Recent studies demonstrating the financial benefits of all-electric buildings

Residential buildings

1. **September 2024** - as part of its NSW Consumer Energy Strategy, the NSW state government conducted modelling on the energy bill savings and emissions reductions that would result from implementing its strategy. The modelling found that homes and small businesses (smaller commercial buildings) could save an average of $4,000 per year on their energy bills switching gas appliances to electric, combined with adding solar and batteries to their buildings. This move would also reduce annual greenhouse gas emissions from these buildings by an average of 2,120 kilograms.[1]

2. **August 2024** - Climateworks Centre's report, *Renovation Pathways: enabling Australia's home renovations wave* modelled the emissions reductions and energy bill savings that would be generated from energy efficiency and electrification upgrades at the point of renovation for detached homes across by state/territory. For NSW, the report found that adding 'climate-ready' energy efficiency upgrades like insulation, draught-ceiling, double-glazed windows and swapping gas appliances for electric ones would save renovated homes up to $2,138 per year on their energy bills.[2]

3. **March 2024** - the Institute for Energy Economics and Financial Analysis modelled how much money Tasmanian households would save if all gas and outdated electric appliances (resistive electric appliances) were converted to modern electric appliances. Each gas-connected household would save around $1,300 per year by converting to modern electric appliances, recouping any upfront costs within two years. At the state level, this aggregates to $146 million saved over the lifetime of their heating, hot water and cooking appliances for every year that all new appliances installed are efficient and

[1] NSW Department of Climate Change, Energy, the Environment and Water. (September 2024). *NSW Consumer Energy Strategy: powering our people and communities*. Accessed 28 January 2025 https://www.energy.nsw.gov.au/sites/default/files/2024-09/NSW_Consumer_Energy_Strategy_2024.pdf

[2] Armstrong, G., Danahay, J., and Dewar, M., (August 2024). *Renovation Pathways: enabling Australia's home renovations wave*. Climateworks Centre. Accessed 24 January 2025 https://www.climateworkscentre.org/resource/enabling-australias-home-renovation-wave/

all-electric, rather than inefficient electric, gas or LPG-fuelled.[3]

4. **27 March 2024** - a report commissioned by Lock the Gate Alliance conducted an electorate-by-electorate analysis of the impact of electrifying and installing energy efficiency upgrades for existing homes in NSW in terms of energy and emissions savings, plus jobs creation.

   Upgrading appliances, including hot water, cooking, and heating would deliver energy cost savings of up to $900 per household. At a state level, those savings would total to around $1 billion each year. The electorates that stand to save the most each year include Heffron with $21.8 million, Sydney, with $20.8, and Parramatta with $17.4 million per year. These upgrades would cut 1.5 million tonnes of CO2e greenhouse gas pollution each year.[4]

5. **13 March 2024** - analysis by the Institute for Energy Economics and Financial Analysis shows that the average cost for household gas in South Australia is $51 per gigajoule of gas. By comparison, running electric appliances costs an average of $24 per gigajoule of replaced gas, meaning running a home with gas appliances in South Australia is more than double the price of running a home on electric appliances. If each new home connected to gas switched to all-electric appliances in SA, these homes would save a total of $108 million in upfront and lifetime running costs.[5]

6. **2024** - updated modelling by the Victorian government shows that building new homes all-electric without gas saves about $900 per year per household compared with a newly built home connected to gas. The figure rises to $1,820 if solar panels are added to the new, all-electric home. For existing homes, the modelling shows that converting an existing home without solar panels to all-electric appliances saves around $1,700 per year on energy bills. This figure rises to $2,000 per home if solar panels are added.[6]

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[3] Gordon, J. (March 2024). *How efficient appliances could ease Tasmania's cost of living*. Institute for Energy Economics and Financial Analysis. Accessed 23 January 2025 https://ieefa.org/resources/how-efficient-appliances-could-ease-tasmanias-cost-living

[4] Lock the Gate Alliance. (27 March 2024). *Electrifying Your Electorate: Savings and Jobs Benefits in NSW*. Accessed 24 January 2025 https://www.lockthegate.org.au/new_analysis_shows_how_getting_off_gas_can_save_nsw_millions_create_jobs_reduce_pollution

[5] Institute for Energy Economics and Financial Analysis. (13 March 2024). *Fact Sheet: As gas bills rise in South Australia, all-electric homes are the most cost-effective solution*. Accessed 23 January 2025, https://ieefa.org/resources/fact-sheet-gas-bills-rise-south-australia-all-electric-homes-are-most-cost-effective

[6] Victorian Department of Environment, Land, Water and Planning. (2024). *Gas Substitution Roadmap update 2024: energy consumers at the heart of the transition*. Melbourne. Accessed 24 January 2025 https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap

7. **November 2023** - the Institute for Energy Economics and Financial Analysis produced a report in the context of looming gas shortfalls in Victoria. It found that replacing gas appliances at end of life with efficient electric ones from 2025 would save the average Victorian home around $1,200 per year on their energy bills, representing a $912 million saving at the state level.[7]

8. **November 2023** - to support its proposal to amend its planning controls to require new developments be fully electric without gas, Lane Cove Council modelled the financial benefits that would accrue to future residents as well as developers from the move. The analysis found:
    - Developers would save around $2,000 per dwelling by avoiding the gas distribution pipework needed for a gas service:
    - Residents in all-electric homes would save money by avoiding the daily gas connection charge, which represents around 30% of the average gas bill in NSW,[8] which is around 65.8c per day in Lane Cove, or $240 per year for each home:
    - The analysis also took into account the avoided gas disconnection fee charged by gas companies which is typically $1,170 per home in Lane Cove. The cumulative, avoided gas disconnection fee for future residents would be over $1 million.[9]

9. **25 October 2023** - modelling by Monash University's Climate Change Communications Research Hub shows that electrifying all existing homes across the country would save a total of $4.9 billion annually, or $450 per household per year. The gas network fees alone cost Australian households $1.3 billion per year alone, excluding any gas usage. Electrifying all homes across NSW would save households a total of $751.1 million, according to the research.[10]

10. **August 2023** - research by 350 Australia shows that, if every NSW council currently connected to the gas network banned new residential gas connections from financial year (2023/24), the average annual bill savings would total $3.7 billion in today's dollars

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[7] Gordon, J. (November 2023). Managing the transition to all-electric homes: an economical solution to Victoria's fossil gas dilemma. Institute For Energy Economics And Financial Analysis. Accessed 23 January 2025 https://ieefa.org/resources/managing-transition-all-electric-homes

[8] Harrington, P. (2023) *Modelling the impact of banning gas to new homes and businesses in NSW*, commissioned by 350 Australia. https://350.org.au/files/2024/05/Electrifying-new-residential-and-commercial-buildings-in-NSW_Final.pdf

[9] Lane Cove Council. (2023). *DCP Sustainability Amendments: Introducing requirements for all-electric buildings* [presentation slides]. Presented at 350 Australia's *Electric Savings - the case for electrifying new homes and businesses in NSW* online webinar on 14 November 2024. Accessed 24 January 2025 https://350.org.au/files/2023/12/Electrify-Your-Council-Council-Forum2-Slides-Lane-Cove.pdf

[10] Monash Climate Change Communication Research Hub. (2023). *Switching On: Benefits of Household Electrification in Australia.* Monash University. Accessed 24 January 2025 https://www.monash.edu/__data/assets/pdf_file/0005/3433550/Switching-On_Benefits-of-household-electrification-in-Australia_report.pdf

compared with business as usual.[11]

11. **July 2023** - a report by Energy Consumers Australia and the CSIRO found that households that change to all-electric appliances, which includes the uptake of electric vehicles, would save up to $2,250 per year on their annual energy bills compared with typical, fossil-fuelled homes.[12]

12. **July 2023** - a report by Renew and Environment Victoria shows that homes in Melbourne that switch gas heaters for electric heat pump heaters could save up to 75% of on their winter heating bills[13]

13. **2023** - the Climate Council's *Smarter Energy Use: How To Cut Energy Bills & Climate Harm* report models the bill savings from electrifying residential cooking, heating and hot water, plus basic energy efficiency upgrades like insulation and draught sealing for various capital cities for an average 1.5 star (NatHERS) home. Total bill savings just from electrifying appliances for Sydney are $898 per household per year. If thermal efficiency upgrades are included, the total savings are $1,436 per household per year.[14]

14. **2023** - a Climate Council report commissioned by the South Australian Council for Social Services compared the heating and cooling costs for different sized homes in Adelaide, finding that households that switch from gas to efficient electric heaters/coolers can save up to $556 per year for a three bedroom home.[15]

15. **2022** - the Victorian Government's Gas Substitution Roadmap shows that converting an existing dual-fuel home to an all-electric home (excluding solar PV) produces annual bill savings of around $1,020 per year. Once solar panels are added to the equation, the energy bill savings rise to $1,020 per year. These savings exclude energy efficiency

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[11] 350 Australia. (2023). *Electric Savings: The case for NSW councils to reduce emissions and energy bills through electrification*. Prepared by Harrington, P. Strategy Policy Research. Accessed 23 January 2025 https://350.org.au/files/2024/06/2024_350_ElectricSavingsReport_v3.0_WEB.pdf

[12] Energy Consumers Australia and CSIRO. (July 2023). *Consumer impacts of the energy transition*. Accessed 24 January 2025 https://energyconsumersaustralia.com.au/news/governments-must-step-up-to-ensure-a-consumer-focused-energy-future#:~:text=CSIRO's%20research%20also%20shows%20that,a%20less%20utilised%20gas%20network.

[13] Renew and Environment Victoria. (July 2023). *It's a Gas: How ditching gas this winter can cut heating bills by 75%: comparing the costs and emissions of gas and electric heating over winter demonstrates how Victorian households can benefit from phasing out gas*. Accessed 24 January 2025 https://renew.org.au/research/its-a-gas-how-ditching-gas-this-winter-can-cut-heating-bills-by-75/

[14] Tilderman, T., Bradshaw, S., Rayner, J., and Arndt, D. (2023). *Smarter Energy Use: How To Cut Energy Bills & Climate Harm*. Climate Council. Accessed 24 January 2025 https://www.climatecouncil.org.au/resources/smarter-energy-use-how-to-cut-energy-bills-and-climate-harm/

[15] Renew. (2023). *Efficient heating and cooling in Adelaide homes An analysis of energy bills and emissions*. Accessed 24 January 2025 https://renew.org.au/research/adelaide-households-paying-too-much-to-heat-and-cool-homes/

upgrades, which would make the savings even higher. The model excludes the upfront costs of switching from gas to electric appliances and assumes replacement at end of life involves switching to electric appliances. [16]

16. **6 April 2022** - as part of the Victorian government's Gas Substitution Roadmap, the government commissioned a report investigating whether all-electric new homes would be cheaper or more expensive to buy for home-buyers compared with standard, dual-fuel homes. The findings showed:

    - all-electric Class 1 detached dwellings need cost no more than an equivalent dual-fuel Class 1 detached dwellings;
    - all-electric Class 1 townhouses on average, can easily cost less when compared to an equivalent dual-fuel Class 1 townhouses; and
    - equivalent all-electric and dual-fuel Class 2 apartments involve similar upfront costs with negligible variance.[17]

17. **October 2022** - an Australian Sustainable Built Environment Council report modelled three different pathways (scenarios) to electrify existing residential and commercial buildings in Victoria, NSW and Qiueensland from 2024-50. The findings show that the most rapid and ambitious electrification pathway (Scenario 1) would produce energy cost savings of $26.4 billion for the residential sector over the study period compared with Scenario 3.[18]

18. **2022** - the Climate Council's *Switch and Save: how gas is costing households* report shows that homes in Sydney could save $924 per year on their energy bills if they switched gas appliances like hot water units, heaters, ovens and stoves, for electric ones.[19]

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[16] Victorian Department of Environment, Land, Water and Planning. (2022). *Gas Substitution Roadmap*. Melbourne. Accessed 24 January 2025 https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap

[17] Victorian Department of Environment, Land, Water and Planning. (2022). *Gas Substitution Roadmap*. Melbourne, prepared by GHD Consultants, Tait, C., *All-Electric New Homes Cost Assessment*. Accessed 28 January 2025 https://www.energy.vic.gov.au/renewable-energy/victorias-gas-substitution-roadmap

[18] Australian Sustainable Built Environment Council. (14 October 2022). *Rapid and Least Cost Pathways for Decarbonising Building Operations – Final Report.* Prepared by Harrington, P. Strategy Policy Research. Accessed 24 January 2025 https://www.asbec.asn.au/wordpress/wp-content/uploads/2022/11/SPR2123-Final-Report-20221014.pdf

[19] Tidemann, C., Rayner, J., and Cheung, H. (2022). *Switch and Save: how gas is costing households*. Climate Council. Accessed 24 January 2025 https://www.climatecouncil.org.au/wp-content/uploads/2022/10/CC_MVSA0323-CC-Report-Switch-and-Save-Gas-vs-Electricity_V6-FA-Screen-Single.pdf

19. **August 2021** - Renew modelled the energy costs savings of 6 star homes connected to gas compared with 7 star (NatHERs), all-electric homes powered by renewable energy with energy efficiency upgrades. The results show that building all-electric, 7 star homes significantly reduces household energy costs in every Australian major city. In Sydney, the savings would be $1,203 per year per household.[20]

20. **2021** - Rewiring Australia's *Castles and Cars: Savings in the Suburbs through Electrifying Everything* report shows that households could save $5,000 per year on their energy bills by replacing their fossil-fuelled cars with electric vehicles, switching all gas appliances (water, heating, and cooking) with electric ones and adding rooftop solar.[21]

21. **2020** - a study by the ACT government demonstrated energy savings of up to $593 per year for homes in Canberra that switch gas appliances to electric ones. When solar panels are added to the equation, the savings rise to up to $985 per year per household.[22]

22. **2018** - Renews *Household fuel choice in the National Energy Market* report found that home owners in Victoria would be between $9,000 – $16,000 better off over 10 years if they built their new home with all-electric appliances powered by solar with no gas.[23]

Commercial buildings

1. **September 2023** - in a report commissioned by 350 Australia, energy consultants, Strategy Policy Research shows that, if NSW councils required all new commercial buildings to be all-electric, it would save businesses across the state $1.3 billion from 2024-64.[24]

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[20] McLeod, R., Hooda, A. (2021). *Households Better Off: Lowering energy bills with the 2022 National Construction Code*. Renew. Accessed 24 January 2025 https://renew.org.au/advocacy/climate-resilient-homes/households-better-off-lowering-energy-bills-with-the-2022-national-construction-code/

[21] Rewiring Australia. (2022). *Castles and Cars: Savings in the Suburbs through Electrifying Everything Discussion Paper*, accessed 24 January 2025 https://assets-global.website-files.com/612b0b172765f9c62c1c20c9/615a513770739cc6477e67f4_Castles%20and%20Cars%20Rewiring%20Australia%20Discussion%20Paper.pdf

[22] Australian Capital Territory Department of Environment, Planning and Sustainable Development Directorate. (2020). *Households Energy Choice in the ACT: Modelling and analysis.* Prepared by ACIL Allen Consulting. Accessed 24 January 2025 https://www.climatechoices.act.gov.au/__data/assets/pdf_file/0011/1784315/Household-energy-choices-in-the-ACT-Modelling-and-analysis.pdf

[23] Lombard, D., Moyse, D. (2018). *Household fuel choice in the National Energy Market*. Renew (formerly the Alternative Technology Association). Accessed 25 January 2025 https://renew.org.au/research/all-electric-solar-homes-save-thousands-over-gas-report/

[24] Harrington, P. (2023) *Modelling the impact of banning gas to new homes and businesses in NSW*, commissioned by 350 Australia. https://350.org.au/files/2024/05/Electrifying-new-residential-and-commercial-buildings-in-NSW_Final.pdf

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[25] Australian Sustainable Built Environment Council. (14 October 2022). *Rapid and Least Cost Pathways for Decarbonising Building Operations – Final Report.* Prepared by Harrington, P. Strategy Policy Research. Accessed 24 January 2025 https://www.asbec.asn.au/wordpress/wp-content/uploads/2022/11/SPR2123-Final-Report-20221014.pdf