Institute for Energy Economics and Financial Analysis

Opportunities in the electrification transition

Presentation for REROC energy conference

Jay Gordon, Energy Finance Analyst

28 August 2024

The efficient electrification opportunity

Many households continue to rely on inefficient appliances

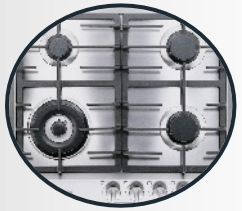


Image: Miele

Image: Rinnai

Image: Bosch

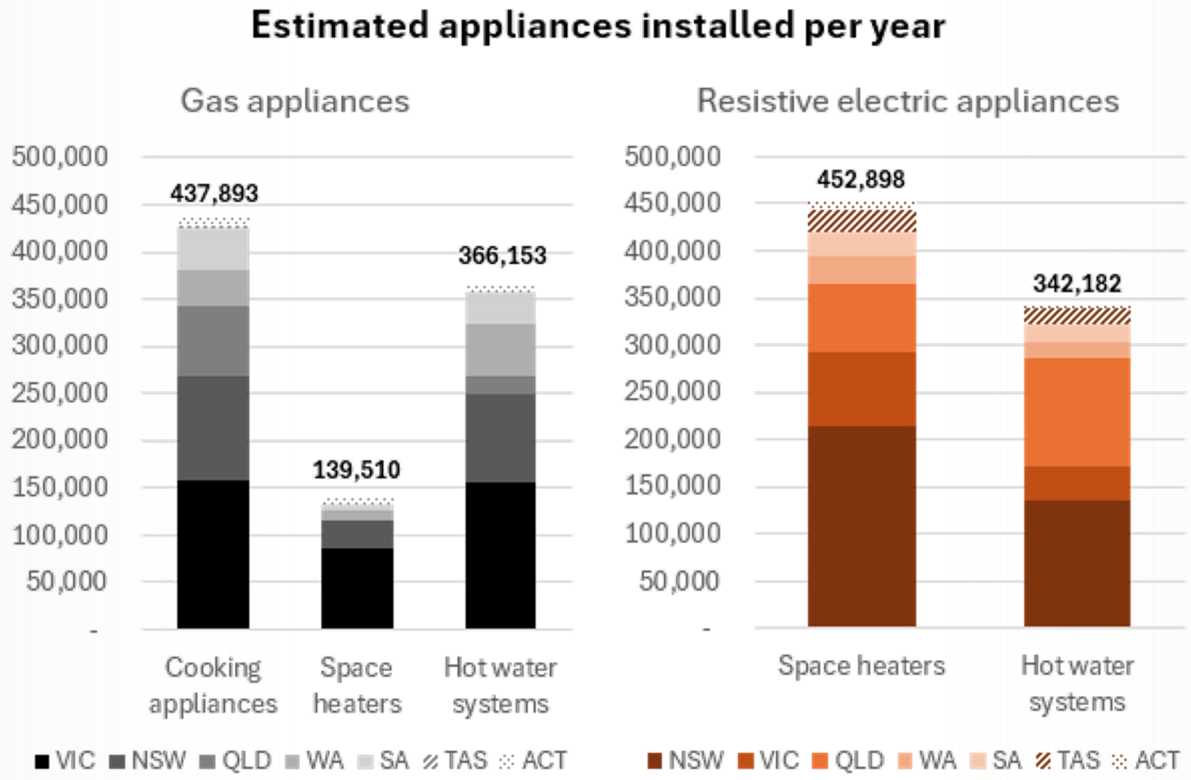
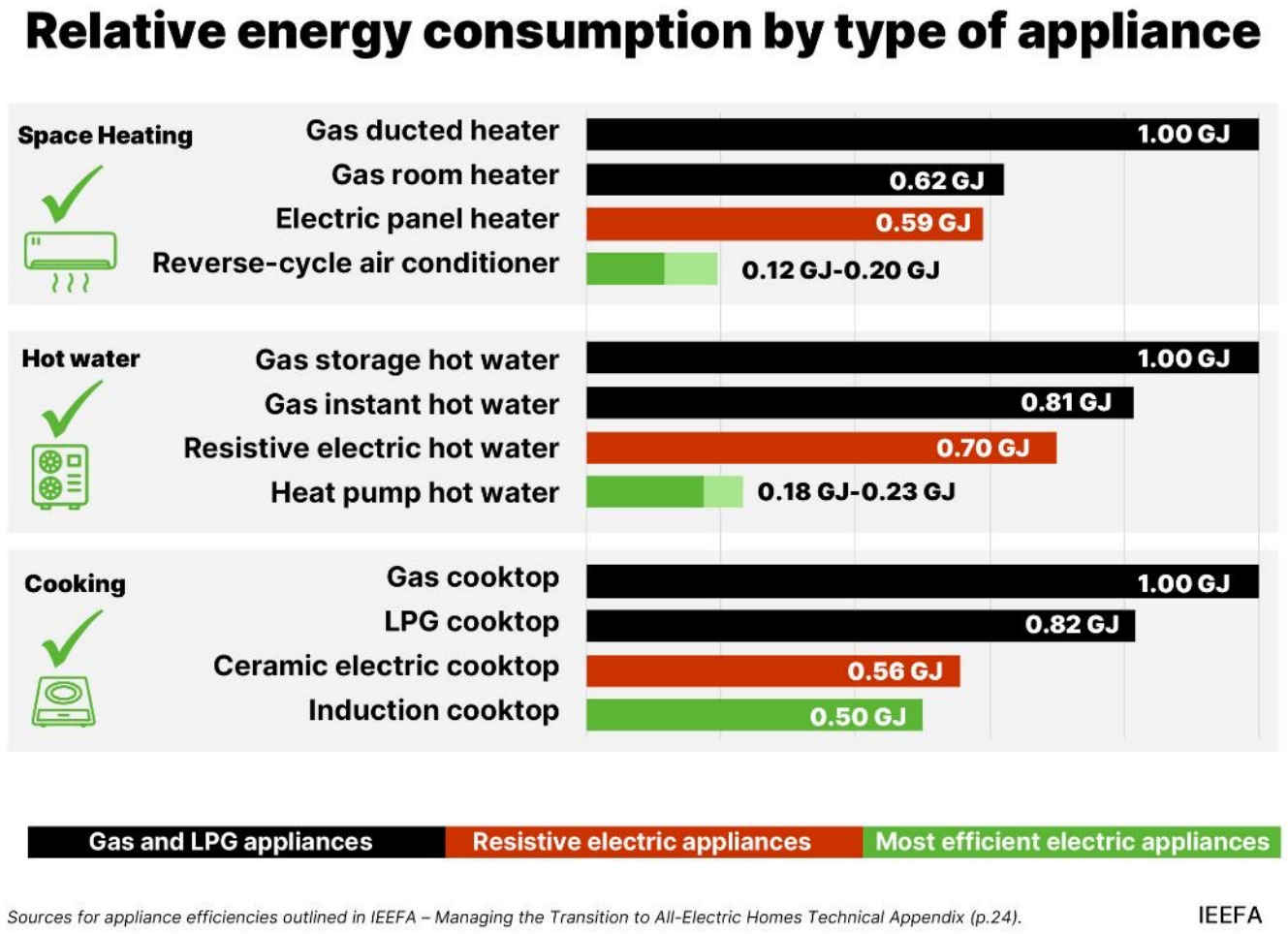


Image: Bonaire

Image: Rinnai

Source: IEEFA analysis of sources from EnergyConsult 2021. NT excluded due to poor data.

Efficient electric appliances consume a fraction of the energy of inefficient appliances



Source:
IEEFA – [Appliance standards are key to driving the transition to efficient electric homes.]

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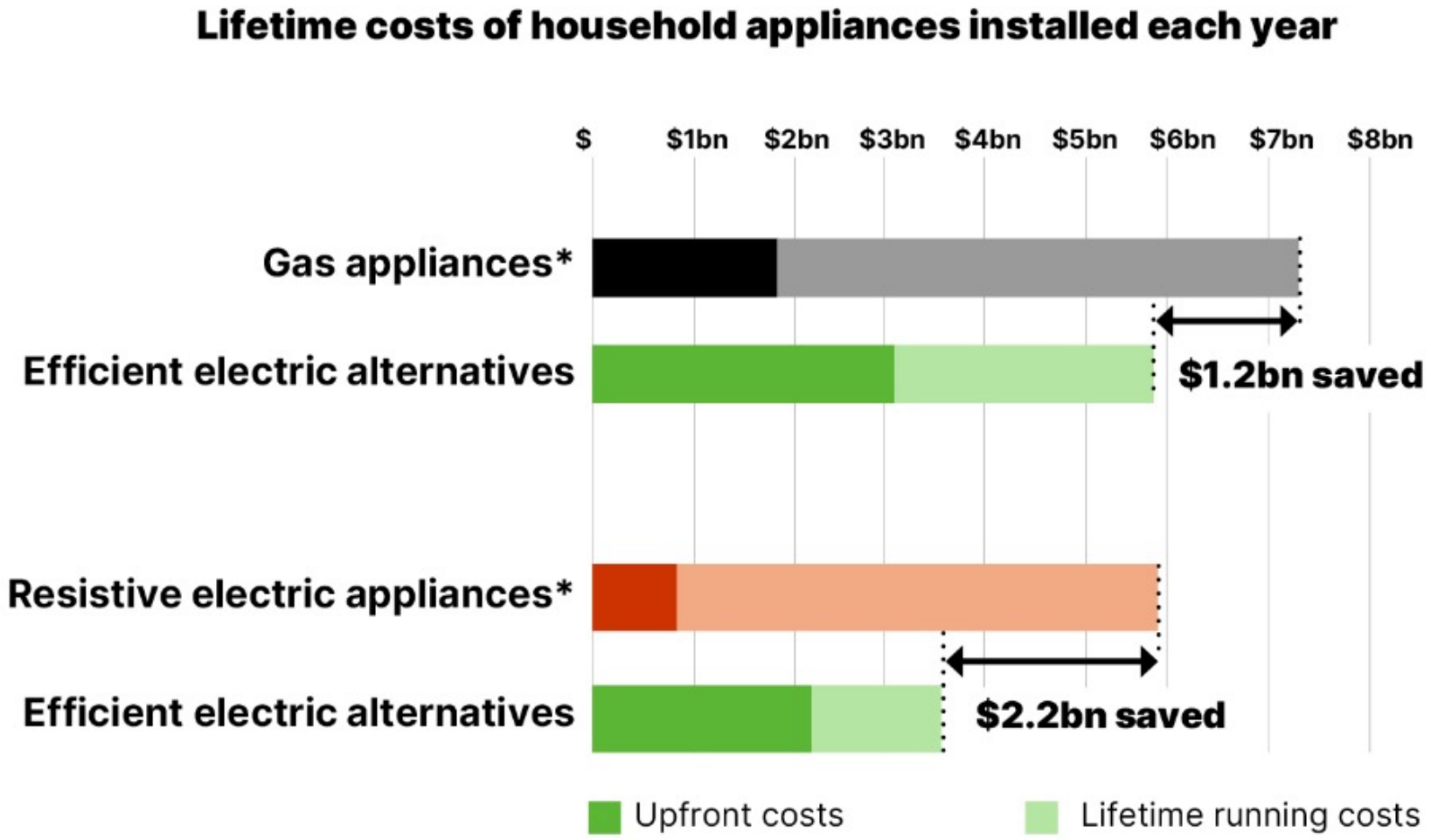
What would happen if all new appliances were efficient and electric?



Source:
IEEFA – Appliance standards are key to driving the transition to efficient electric homes.

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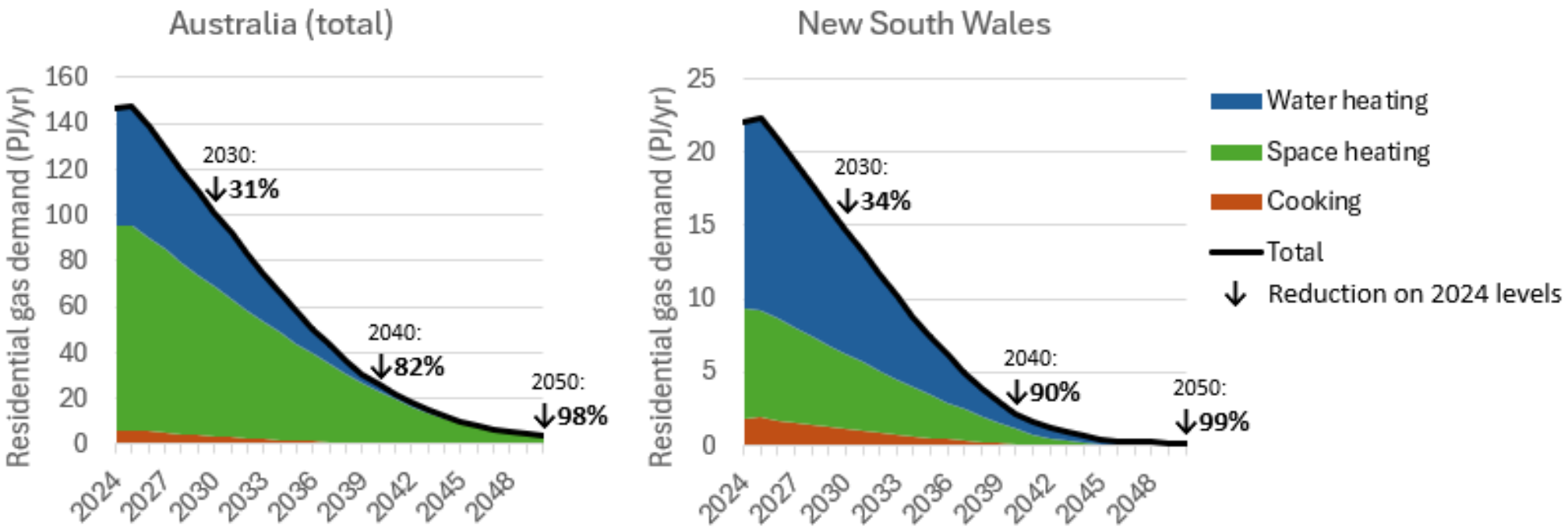
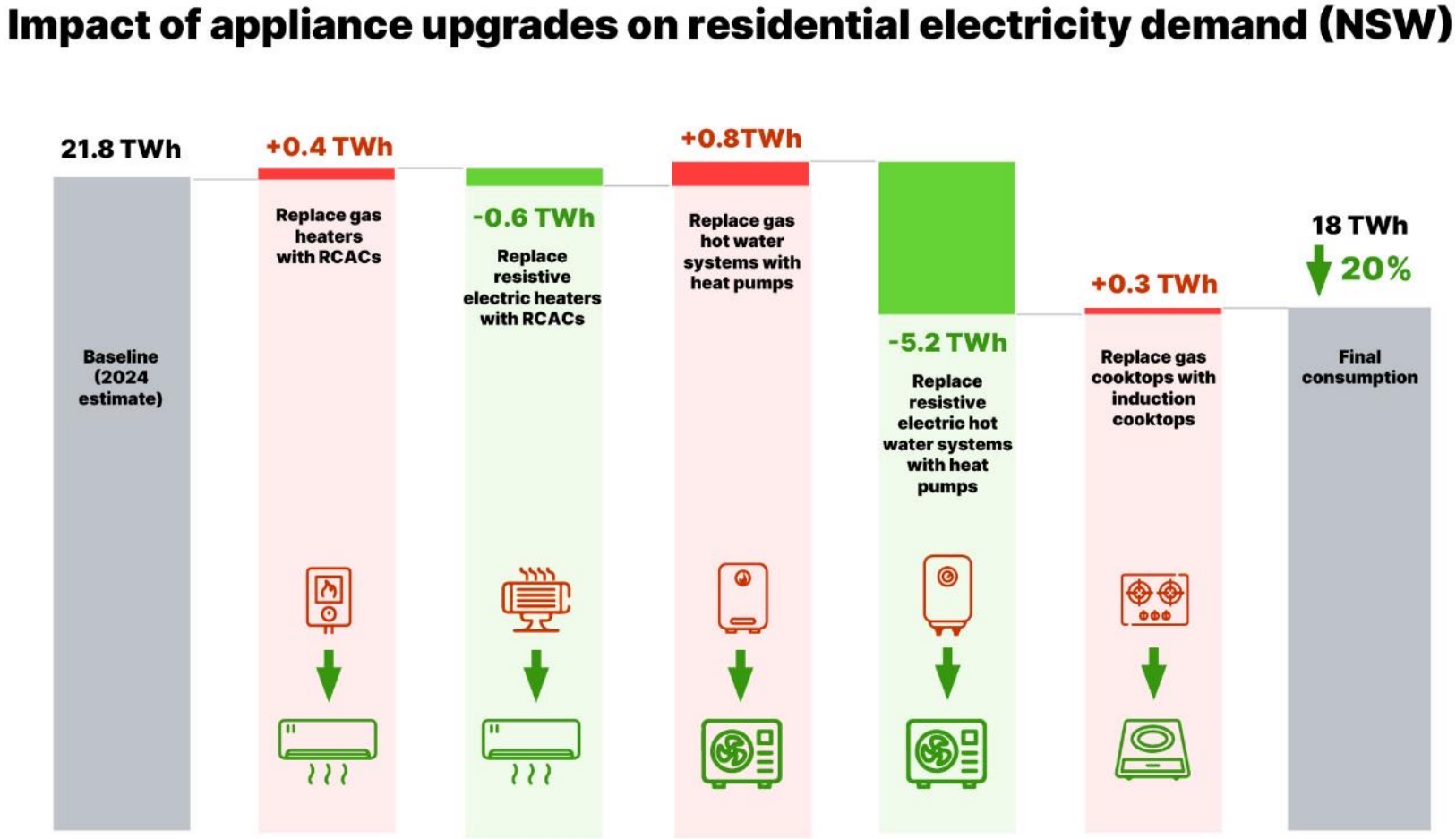
Efficient electrification would support energy security & emissions objectives

Pathways for residential gas demand, if no new gas appliances were installed from 2026:



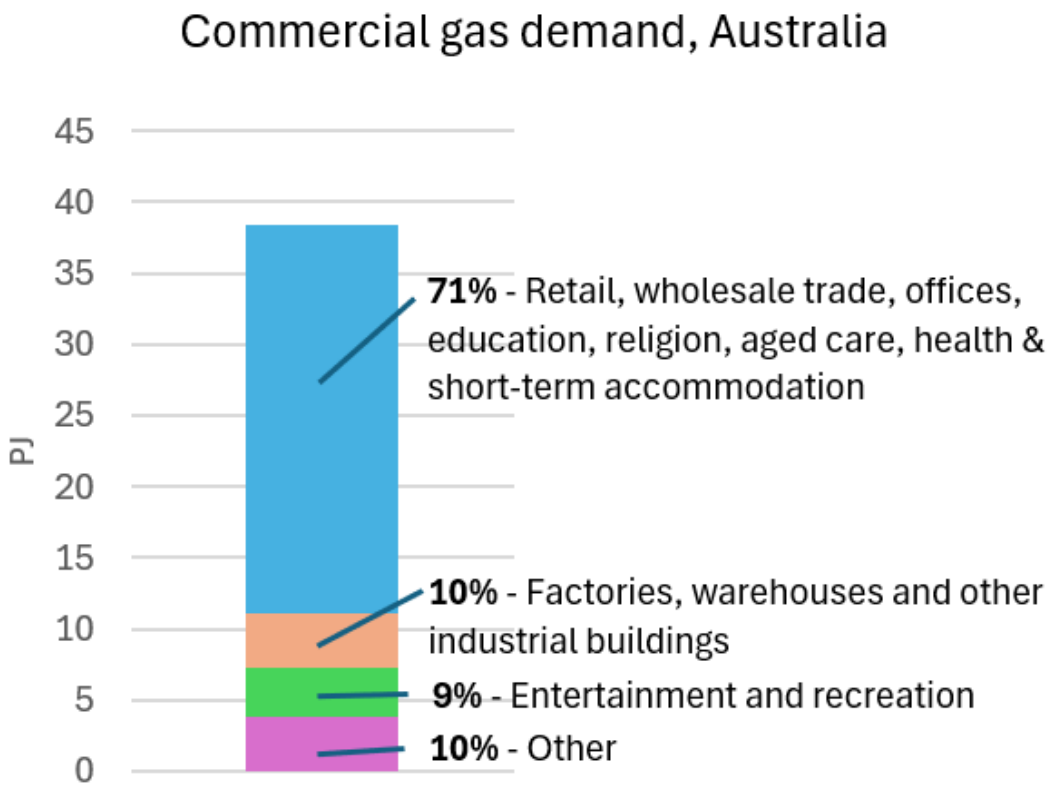
Source: IEEFA modelling based on EnergyConsult 2021 Residential Baseline Study

Electricity demand in most regions could be reduced

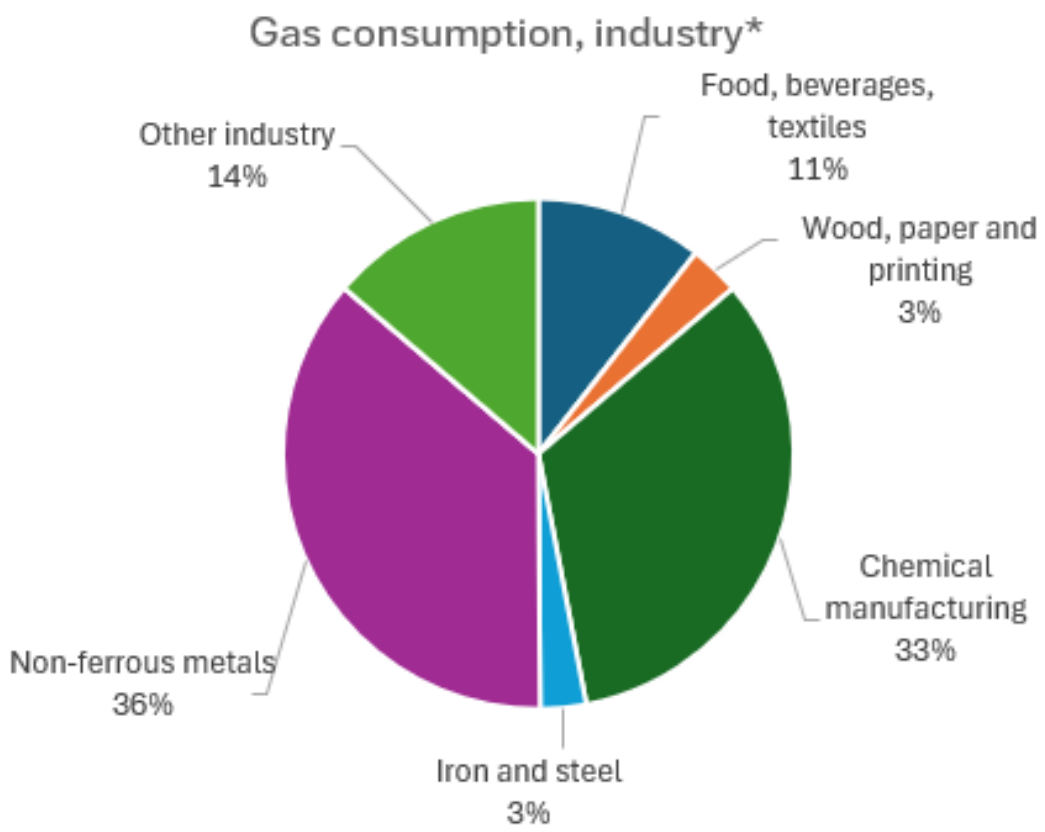


Source:
IEEFA – [Eight ways NSW could cut energy bills during the cost-of-living crisis, and beyond]

More electrification opportunities likely exist in commercial and industrial sectors



Source: Strategy. Policy. Research.



Source: Australian Energy Statistics – Table H
*Excludes gas consumed in gas extractive processes

How do the alternatives compare?

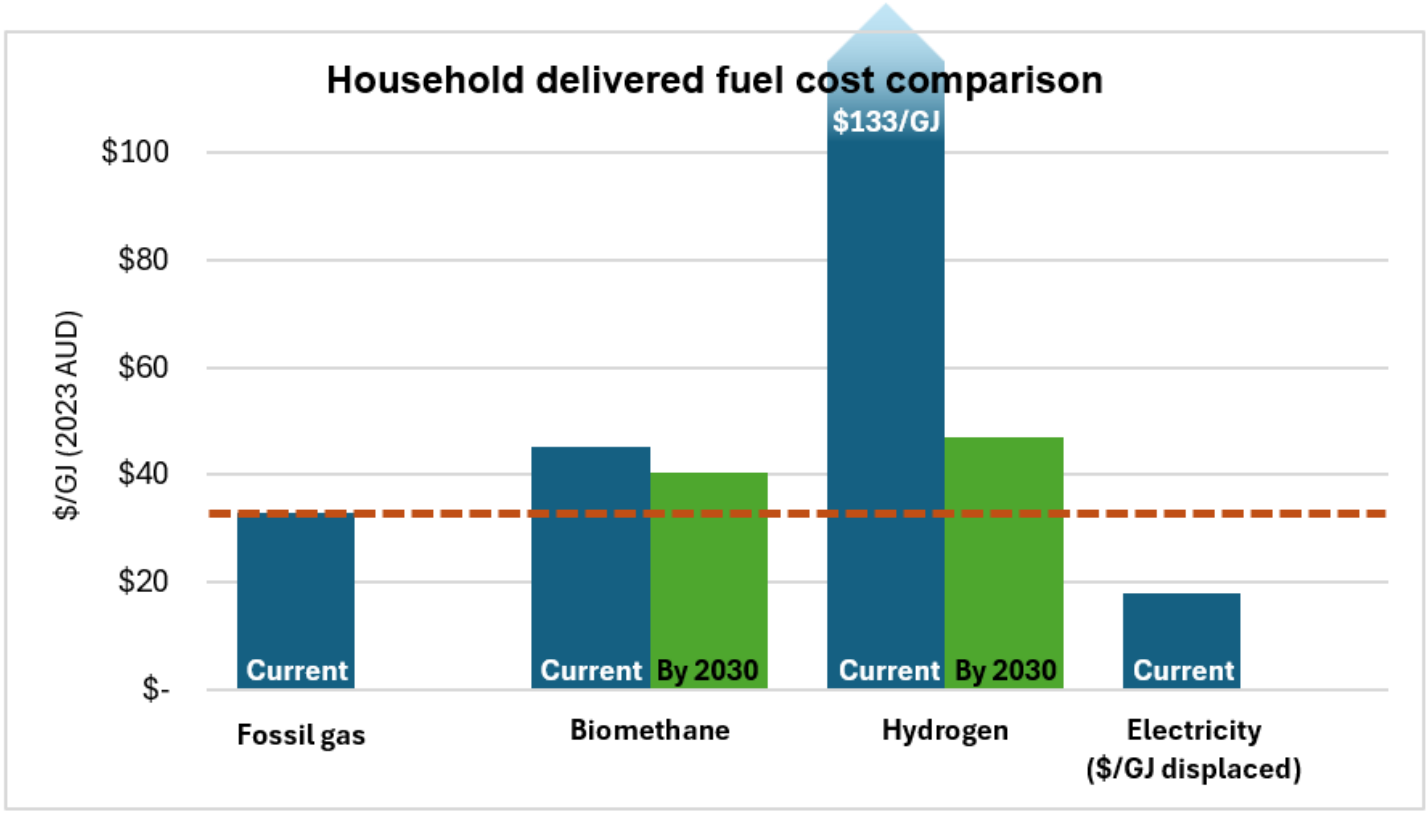
Green hydrogen:

- ✓ Cost-effective for **iron**, **ammonia** production
- ✗ Expensive and difficult for **buildings**

Biomethane:

- ✓ Useful in '**hard to abate**' cases
- ✗ Very **supply constrained**

Read more:
IEEFA – 'Renewable gas' campaigns leave Victorian gas distribution networks and consumers at risk



Source: IEEFA analysis based on St Vincent de Paul; retail energy plans; AER; Future Fuels CRC and DCCEEW. Based on original Victorian analysis and extended to represent all states/territories except NT.

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The benefits of electrification stack with other measures

Flexible electrification of hot water can reduce household energy costs and overall system costs

Image: Sustainability Victoria

Households with **rooftop solar** can get greater value from their system.

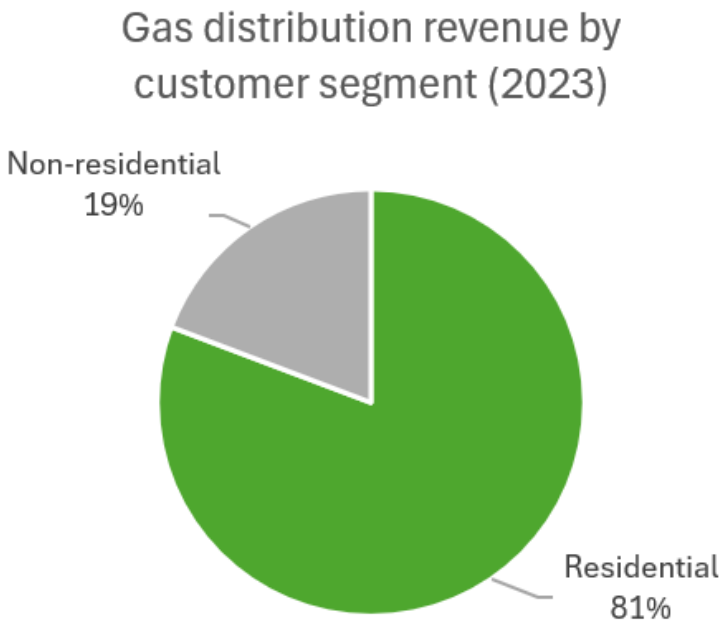
Image: ARENA

Upgrading a home's **thermal efficiency** reduces energy consumption even further.

Image: Pricewise Insulation

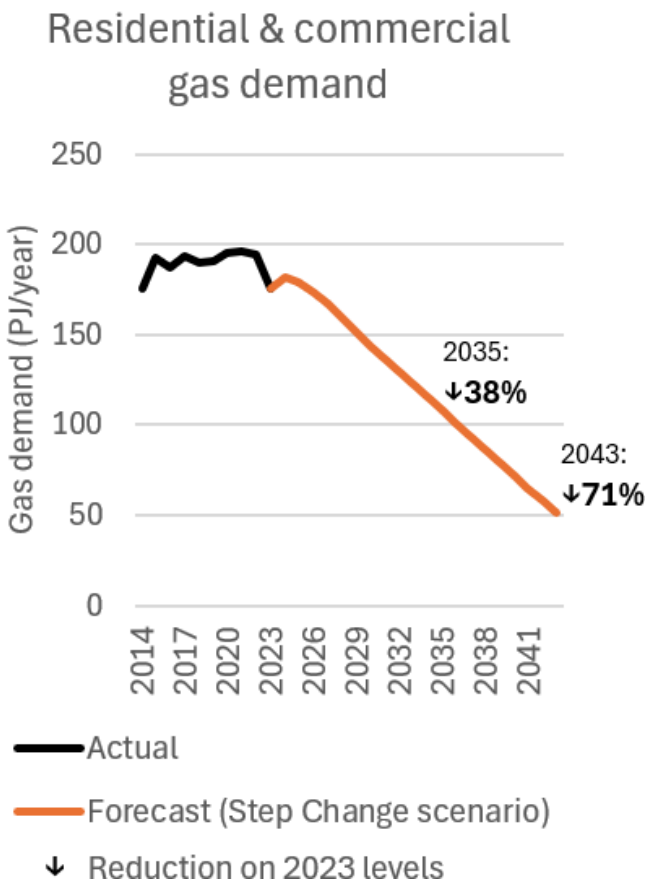
Electrification and gas networks

Gas distribution networks are exposed to stranded asset risks



↑ *Source: Analysis of RIN responses for fully-regulated gas networks*

Source: 2024 GSOO data from AEMO forecasting portal (excludes WA) →



*"we can see the potential for **more competition in the future** (as renewable energy becomes less expensive.)" – AGN (SA)*

*"**significant stranding risks** could emerge by 2040" – AusNet*

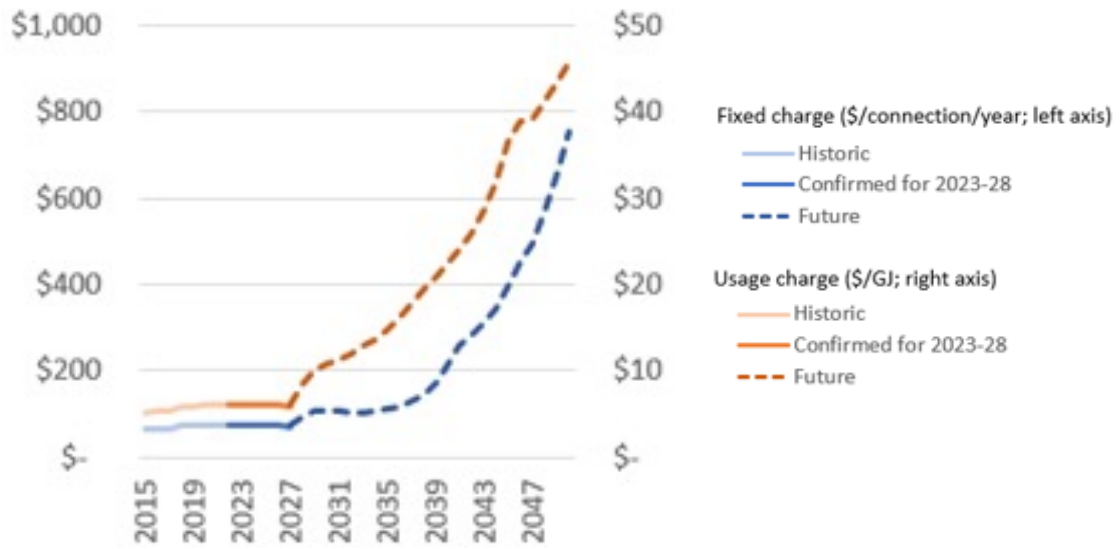
*"the end result of a death spiral demand reduction is the loss of whatever assets have not been recovered; referred to as **economic asset stranding**" – AGN (Albury/Victoria)*

*"Future demand for gas networks is expected to decline due to changing consumer behaviours, and as a direct result of government policy […] This **may lead to our network becoming stranded**" – Jemena*

Who pays for stranded assets?

Example – modelling for AGN Victoria/Albury

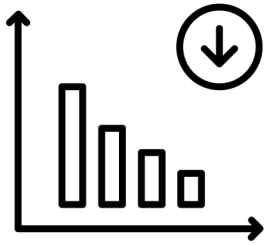
If remaining consumers continue paying for gas network assets…



Source: IEEFA – Managing the transition to all-electric homes

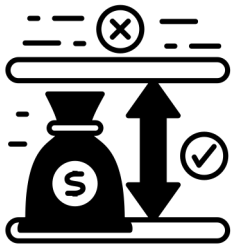
Proposed strategies transfer more risks to customers, and are poorly justified:

Accelerated depreciation



Increase today's network charges to accelerate the write-down of assets

Revenue caps (and hybrids)?

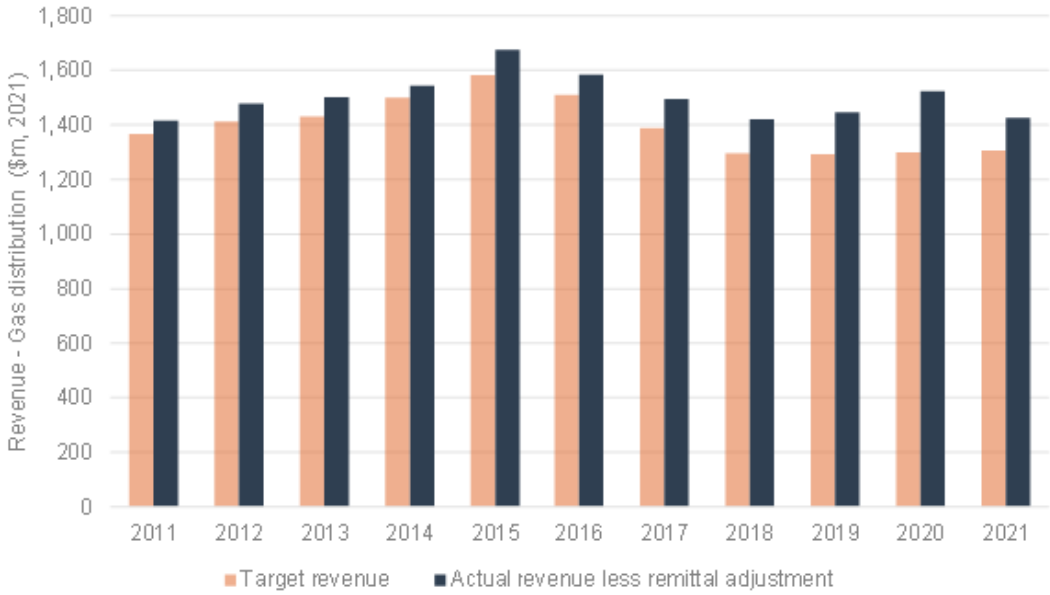


Allow networks to adjust prices in response to changes in demand

Have gas networks already been compensated for demand risks?

Source: IEEFA – Gas networks are making persistent and significant supernormal profits

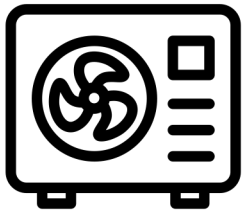
Target vs actual revenue



Source: AER – Gas distribution network tariff review 2023

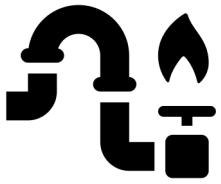
What does it all mean for consumers?

Consumer takeaways



Efficient, electric appliances are the most cost-effective option for consumers

Alternatives like hydrogen and biomethane (‘renewable gas’) are unlikely to play a role in homes



Consumers have paid more than necessary to access gas networks, and could be exposed to more risk unless regulatory actions are taken.

How can governments support consumers?

Supporting renters

- Minimum rental standards
- Incentives for rental providers

Removing upfront cost hurdles

- Well-designed financing options

Supporting better appliance choices

- Updated appliance standards
- Updated appliance labelling

Managing gas stranded asset risks

- Capping future growth of gas networks
- Gas network phase-down plan to mitigate consumer risks

Thank you

Contact

Jay Gordon, jgordon@ieefa.org

More research:

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