

Hydrogen Appliances for Homes

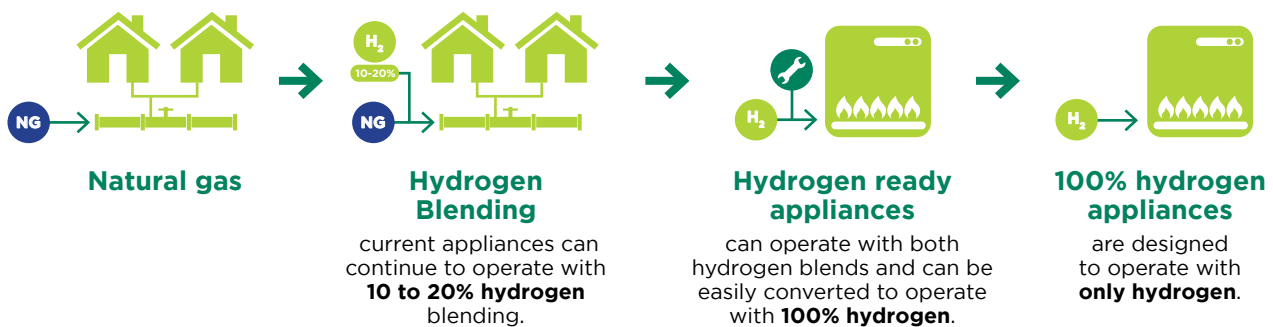
Gas Vision
2050

Australia has over **5 million homes** that use natural gas for cooking, hot water and heating.



Hydrogen allows us to decarbonise our homes.

- 1** The first step is to blend hydrogen through pipelines allowing existing appliances to continue operating. This has already started in Adelaide, Perth and Sydney.
- 2** When a gas network converts to hydrogen, 100% hydrogen appliances will need to be used. This will require appliances to be replaced or upgraded.
- 3** Introducing hydrogen-ready appliances into homes and businesses will make the switch to 100% hydrogen easier.



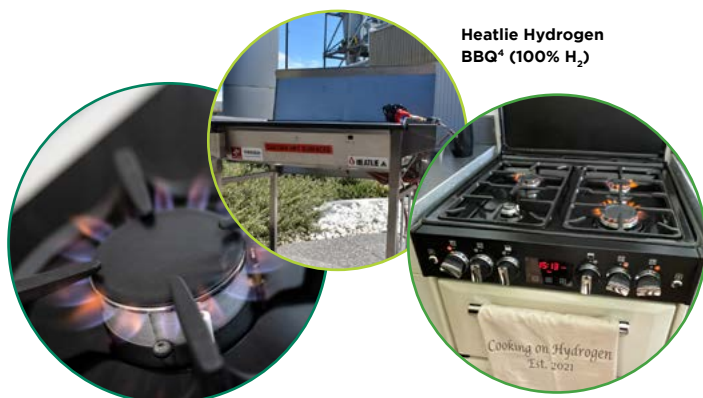
When can I buy these hydrogen appliances?

These appliances provide an insight into what is possible. The industry will need to work together with governments to develop plans to make these appliances commercially available.

Cooking with hydrogen

Australian and international appliance manufacturers have developed cooktops and ovens that work with hydrogen.

A key feature of hydrogen cooking is the “sunflower” flame, named due to the orange flame that is produced. These appliances are being demonstrated in hydrogen ready homes such as AGIG’s HyHome in Australia.



Electrolux UltimateTaste 900 Hydrogen Gas Cooktop³ (100% H₂)

HyCookers Hydrogen Gas Hob, Freestanding Cooker, Oven and Grill⁶ (100% H₂)

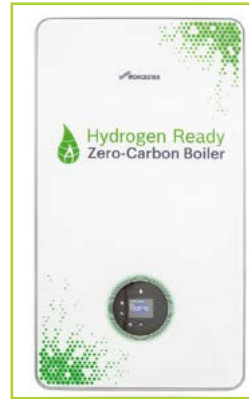
Hot water from hydrogen

Heating water has many uses in the home including cleaning and showering. But hot water can also be used for space heating, referred to as boilers.

Hydrogen fired hot water heaters have been designed to provide heat into homes and businesses.



Rinnai's H₂ Ready Water Heater⁶



Worcester Bosch Boiler⁷ (H₂-Ready)



Baxi Combi Boiler⁸ (H₂-Ready)

Hydrogen-ready price commitment for boilers.

UK boiler manufacturers Worcester Bosch, Valliant, Baxi and Ideal have committed to produce hydrogen-ready boilers at the same price as their natural gas systems today.⁹

Ancillary equipment

Conversion kits for hydrogen ready boilers consist of a few components that need to be changed over before the appliance can run on 100% hydrogen.



This is expected to only take a qualified tradesperson around an hour. Hydrogen gas meters allow metering of hydrogen.

Hydrogen for space heating

While hydrogen boilers can provide space heating, hydrogen heaters have also been designed to provide direct space heating.



Glen Dimplex (Valor), Gazco Stovax, and Charlton & Jenrick flue gas fires¹⁰ (100% H₂)



CBS Open¹¹ and Kalfire Closed Gas Fires¹² (H₂ Blending)



Hydrogen Gas Smart Meter^{13,14}

References

- 1 Heating & Hotwater Industry Council. Hydrogen appliances. www.hhic.org.uk
- 2 Hy4Heat Programme. <https://www.hy4heat.info>.
- 3 Electrolux Hydrogen Gas Cooktop Concept for HyHome, 2023.
- 4 Hydrogen BBQs - The Future of BBQing. Heatlie BBQs.
- 5 Enertek International. BEIS Hy4Heat, Hycookers Consortium, and Hydrogen Gas Cookers, 2021.
- 6 Rinnai Corporation. World's first 100% hydrogen combustion technology for residential water heaters.
- 7 Bosch Thermotechnology. Hydrogen-Ready Wall-Mounted Gas Boilers; 2019.
- 8 Baxi Heating. Baxi Hydrogen Hy4Heat, 2021.
- 9 Energy & Utilities Alliance (2021). The Upfront Cost of Decarbonising Your Home.
- 10 Enertek International. The HyFires Consortium, 2021.
- 11 Clean Burner Systems. Domestic Hydrogen Appliance Development Innovation SBRI, 2021.
- 12 Kalfire Fireplaces. H2 ready - Kalfire. <https://kalfire.com/en/h2-ready>
- 13 Jones, J. S. Hydrogen meters - the next evolution of gas meters. Smart Energy International.
- 14 Pietro Fiorentini. Pietro Fiorentini Hydrogen Catalog, 2023.

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