Review of multiple studies suggests hydrogen is not a good option for heating homes

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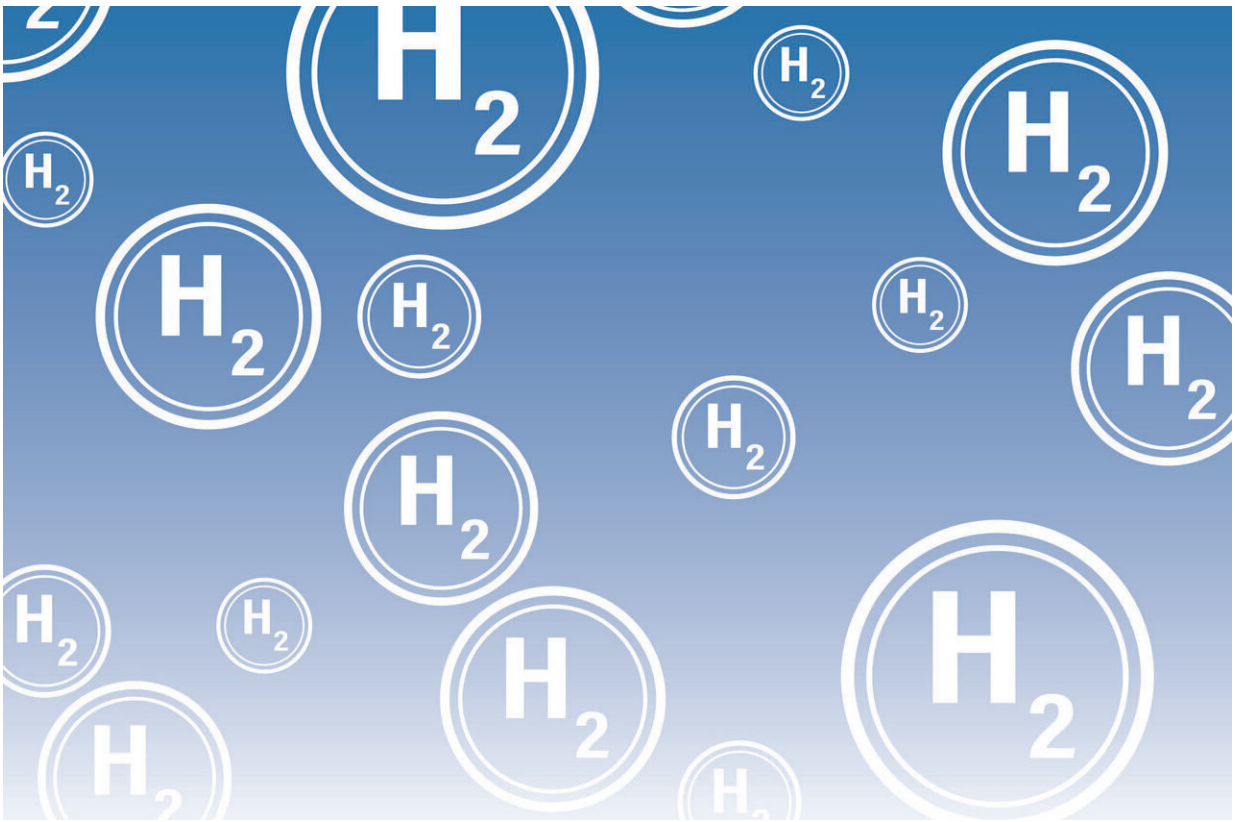

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Jan Rosenow, a program director at the Regulatory Assistance Project, has published a commentary piece in the journal *Joule* regarding the prospects of using hydrogen to heat homes. In his paper, he suggests that

multiple research groups have found that the idea is not feasible.

Scientists around the world continue to propose ways to reduce carbon emissions—one approach involves using hydrogen as a fuel source. Hydrogen has been touted as an excellent replacement for multiple types of fuels, such as gasoline for cars, because it does not emit carbon dioxide when burned. More recently, some have proposed using it as a replacement for natural gas that is currently used to produce electricity and to heat homes and businesses. Rosenow wondered if using it for this purpose was a good idea.

To learn more, he studied the work of 32 groups who had themselves studied the feasibility of using hydrogen as a power source in multiple areas. None of them had found hydrogen to be a suitable means for heating homes and businesses.

The problem, Rosenow points out, is that using hydrogen in such a way would be inefficient. To be feasible, hydrogen would have to be created using a renewable resource. It would then have to be either burned at a plant to heat a boiler driving a turbine to create electricity to send to homes, or be sent directly to homes. If it was sent directly to homes and burned in a furnace, it would be approximately five times less efficient than an ordinary heat pump. He notes that with this approach, more renewable energy would be needed than has been forecast, which would involve building more wind and solar farms, pushing the cost of hydrogen heating even higher.

He concludes by noting that discussions regarding the use of hydrogen to heat homes is taking attention away from more worthy endeavors, which is delaying the changes required to reduce greenhouse gas emissions sooner rather than later.

More information: Jan Rosenow, Is heating homes with hydrogen all

but a pipe dream? An evidence review, *Joule* (2022). DOI: 10.1016/j.joule.2022.08.015