

## **Written Evidence Submitted by the International Council on Clean Transportation (ICCT) (HNZ0002)**

These comments are submitted by the International Council on Clean Transportation (ICCT). The ICCT is an independent nonprofit organization founded to provide unbiased research and technical analysis to environmental regulators. Our mission is to improve the environmental performance and energy efficiency of road, marine, and air transportation, in order to benefit public health and mitigate climate change. We promote best practices and comprehensive solutions to increase the sustainability of alternative fuels and energy, increase vehicle efficiency, reduce pollution from the in-use fleet, and curtail emissions of local air pollutants and greenhouse gases (GHG) from international goods movement.

We recommend the UK Parliament to consider our recent study called *Hydrogen for heating? Decarbonization options for households in the United Kingdom in 2050* by Baldino et al. (2020), as a part of the inquiry into the relative advantages and disadvantages of hydrogen compared to other low-carbon options (such as electrification or heat networks). In this study we assess whether heating pathways using low-carbon hydrogen, renewable electricity, or a combination of both, provide a cost advantage to a single-family household in the UK in 2050, and we compare our results to the literature. This paper is available on our website at <https://theicct.org/publications/hydrogen-heating-UK-dec2020>.

We find that in 2050 heat pumps will be more cost-effective than any heating pathway relying on low-carbon hydrogen. We also find that the carbon savings from pathways relying on steam methane reforming + carbon capture and storage to produce hydrogen are not as high as pathways based on renewable electricity. In a sensitivity analysis, we find that even in the case that both renewable electricity prices were 50% higher and natural gas prices 50% lower than we assume, a heat pump would still be the most cost-effective heating option of all the technologies we assessed.

***(23 December 2020)***