set out in the guidance. Again the IOA would be happy to assist with this aspect. Please do contact us.

5 Do you have any additional evidence on the size and characteristics of the cohort of homes off the gas grid that have the greatest deployment potential for ground source heat pumps?

Please provide your evidence in this space. :

N/A

Require high performing replacement heating systems where heat pumps cannot reasonably practicably be installed

6 Do you agree that the performance of replacement heating systems in homes off the gas grid that cannot reasonably practicably accommodate a heat pump should reflect the current high standards of performance that can be delivered through high temperature heat pumps and solid biomass systems?

Not Answered

Please provide evidence to support your answer. :

N/A

7 Do you agree that future use of solid biomass to decarbonise heat in homes off the gas grid should be limited to rural, off-gas grid areas where air quality can be better controlled, and in 'hard to treat' properties that are not suitable for other low carbon heating technologies?

Not Answered

Please provide evidence to support your response. :

N/A

8 Do you have any views on the development of heating fuels and systems which will be consistent with wider government objectives on net zero emissions, environmental sustainability and air quality, and offer a secure and affordable fuel supply to consumers, from 2026?

Please provide evidence to support your answer. :

Only to say that the criteria should be extended so that the systems also comply with the Government's noise policy.

A potential end to the use of fossil fuel heating in all homes off the gas grid by the late-2030s

9 Do you agree with an end date for the use of remaining fossil fuel heating in homes off the gas grid by the late 2030s?

Not Answered

Please provide evidence to support your answer. :

N/A

10 Do you have any views on measures the Government could introduce to ensure that fossil fuel heating will no longer be used in homes off the gas grid by the late 2030s?

Please provide evidence to support your answer. :

In the context of our response - ensuring that the noise issues associated with heat pumps are properly addressed

Enforcement

11 Do you have any views on how best to ensure compliance with the proposed regulations laid out through this consultation?

Please provide evidence to support your answer. :

N/A

Running Costs

12 Do you have any views on what more could be done to address financial barriers to heat pump deployment?

Please provide evidence to support your answer. :

N/A

13 Do you have any views on how we should encourage smart-enabled heating in homes off the gas grid?

Please provide evidence to support your response. :

N/A

Non-financial Barriers

14 Do you have any views on what more could be done to galvanise supply chains for low carbon heating?

Please provide evidence to support your answer. :

N/A

Equality Act 2010

15 Do you have any additional evidence on how groups protected under the Public Sector Equality Duty may be affected by our proposals to phase out high carbon fossil fuel heating in homes off the gas grid?

Please provide evidence to support your answer.:

N/A

16 Do you have any views on what more could be done to ensure households, and communities, affected by our proposals experience a smooth transition to clean heat?

Please provide evidence to support your response. :

At the risk of repetition - ensure the noise issues associated with heat pumps are properly addressed

17 Do you have any further comments to make on our proposals to phase out high carbon fossil fuel heating in homes off the gas grid?

Please provide evidence to support your answer. :

N/A