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BY EMAIL ONLY

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Hydrogen Blending into GB Gas Distribution Networks Consultation
End Fuel Poverty Coalition Response

The End Fuel Poverty Coalition is a broad coalition of more than 70 anti-poverty, health, housing and environmental campaigners, charities, local authorities, trade unions and consumer organisations. It is also supported by academics, social enterprises and those working on the front line of fighting fuel poverty. We believe that everybody has the right to a warm, dry home that they can afford to heat and power.

We believe that fuel poverty will be solved through a combination of financial support for households affected, reform of the energy market, improving energy efficiency of homes and a secure, renewables-led, energy system.

On the contrary, it will not be solved by plans for hydrogen-based heating systems nor by continuing our reliance on fossil fuels.

Energy industry bosses have long been arguing that hydrogen could be the solution to high energy bills and ending our reliance on traditional fossil fuels.

However, the evidence suggests it 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.

As we understand it, 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.

You can read more about our concerns around hydrogen online, but in response to the specific consultation questions we would support the points made by the E3G think tank and other End Fuel Poverty Coalition members in their responses to the consultation.

These are summarised below for ease of reference.

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 are 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.
- There is an argument that blending hydrogen can reduce risks for hydrogen producers at times when industrial demand is limited. However, there are other ways of addressing this challenge of balancing supply and demand. Early production of clean hydrogen should be prioritised to replace the grey hydrogen currently used in industrial processes.
- The government can encourage the development of "hydrogen clusters" and incentivise co-location of production and demand. It is key that blending, if permitted, is limited geographically to encourage strategic hydrogen deployment.

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.

We are also concerned by the point noted that: "[i]n this cost assessment, for the high scenario, we assume high blended volumes are 15%, rather than the maximum of 20%. This is because if we are blending at 20% then blending would no longer be a flexible offtaker. 5% less than the maximum is an illustrative assumption as there is currently no evidence on the volumes of hydrogen that could be blended whilst still maintaining flexibility." It would be wrong for the government to permit a blend of up to 20%, if it has not run economic analysis on the outcome of this and does not believe that blending at 20% would present a viable option of a "flexible offtaker."

About the Coalition
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Members of the Coalition include:
Action with Communities in Rural England, ACE Research, Advice for Renters, AgeUK, All Birmingham's Children, Austerity Action Group, Association of Green Councillors, Association of Local Energy Officers, Association for Decentralised Energy, Asthma + Lung UK, Basingstoke & Deane Borough Council, Beat the Cold, Brighton & Hove City Council, Bruton Town Council, Camden Federation of Private Tenants, Child Poverty Action Group, Church Poverty Action, Chartered Institute of Environmental Health, Chartered Institute of Housing, Community Action Northumberland, Centre for Sustainable Energy, Climate Action Network West Midlands, Disability Poverty Campaign

Group, Disability Rights UK, E3G, EBICO, End Child Poverty Coalition, Energy Saving Trust, Energy Cities, Fair Energy Campaign, Epilepsy Action, Foster Support, Friends of the Earth, Fuel Poverty Action, Fuel Poverty Research Network, Generation Rent, Good Law Project, Greenpeace, Groundwork, Hackney Foodbank, Home Start Oxford, Independent Age, Inner City Life, Joseph Rowntree Foundation, Lambeth Pensioners Action Group, London Borough of Camden, London Borough of Lewisham, Mayor of London, Moorland Climate Action, National Pensioners Convention, National Union of Students / Students Organising for Sustainability, NCB, National Energy Action, New Economics Foundation, National Federation of Women's Institutes, Northern Health Services Alliance, Oxford City Council, Positive Money Tower Hamlets, Redcar & Cleveland Council, Repowering London, Retrofit Bruton, Right To Energy Coalition, Ryecroft Community Hub, Save the Children, Scope, Shaping Our Lives, Social Workers Union, South East London Community Energy, Southwark Group of Tenants Organisations, South West London Law Centres, Stonewater Housing Association, Stop The Squeeze, Uplift, UNISON, Warm & Well North Yorkshire, Warm & Well in Merton.

The coordination for the End Fuel Poverty Coalition is provided by social enterprise Campaign Collective and the Coalition is also part of the Warm This Winter campaign. In Scotland we work closely with Energy Action Scotland. In Wales, we work with Climate Cymru's Warm This Winter activity and in Northern Ireland with the NEA-backed Fuel Poverty NI coalition.

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