



Avoid False Solutions for Clean and Healthy Buildings

Greenwashed Hydrogen and So-Called “Renewable” Gas are Not Viable Alternatives to Clean Electricity for Homes and Buildings

It has become increasingly clear that moving our homes and buildings off of fossil fuels is a cost-effective way to meet our climate goals - especially when coordinated with efforts to clean up the electric grid. After all, our homes and buildings account for nearly **40% of the nation’s total energy consumption** and **9% of greenhouse gas (GHG) emissions** in the U.S.

Recognizing this, a number of cities and states across the United States have already started to mandate the move away from polluting methane gas (what the industry calls “natural” gas) for use in buildings. This movement toward clean electric buildings presents an existential threat to the business model of the methane gas industry, which is now pushing to expand its dirty infrastructure in an attempt to remain viable.

As part of this effort to continue selling a dirty and harmful product, the methane gas industry has attempted a slew of **greenwashing efforts** to keep us hooked on the dangerous fuel in our homes and buildings and rake in big profits. The industry is currently focused on two false solutions: hydrogen and RNG (so-called “renewable” gas).

Don’t let their marketing fool you. Neither of these fuels will meet our energy needs for our buildings, nor will they significantly reduce greenhouse gas emissions. The goal of the gas industry is to use these “alternative fuels” as distractions to keep us hooked on methane gas. While

there are limited applications for each, widespread use of hydrogen and “renewable” gas beyond very targeted applications poses economic, environmental, public safety, and health risks.

Hydrogen

Hydrogen is not a reasonable replacement for gas in heating and cooking appliances in buildings. Electrification is a better option; it is already available, more efficient, more cost-effective, and provides cleaner indoor air.

There are different types of **hydrogen production**. “Green” hydrogen is made through **electrolysis** (i.e., running an electric current through water to separate out the hydrogen atoms) that is powered by renewable energy. This production process does not emit climate pollution, but because it produces a relatively short supply of hydrogen, it should only be used for hard-to-electrify sectors, like aviation or heavy industry, not applications where electrification is a more realistic and cost-effective option, like homes and buildings.

Using renewables to produce hydrogen is **dramatically less efficient** than using that same clean energy source directly to power electric appliances, especially highly efficient heat pumps. Other types of hydrogen (so-called “blue” and “gray” hydrogen) are an even less viable solution for the clean energy transition, as they are made using

methane gas and emit climate pollution in the process.

Hydrogen would be delivered to buildings through the current pipeline infrastructure for gas, which is outdated and in need of updating in many places. Pushing hydrogen as a greenwashed fuel to use in gas infrastructure allows the industry to argue that these developments would help avoid wasted infrastructure investments, but in reality, it is a simple ploy to prolong the use of methane gas and its associated infrastructure.

Why does burning hydrogen in buildings act as a lifeline for methane gas? The reason is that hydrogen cannot be safely piped into existing gas infrastructure by itself. Instead, it needs to be mixed with [large amounts of climate-warming methane gas](#) as it travels through pipelines. That means the intended climate benefits are essentially wiped out.

Furthermore, hydrogen weakens pipes, making leaks more likely, and is extremely flammable even in small concentrations. One study found that if hydrogen were used in homes to replace methane gas, the annual predicted [number of explosions would more than quadruple](#), which would lead to increased injuries and deaths.

On top of the delivery issues with hydrogen, gas appliances for cooking and heating can only handle hydrogen blending of [5 to 20 percent](#) by volume anyway. Hydrogen use in buildings beyond that level would require installing all new appliances for safety and emissions control.

Instead of laying more gas infrastructure, retrofitting every pipe, and still having to replace all appliances for little to no emissions reductions, we should simply electrify our homes and buildings with readily available, energy-efficient, electric appliances.

“Renewable” Gas or RNG

“Renewable” gas (also known as RNG, “biomethane” or “biogas”) is methane captured from organic waste at landfills, livestock operations, and farms.

Similar to hydrogen, “renewable” gas appears to have benefits when taken at face value, but it is not a viable, widespread solution. Efforts to minimize methane emissions from industrial and waste projects are worthwhile, but there isn’t nearly enough “renewable” gas to make it a feasible alternative to using clean electricity to run buildings. In fact, experts estimate that biogas could

replace a mere [2 to 5 percent](#) of the total gas consumed in the United States in 2019.

The infrastructure needed to convert waste into gas that can be used in homes and businesses drives up costs, which further undermines the case for using it instead of clean electricity. Estimates put the [costs at 3 to 18 times higher](#) than the current market price for methane gas. On top of that, the average gas pipe in the US is 34 years old, and will [need costly replacement](#) if it is to continue being used to pipe gas across the country.

Regardless of whether it comes from fracking, landfills, or factory farm manure, gas poses constant risks to public safety and health, and because it is still primarily methane, infrastructure and pipeline leaks (which are widespread) contribute greatly to the climate crisis. In fact, methane is over 80 times more powerful at warming the planet than carbon dioxide in the near term, so even small leaks can have a huge impact. In addition, methane leaks from pipes, meters, and appliances in the home can increase the risk of fire and explosions. Gas appliances also release dangerous conventional pollutants, including nitrogen dioxide, carbon monoxide, nitric oxide, and fine particulate matter.

[Report after report](#) has concluded that relying on “renewable” gas to reduce building emissions would be expensive and not technically feasible. Propping up a polluting industry with false climate solutions would make these problems worse for communities that live nearby.

Niche Fuels, Not For Widespread Use

Hydrogen and “renewable gas” should not be piped into buildings for heating or cooking and should instead be reserved for the sectors of our economy that will be more difficult to decarbonize in the years ahead, such as energy-intensive industrial uses, air travel, or shipping.

Any suggestion otherwise is simply a dangerous, greenwashed effort by the gas industry in an attempt to keep us hooked on fossil fuels.

Sierra Club National
2101 Webster Street, Suite 1300
Oakland, CA 94612
(415) 977-5500

Sierra Club Legislative
50 F Street, NW, Eighth Floor
Washington, DC 20001
(202) 547-1141

sierraclub.org
facebook.com/SierraClub
twitter.com/SierraClub

