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Fuel Poverty Action Response To Hydrogen Blending Consultation

27 October 2023

Fuel Poverty Action is a grassroots organisation taking action against inflated energy bills and working towards an affordable, sustainable and democratic energy system.

We believe there are serious risks that hydrogen blending could undermine the green transition and make life worse for vulnerable households. The intense industry lobbying and marketing efforts are worrying.

The evidence suggests introducing hydrogen into home heating could actually make life a lot worse for vulnerable households. Despite big name corporations backing plans to [replace gas in our homes with hydrogen](#), a [review of 32 independent studies](#) revealed that none of them support widespread use of hydrogen for heating in homes.

The problems associated with hydrogen for those suffering from high energy bills fall into three main groups:

Explosive: Hydrogen is four times more explosive and four times more likely to result in a fatality or injury in homes than fossil gas – as shown by the Government’s own commissioned [safety assessment](#).

Costly: Hydrogen is significantly more expensive than using fossil gas for heating and could add on average 70% to heating bills from 2025 for both electricity and fossil fuel-based hydrogen, according to a study by [Cornwall Insight](#). Some estimates suggest far higher costs for hydrogen from renewable electricity. For example, to run a boiler on hydrogen from renewable electricity compared to a heat pump could cost twice or even six times as much, according to the [Hydrogen Science Coalition](#). In addition, home appliances will also have to be changed to accept this new fuel and cautious estimates suggest [it would cost approximately £171 billion](#) to convert appliances and infrastructure to hydrogen across the UK. The [public are nervous about such costs](#), especially for those in vulnerable groups.

Harmful to health: Hydrogen produces [dangerous nitrous oxide \(NOx\) emissions](#) when burned in people's home appliances, which can have serious health impacts. Even short-term exposure can cause inflammation of the airways and increase vulnerability to respiratory infections and allergens. [Asthma + Lung UK warn](#) that it can worsen the symptoms of people with existing lung problems and could lead to [children developing asthma](#), while [other vulnerable groups, such as those with heart conditions](#), may also suffer. The smaller nature of the hydrogen molecules also means that this is [more likely to seep out of pipe work](#) than fossil gas.

Therefore, we urge the government not to move forward with the proposal to blend hydrogen into the gas grid.

We believe this is the wrong approach to building the hydrogen economy, with potential costs and risks for households. Blending could greenwash fossil gas, derailing heat decarbonisation. A fairer, more strategic approach is required to support hydrogen deployment for net zero.

We agree with the analysis of the E3G think tank and other End Fuel Poverty Coalition members responding to the consultation questions, summarised in the key point below:

1(a) Do you have any concerns around the safety or usability of hydrogen blends of up to 20% by volume in the GB gas distribution networks?

Yes

- Hydrogen is a small particle, meaning there is a higher risk of leakage, and it is more flammable – without an odour that households can detect in the case of a leak. We are concerned that the safety implications of permitting a 20% blend have not been fully tested at scale. Additional guardrails must be put in place.
- There are [health risks associated](#) with burning hydrogen in boilers, since it produces nitrogen oxide, which is bad for our lungs.
- All residents connected to a gas network which was being used for hydrogen blending would need to consent to the changes being made. It is unclear if there is public consensus or support for blending – for instance, following resistance from residents, Cadent's hydrogen trial in Whitby in Ellesmere Port had to be [abandoned](#).
- Before blending occurs, a thorough assessment would be needed to show that all the assets downstream would be able to take the blend.

2. Do you have any additional views or concerns associated with blending hydrogen into GB gas transmission networks that have not been identified within this chapter? Please provide evidence to support your response.

Yes

- We are concerned that hydrogen blending could derail heat decarbonisation, which is particularly concerning given the UK's sluggish rates of heat pump deployment. The government is considering a 20% blend as a short-term, transitional way to shore up demand as the hydrogen [economy develops](#)- rather than a stepping stone towards 100% hydrogen heat. However, confusion around the purpose of blending can lead

to people believing that widespread use of hydrogen for heating is around the corner, in turn delaying consumer decisions on readily available clean heat alternatives.

- Some gas networks and boiler manufacturers are already advertising blending as a step towards 100% hydrogen heat, which could create confusion among installers and consumers. Worcester Bosch is currently [under investigation](#) by the Competition and Markets Authority into making misleading claims and overstating the government's intention to allow hydrogen heating.
- The Climate Change Committee [has noted](#) that the uncertainty around hydrogen heating could undermine investment in readily available clean heat technologies like heat pumps.
- If the government does go ahead with blending, we urge for much clearer and simpler messaging around its purpose, with explicit public clarification that it does not represent a stepping stone towards 100% hydrogen heating.
- We highlight the risk of hydrogen blending increasing consumer bills. We welcome that the government is considering changes in billing mechanisms to account for the much smaller size of hydrogen particles. However, the consultation does not set out robust provisions (besides the potential subsidy to industry to support blending) to prevent additional costs being passed on to consumers associated with producing and transporting hydrogen and surrounding infrastructure costs. We are also concerned that the economic analysis in the government impact assessment is not able to fully quantify all the potential costs to consumers (see question 10).
- We are also concerned about the implications for thermal comfort associated with blending. For households which experience fluctuations in the blended content of their gas supply, there could be daily changes in how much of gas they need to burn to stay warm.

3. Do you have any comments on our views of the strategic role of blending, as described in this chapter? Please provide evidence to support your response.

Yes

- Blending does not encourage strategic deployment of hydrogen in sectors where it is the primary option for decarbonisation, such as heavy industrial processes, aviation and storage for power generation. To reap this opportunity, and prevent stranded assets and wasted money, hydrogen must be strategically deployed. Without a strategic vision, blending risks locking in hydrogen for inefficient uses like domestic heating.

7. Do you agree with our lead option to adopt the free-market approach as the preferred technical delivery model for hydrogen blending, should blending be enabled by the government? Please provide evidence to support your response.

No – hydrogen should only be injected into gas networks on a case-by-case basis, where this presents a sensible and cost-effective approach to building the hydrogen economy for strategic sectors and clusters. Before this takes place, more evidence that hydrogen blending can demonstrate strategic value is needed. Careful coordination would be needed at a national and local level.

9. Do you agree with our lead option to adopt Option A (working within existing frameworks) from the Future Billing Methodology Report as the preferred approach to gas billing, should blending be enabled by government? Please provide evidence to support your response.

No

We welcome the government's consideration of the need to adjust billing mechanisms to account for hydrogen blending. If it is not possible to fairly bill consumers, or if it proves extremely complex and requires a lot of expensive changes to systems to bill consumer fairly, this would be a substantial argument against blending.

The proposed course of action comes with costs: Option A, which is proposed to start now would cost £5.5mil upfront, then £0.5million/year. The government would then potentially undertake Option C in the future, costing £162.5 million then £2.4million per year. The whole Net Zero Hydrogen Fund is currently £240 million. It is not clear this change represents a strategic use of funding. These changes appear expensive, given blending is only intended to be a time-limited solution.

10. We welcome feedback on the economic analysis presented in this section and corresponding annex. Please provide evidence to support your response.

It is notable that the government's analysis is inconclusive in quantifying the full potential costs of hydrogen blending, noting "[t]he evidence at the moment is inconclusive [on certain aspects of hydrogen blending, including for consumers not able to use blended gas; updating legacy gas meters; and areas of the GB gas distribution network made of old iron which can be subject to embrittlement by hydrogen] and these costs have therefore not been included in the analysis." We are concerned that this doesn't provide adequate assurance that blending hydrogen would present good value for money, or could risk increasing household bills – particularly for vulnerable households and those in fuel poverty. Given the lack of evidence, we urge the government to take a precautionary approach and not advance with blending.

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