HEALTHY FUTURES

Lucid

All-Electric Healthy Hospitals
A Cost Benefit Analysis

Authors

Healthy Futures is a grassroots organisation of healthcare workers and community members working to limit climate change and its health impacts. Healthy Futures is an affiliate group of Friends of the Earth Australia.

Lucid Consulting Australia is an Australian engineering and asset advisory firm with expertise delivering large health infrastructure and electrification upgrades.

We acknowledge the Traditional Owners of the lands on which we live, meet and work, and their traditions of caring for Country. We pay our respects to Elders past, present and future.

This report is endorsed by:

Doctors for the Environment Australia

The Royal Australian & New Zealand College of Psychiatrists

RACP Specialists. Together

caha Climate and Health Alliance

Australasian College for Emergency Medicine

Australian Federation of Medical Women the voice of australian medical women

Dr Harry Jennens
Founder & Co-ordinator
Healthy Futures

Bob Wilson
National Leader Energy & Sustainability
Lucid Consulting

Willow Aliento
Sustainability Advisor, Researcher & Writer

Ursula Alquier
Healthy Hospitals Co-ordinator
Healthy Futures

Dr Bronwyn McDonald
NSW Campaigner
Healthy Futures

Report design by:
Tenielle Dunkley

Connect with us!

facebook.com/HealthyFuturesAU

admin@healthyfutures.net.au

instagram.com/healthyfuturesau

linkedin.com/company/healthy-futures-au

Contents

Cover: Hospital Emergency Entrance, Peterspiro, Getty Images
Image 1: Celebrating 10 years of Healthy Futures, Healthy Futures

Executive Summary

Replacing fossil gas with clean electricity in Australian hospitals is urgently required to reduce climate pollution and its associated health impacts.

The health sector should be preventing and managing the health impacts of climate change rather than contributing to them. Electrification can also lower hospital energy costs and thereby allow more resources to be allocated to patient care. It is a key step in decarbonising the health sector in accordance with the Australian Government's National Health and Climate Strategy[1], and is supported by a broad cross-section of the health workforce.

This report estimates that electrifying all Australian public hospitals would:

1. Avoid **312,050 tonnes** of carbon dioxide-equivalent greenhouse gas emissions annually once completed - equivalent to taking nearly 150,000 petrol cars off our roads, and

2. Reduce hospital energy costs by **$59 million per year**.

We calculate that a program to electrify all Australian public hospitals evenly over the next ten years (10 per cent per year) would achieve net economic benefit in 2047 and continue to add value thereafter. Undertaking feasibility studies at a range of hospital sites of varying size and climatic conditions would allow for identification and prioritisation of the most cost-effective initial opportunities.

We therefore recommend that the Australian Government fund electrification feasibility studies in nine hospitals around Australia to inform design of a wider electrification program.

Image 2: Veja Mate Offshore Wind Farm, source: Global Energy World

1 Australian Centre for Disease Control (2023). National Health and Climate Strategy

Introduction

Climate change has been declared a health emergency by the Australian Medical Association[2] and multiple Australian medical colleges[3,4,5,6].

Globally, heat-related death rates have risen by 23% from the decade 1990-1999 to the decade 2012-2021, and heat now kills over half a million people every year[7]. In Australia, climate change increases the risk of extreme heat, bushfires, floods, cyclones, air pollution, spread of infectious diseases and mental health impacts[8].

The Australian Government's 2025 National Climate Risk Assessment identified climate change as currently posing a moderate to high risk to our health and social support system, and likely a severe risk by 2050[9]. It predicted that, by the end of this century, climate change could increase heat-related death rates in some Australian capital cities by over 400%[10].

Despite climate change presenting a public health emergency, Australia's health sector remains a major contributor to climate pollution. Malik et al. estimated in 2018 that the health sector accounts for 7% of Australia's domestic greenhouse gas footprint and that a third of this pollution is produced by Australian public hospitals[11].

A further study in 2021 found that one third of energy used in Australian public hospitals is derived from burning fossil gas[12]. Replacing this gas with renewable electricity is therefore a key step in reducing the carbon footprint of Australian healthcare and of Australia overall.

Scale of the sector

As of 2022-23 there were 700 public hospitals in Australia, comprising 189 in major cities, 400 in inner regional and outer regional areas and 111 in remote or very remote areas[13].

Hospital CO e (Carbon Dioxide equivalent) emissions comprise:

Scope 1

On-site emissions) from stationary energy use, including gas fired boilers for heating and hot water, gas-fuelled cooking/catering equipment, along with emissions from refrigerants, medical gases and back-up power systems such as diesel generators. In addition, emissions from operational vehicles such as ambulances or other owned/operated vehicles.

Scope 2

Emissions from purchased energy in the form of grid electricity.

Scope 3

Supply chain emissions, staff travel emissions, and other offsite emissions within the hospital value chain such as waste disposal, offsite catering, supplier freight and logistics.

2 Australian Medical Association (2019). AMA formally recognises climate change as a health emergency
3 Royal Australasian College of Physicians (2016). Climate change and health position statement
4 Australasian College of Emergency Medicine (2019). ACEM declares climate change a medical emergency
5 Royal Australian College of General Practitioners (2019). Climate change is a health emergency, RACGP declares
6 Australian College of Rural and Remote Medicine (2019). ACRRM recognises climate change as a rural health emergency.
7 University of Sydney (2025). World's leading medical journal details the climate emergency (news story)
8 Australian Climate Service (2026). *National climate risk assessment*
9 ibid.
10 ibid.
11 Malik A, Lenzen M, McAlister S & McGain F. (2018). The carbon footprint of Australian health care The Lancet Planetary Health, 2, e27-e35
12 Burch, H., Anstey, M. & McGain, F (2021). Renewable energy use in Australian hospitals. Medical Journal of Australia
13 Australian Institute of Health and Welfare (2026). Australian hospitals at a glance.

Electrification can also reduce hospital operational costs due to the increased efficiency of heat pumps compared to gas-fired space and water heating. Increased efficiency and sustainability protects hospitals' value as government-owned and operated assets, and for stakeholders including capital funds, health insurers, financial organisations and partners such as global pharmaceutical companies, universities and facilities management providers.

New Melton Hospital, Victoria, Australia

The Victorian Government has committed more than $900 million to deliver a new Melton Hospital in 2029. The hospital will be Victoria's first all-electric hospital.

Image 3: Artist Impression: Aerial view at dusk, Victorian Health Building Authority

> **As electric technologies become more efficient and electricity from renewable sources becomes more accessible and affordable, operating costs can be reduced.**

Mark Chrisman
Health Sector Executive
Henderson Engineers (USA)

International perspectives

Mark Chrisman, Health Sector Executive at Henderson Engineers (USA) reviewed the business case and operational benefits of electrification in USA hospitals in 2025[14].

He explained, "As electric technologies become more efficient and electricity from renewable sources becomes more accessible and affordable, operating costs can be reduced…the fossil fuel markets also experience volatility.

Electricity prices—especially from local renewable sources—can offer greater price stability and potentially more resiliency.

Furthermore, lifecycle cost analysis, which is conducted on a project-by-project basis, often reveals that all-electric hospitals enjoy a lower total cost of ownership."

The UK's National Health Service (NHS) is also actively pursuing hospital electrification, with a target of 47 percent reduction in directly controlled greenhouse gas emissions by 2032[15].

In November 2025 Imperial College Healthcare, part of the NHS Trust, announced an investment of £47.4 million over the next two years to continue overhauling its hospitals' energy systems and reduce estate risks[16]. Charing Cross and Hammersmith are a major focus for these works.

The Trust began a a £120 million decarbonisation program in 2021, and estimates that once completed the result will be a 43 percent reduction in greenhouse gas emissions from heating, cooling and powering hospital buildings and equipment, representing a saving of 20,233 tonnes of CO2e (carbon dioxide equivalent) per year[17].

Image 4: Wind Turbines on a Mountain, Francesco Ugaro , Pexels.

14 Chrisman, M. (2025). Making the case for all-electric hospitals. Healthcare Design Magazine.
15 NHS Trust (2026). Reducing the environmental impact of powering our hospitals
16 ibid.
17 ibid.

Partners and investors

Australian universities are increasingly leveraging sustainability initiatives and net-zero targets to drive operational, academic, and community benefits.

Universities frequently partner with public hospitals to deliver research, training, and advanced care in the hospital setting in both capital cities and regional centres. Sources within the tertiary education sector have noted that action on climate change, strong net zero targets and electrification of assets[18] have multiple benefits including recruiting and retaining excellent staff[19], attracting the brightest students and researchers from both Australia and abroad, and reducing operational overheads and future asset risks.

Health insurers are also stakeholders in the increased savings and sustainability achievable through electrification, as a 2022 Parliamentary Inquiry into healthcare funding found a significant proportion of public hospital funding comes from health insurance payments and the fees of patients with private health insurance[20].

In addition, as a recent article in the Medical Journal of Australia notes, private equity is increasingly investing in healthcare assets[21].

As these organisations increasingly adopt net zero targets, and either directly report emissions-related data or seek to disclose it to their upstream or downstream value chain, shifting to all-electric building operations and building services becomes a risk management and value management imperative.

For example, INREV (the European Association for Investors in Non-Listed Real Estate Vehicle) now considers the Carbon Real Estate Risk Monitor (CRREM) “Misalignment Year” and supporting data to be a valid data point for investment underwriting[22].

In a statement, INREV and CRREM note that by comparing assets against forward-looking energy and carbon trajectories, investors gain early visibility on which properties may require upgrades or face regulatory pressure[23].

> **Shifting to all-electric building operations and building services becomes a risk management and value management imperative.**

Image 5: Solar Farm Array Generating Clean Renewable Energy,Tartezy Images

18 UNSW Sydney (2025). UNSW powers ahead.
19 Melville-Rea, K., & Arndt, S. K. (2024). Net-zero heroes? Climate change mitigation efforts and strategies across Australian Group-of-Eight universities. Sustainability, 16(7), 2937.
20 Hewett, R. (2022). Public hospital funding: an overview.
21 Berquist, V. (2024). Private equity investment in health care delivery, Australia, 2008-2022. Medical Journal of Australia.
22 Carbon Risk Real Estate Monitor (2026). INREV identifies CRREM Misalignment Year as a material input for valuation.
23 ibid

The Australian Government has committed to reduce Australia's greenhouse gas emissions to 62-70% below 2005 levels by 2035 and achieve net zero emissions by 2050[24].

The Government has also released a National Health and Climate Strategy that, amongst other objectives, aims to decarbonise the health sector[25]. This Strategy was developed following sustained advocacy by the Climate and Health Alliance and its constituent organisations[26].

Australian health organisations such as the Australian Medical Association[27], the Royal Australasian College of Physicians (RACP)[28] and Doctors for the Environment Australia[29] continue to advocate strongly for urgent replacement of fossil fuels with renewable energy to limit climate change and its health impacts. This year the RACP published a new position statement, "A Healthy Future Beyond Fossil Fuels", in which they recommended that Australian and New Zealand governments support hospitals and health services to become all-electric and lead in the transition to renewable energy[30].

Healthy Futures, co-authors of this report, are currently co-ordinating a campaign for electrification of Australian public hospitals supported by thirteen health organisations representing over 300,000 healthcare workers[31].

There is clearly abundant support in the health sector for hospital electrification. Furthermore, Healthy Futures have proposed a pilot program to electrify nine hospitals across all states and territories to demonstrate cost-effectiveness in a range of climatic conditions and for facilities of varying size[32].

Hospital Vithas Valencia Turia, Spain

Vithas, a major Spanish hospital group, the first hospital group in Spain to run entirely on certified renewable electricity and achieve carbon neutrality in gas and electricity.

Image 6: Infografía. Hospital Vithas Valencia Turia. España, OHLA Progress Enablers

24 Department of Climate Change, Energy, the Environment and Water (2025). Net zero.
25 Op. cit. Australian Centre for Disease Control (2023).
26 Armstrong, F. (2026). The health sector – led campaign to realise Australia's national Strategy on health and climate change. The Journal of Climate Change and Health, Volume 28, 2026
27 Australian Medical Association (2023). One Health position statement.
28 Royal Australasian College of Physicians (2026). Physicians call for fossil fuel phase out due to severe health impacts.
29 Doctors for the Environment (2024). Fossil Fuels are a Health Hazard
30 Royal Australasian College of Physicians (2026). A healthy future beyond fossil fuels position statement.
31 Healthy Futures (2026). All-Electric Healthy Hospitals.
32 ibid.

The Energy and Climate Change Ministerial Council (Commonwealth of Australia, 2025) also advised in their 2025 Updated Trajectory for Low Energy Buildings:

> **Governments own and procure a significant proportion of Australia's building stock. Governments' operational and procurement policies are pivotal to achieving energy and emissions performance outcomes.**[33]

They noted that electrification of buildings such as hospitals, which are under-represented in other schemes such as commercial building energy efficiency incentive schemes, is necessary to help governments at all levels achieve net zero goals and commitments[34]. They warned that delay would be costly, saying:

> **The challenges associated with achieving the objectives of the Trajectory will compound with every year that passes. Policies and plans introduced sooner, will contribute to steady long-term emissions savings as well as avoiding costly and unnecessary future upgrades.**[35]

Image 7: Castle Hill hospital now completely powered by it's own on solar energy, NHS

33 Commonwealth of Australia (2025). Trajectory for low energy buildings update.
34 ibid
35 ibid

In light of the above health, environmental and economic imperatives for decarbonisation, as well as the recommendations of the above stakeholders, we present in this report a simplified cost-benefit analysis for electrifying all Australian public hospitals, followed by a recommendation for feasibility studies that could inform a national electrification program.

Image 8: Solar panel technician installing solar panel system, ArtistGNDphotography, Getty Images Signature.

Methodology

We conducted a cost-benefit analysis for electrifying all Australian public hospitals evenly over a ten-year period (10 per cent per year) from 2027-2036 using four steps:

1. Estimated the capital cost of electrification, the alternative cost of replacing ageing gas systems with new gas systems at their end of life, and the difference between these costs

2. Estimated energy cost savings from replacing gas with electricity

3. Estimated and evaluated avoided greenhouse gas emissions

4. Applied an exponential annual discount of 7% to all future costs and benefits (as per Infrastructure Australia's 2021 Guide to Economic Appraisal[36]) and then charted cumulative value (benefits minus costs) over time

36 Infrastructure Australia (2021). Guide to Economic Appraisal.

Castle Hill Hospital, East Yorkshire, UK

In just five months, Castle Hill Hospital installed 11,000 solar panels across 7.7 hectares of land adjacent to its site. This £4.2 million ($8.1 million) project, known as the "Field of Dreams", has made the hospital self-sufficient for its daytime energy needs.

Image 9: Castle Hill Hospital, NHS

1. Estimating capital cost of electrification versus replacing ageing gas systems like for like

To maximise cost-effectiveness, we propose replacing gas systems with electrical alternatives when gas systems reach their end of life. This extracts maximal value from gas systems while avoiding the cost of replacing them with new gas systems, which are typically less efficient than electrical alternatives. However, detailed modelling of when each public hospital's gas system is due for replacement is beyond the scope of this report. Therefore we have instead conducted a cost-benefit analysis for a simplified model of electrifying ten per cent of all Australian public hospitals each year from 2027-2036 inclusive, achieving 100% electrification in 2036. This is based on observations that many public hospitals operate gas systems that are at or already beyond their end of life.

The capital cost of electrification has been assumed to be $280 per GJ of gas used at each hospital in the preceding year. The comparative cost of replacing ageing gas systems with new gas systems at their end of life has been assumed to be 30% of this ($84 per GJ). In reality these costs will vary depending on local conditions but we consider them to be reasonable averages tested against a number of detailed feasibility studies conducted by Lucid Consulting.

For our cost-benefit analysis we therefore assumed that the relative cost of electrification (compared to a "no electrification" baseline scenario of replacing gas systems like for like at end of life) is $196 per GJ.

We assume that energy systems have a lifespan of 20 years and therefore end of life replacement costs are incurred again every 20 years. We assume that replacing an electrified system like for like costs 60% of the initial electrification cost.

Total current gas consumption in Australian public hospitals was estimated by taking publicly available data from the Victorian Department of Health on Victorian health-related energy consumption for the 2024-25 financial year[37], and then extrapolating this to other states and territories, assuming that gas energy consumption ratios between Victorian public hospitals and those in other states and territories remained the same in 2024-25 as they were in the 2018-19 financial year. Ratios from the 2018-19 financial year were derived from Burch, Anstey & McGain, 2021[38].

Kangaroo Island Hospital

The Kangaroo Island Health Service in South Australia became Australia's first fully electric, gas-free public hospital in early 2025. The transition phased out gas hot water, steam boilers, heaters, and cooking appliances to lower costs and cut carbon emissions.

Image 10: Kangaroo Island Hospital, Daily SA

37 Department of Health and Human Services Victoria (2026). Environmental performance reporting 2024-25 machine readable dataset

38 Op. cit. Burch, H., Anstey, M. McGain, F. (2021).

2. Estimating energy cost savings from replacing gas with electricity

As each hospital electrifies, it typically replaces its existing gas equipment with more efficient electric equipment, usually using heat pumps to significantly reduce overall energy consumption.

For this study, we have assumed the new systems eliminate gas consumption at each site, but increase electricity consumption. For each GJ of gas consumption eliminated, we expect an additional 0.25 GJ of electricity to be required. This can be conceptualised as a heat pump with a Coefficient of Performance (COP) of 3.2 replacing an 80% efficiency boiler, which is a common design solution. However, actual design solutions would vary depending on hospital, climate and application.

This study models these energy mix changes as each hospital electrifies over the ten-year period 2027-2036. For simplicity, we have assumed no energy demand changes over the analysis period other than the change to the energy mix due to electrification.

Energy costs have been estimated for both a business-as-usual scenario (no electrification program) and the scenario of electrifying 10% of Australian hospitals each year from 2027-2036 inclusive. Utility cost rates have been assumed based on wholesale energy rates with an allowance for network costs. More detail is available in the appendix.

Energy cost savings are calculated as the difference in energy costs between the business-as-usual scenario and the electrification scenario.

Canberra Hospital opened its first all-electric building in August 2024

Twenty-one state-of-the-art heat pumps replaced outdated gas boilers, reducing the hospital's carbon footprint by approximately 1,886 tonnes annually

Image 11: Canberra Hospital opened its first all-electric building in August 2024.

3. Estimating and evaluating avoided greenhouse gas emissions

A core part of the value of electrification is the avoidance of carbon emissions and associated economic costs.

As the electricity grid transitions away from fossil fuels towards renewable energy, the emissions associated with electricity use decreases. Using electricity for heating and other core hospital services already emits less greenhouse gases than using fossil fuels on site, and this differential is expected to grow.

This study has estimated the emissions associated with electricity use using the emissions projections contained within the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW)'s *Australia's Emissions Projections 2025*[39].

These projections considered the impact of currently implemented state and federal policies and some policies announced but not yet implemented (at the time that report was written). However, the true emissions associated with electricity use may be lower than this due to renewable energy purchasing commitments, such as in Victoria where public hospitals have been purchasing 100% renewable energy since July 2025[40]. These renewable energy purchasing commitments were not factored into our analysis, and therefore true reductions in pollution may be greater than our estimation.

Emissions associated with gas use are expected to be relatively constant over the analysis period and the emissions factors contained within DCCEEW's National Greenhouse Accounts 2025[41] have been used in this study.

Of these approaches, there is little consensus on long-term carbon market price projections, and calculating the economic harm is complex and beyond the scope of this study.

Only Scope 1 and Scope 2 emissions have been considered in this study.

Assigning a value to avoiding carbon emissions typically follows one of three approaches, as follows:

1. Considering what carbon offsets can be sold for on current markets.
2. Considering the economic harms that result from carbon emissions, including those caused by health impacts.
3. Considering the expected cost of technologies that will be required to achieve Australia's net zero targets.

As such, this study assigns a value to emissions based on the expected cost of achieving net zero emissions, which are sourced from Infrastructure Australia's Guidance Note - Valuing Emissions for Economic Analysis . These emissions valuations have been developed for Infrastructure Australia to use in assessing value for money of infrastructure projects.[42]

39 Department of Climate Change, Energy, the Environment and Water (2025). *Australia's emissions projections 2025.*
40 Victorian Health Building Authority (2026). *Renewable electricity in public hospitals*
41 Op. cit. Department of Climate Change, Energy, the Environment and Water (2025)
42 Infrastructure Australia (2024). *Valuing emissions for economic analysis.*

4. Discounting future costs and benefits

We applied an exponential annual real discount of 7% to all estimated costs and benefits in the future, as recommended by Infrastructure Australia's 2021 Guide to Economic Appraisal[43].

We then charted cumulative benefits minus costs to show cost-benefit over time. All cash flows are presented in real terms, without including the effects of inflation.

Image 12: Solar Panel Technician with Drill Installing Solar Panels, zstockphotos, Canva Pro

43 Op. cit. Infrastructure Australia (2021).

Results

Below are our estimates for electrifying all Australian public hospitals evenly over ten years from 2027-2036, in terms of:

- Capital costs of electrification relative to replacing ageing gas systems “like for like”(Fig. 1)
- Energy cost savings (Fig. 2)
- Avoided greenhouse gas emissions (Fig. 3)
- Economic value of avoided greenhouse gas emissions (Fig. 4)
- Energy cost savings plus economic value of avoided greenhouse gas emissions (Fig. 5), and
- Cumulative benefits minus costs over time (Fig 6).

Figures 1-5 show values **without** applying future discounts that are recommended by Infrastructure Australia’s 2021 Guide to Economic Appraisal for cost-benefit analysis of public infrastructure projects[44], as we intend these figures to convey costs and benefits in everyday terms.

Figure 6 **does** incorporate an exponential annual discount of 7% to all future costs and benefits as per Infrastructure Australia’s 2021 Guide to Economic Appraisal[45] to indicate future “value for money” in standard economic terms for public investment proposals.

Image 13: Smart Charging Technology, St Vincents Hospital, Ocular

44 Op. cit. Infrastructure Australia (2021).
45 Op. cit. Infrastructure Australia (2021).

Figure 1: Relative Capital Cost of Electrification Per Year (Not Discounted)

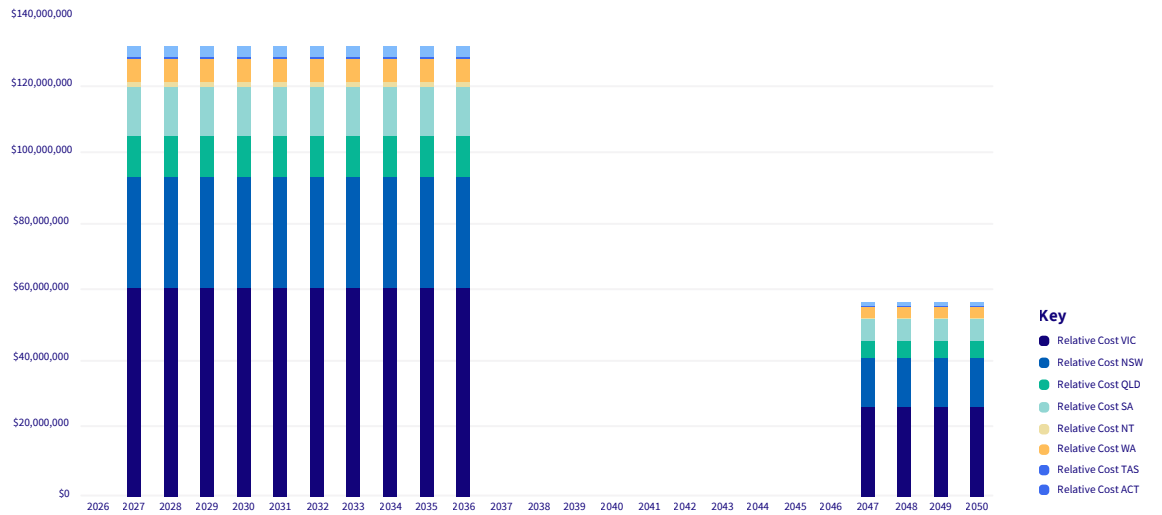


Figure 1 shows the estimated capital cost of fully electrifying all Australian public hospitals evenly over ten years (relative to the estimated baseline cost of replacing ageing gas systems with new gas systems): $131,405,232 per year from 2027 to 2036 inclusive. It also indicates the estimated capital cost of replacing ageing electrified systems like for like (which is assumed to be 60% of the initial electrification cost), relative to the estimated cost of replacing ageing gas systems like for like, from 2047 onwards: $56,316,528 per annum. These annual replacement costs are expected to recur for a ten-year period every twenty years.

Figure 2: Energy Cost Savings Per Year (Not Discounted)

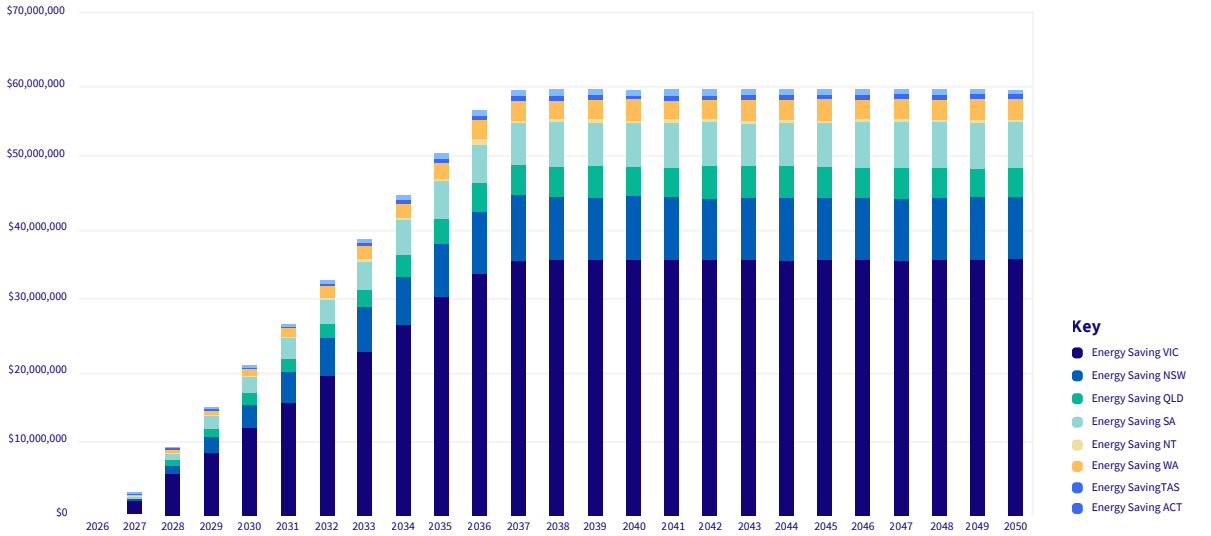


Figure 2 shows estimated energy cost savings from replacing fossil gas with electricity. These savings peak at $59,347,533 per annum once all Australian public hospitals are electrified.

Figure 3: Carbon Emissions Avoided Per Year

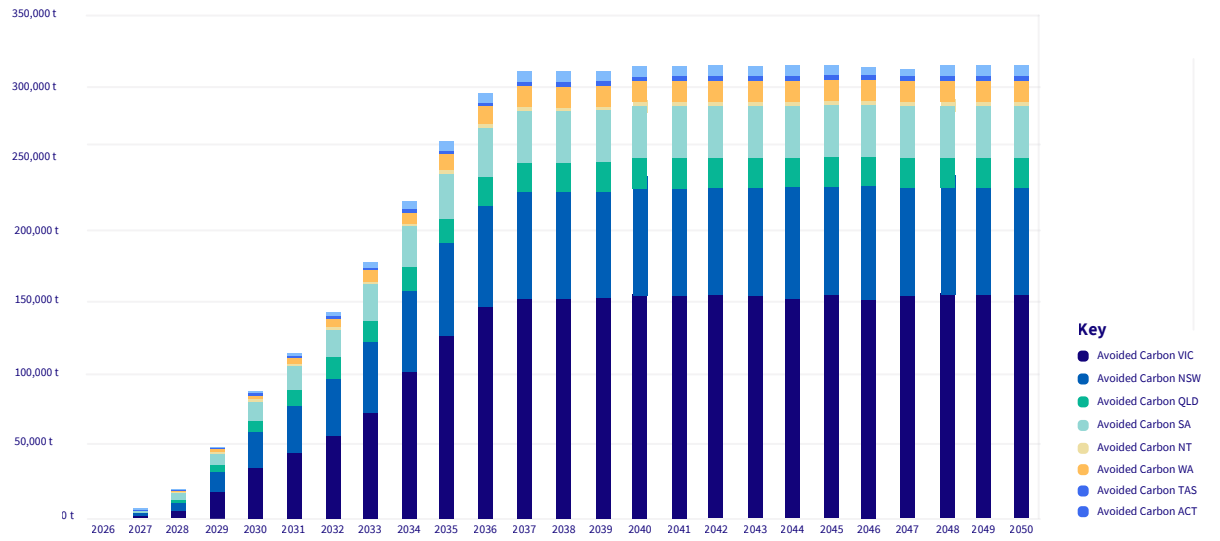


Figure 3 shows the estimated tonnes of carbon-dioxide-equivalent greenhouse gas emissions avoided each year by electrifying all Australian public hospitals over a ten-year period, peaking at 312,050 tonnes per year once electrification is complete. This is equivalent to taking 147,186 petrol cars off our roads[46, 47].

Figure 4: Carbon Cost Savings Per Year (Not Discounted)

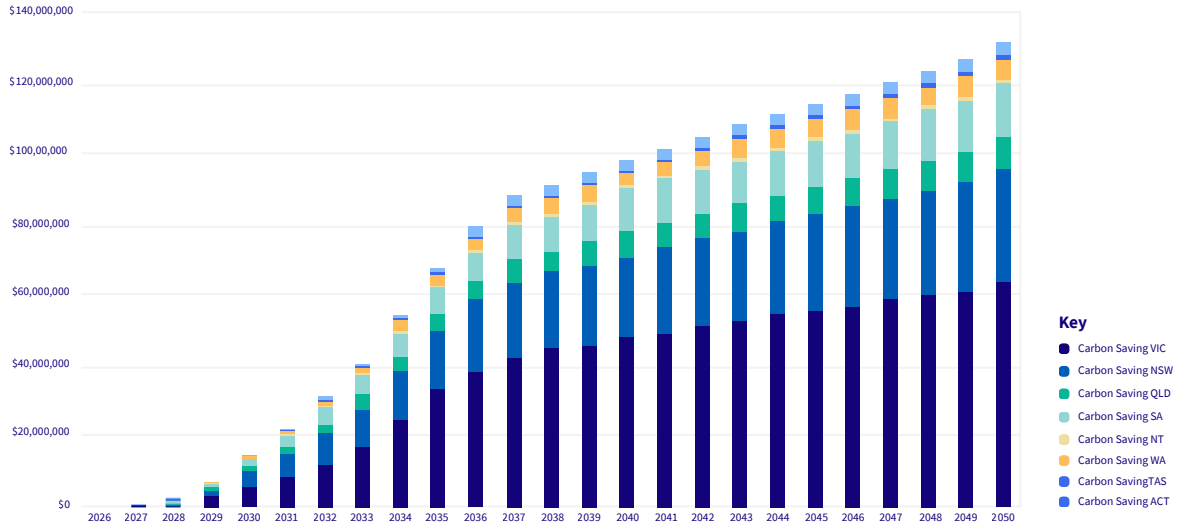


Figure 4 shows the estimated value of these avoided greenhouse gas emissions as per Infrastructure Australia's Guidance Note - Valuing Emissions for Economic Analysis[48], which increases over time until reaching an estimated $131,122,394 per annum in 2050.

46 Australian Bureau of Statistics (2020). *Survey of motor vehicle use, Australia.*
47 National Transport Commission (2025). *Light vehicle emissions intensity in Australia: trends over time report.*
48 Op. cit. Infrastructure Australia (2024).

Figure 5: Energy + Carbon Cost Savings Per Year (Not Discounted)

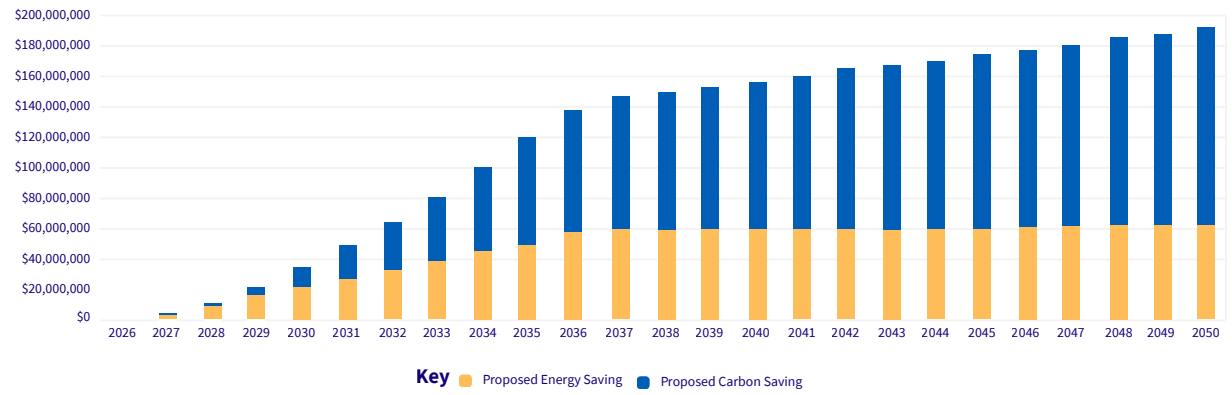
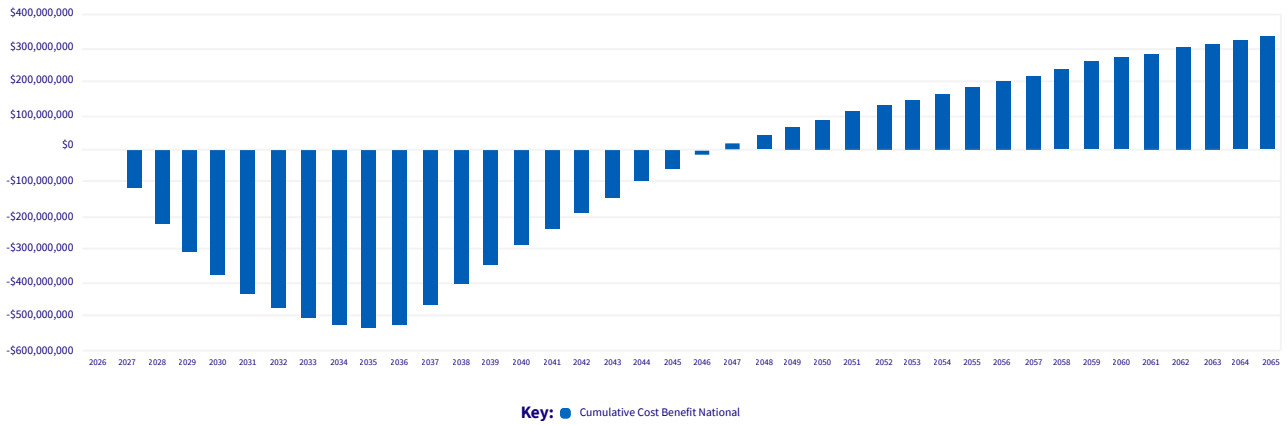


Figure 5 displays the sum of estimated energy cost savings (from Figure 2) and estimated value of avoided greenhouse gas emissions (from Figure 4) to show the relative contribution of these to estimated annual economic benefit (totalling $190,469,927 in 2050).

Figure 6: Cumulative Cost Benefit (After Annual 7% Discount Rate)

Figure 6 graphs cumulative economic benefit minus costs over time of electrification compared to no electrification. **Unlike Figures 1-5, Figure 6 applies an exponential discount rate of 7% per year to all future costs and benefits**, as per Infrastructure Australia's 2021 Guide to Economic Appraisal[49] for cost-benefit analysis of public infrastructure projects, to demonstrate "value for money" and place greater weight on short-term rather than long-term costs and benefits. Even with this weighting, net economic benefit is achieved in 2047, eleven years after completion of the electrification program. A benefit-cost ratio of 1.05 is achieved by 2050 with increasing value thereafter.



49 Op. cit. Infrastructure Australia (2021).

Summary & Recommendation

Our analysis suggests that electrifying ten per cent of Australian public hospitals each year from 2027 until 2036 inclusive will avoid 312,050 tonnes of carbon dioxide-equivalent greenhouse gas emissions annually once completed, reduce hospital energy costs by $59m per year and achieve net economic benefit in 2047 (discounting future costs and benefits as per Infrastructure Australia Guidelines) with ongoing savings thereafter.

It should be noted that this is a simplified model of an electrification program. In practice, hospitals where the economic savings of electrification would be greatest (e.g. those using older and less efficient fossil gas systems) could be prioritised so that greater benefits could be achieved earlier.

Savings from electrification could be reinvested in the health system to improve healthcare for people in Australia, and the reduced greenhouse gas emissions will support global efforts to limit climate change and its health impacts. Such a program would serve the aims of the Australian Government's National Health and Climate Strategy, assist in achieving our national emissions reduction targets, protect Australians' health, and meet expectations from across the health sector.

As a next step, we urge the Australian Government to fund feasibility studies for electrification of hospitals in each state and territory. Such studies should take a systems approach to consider not only technical feasibility and cost-benefit of electrification but also financial, procurement, maintenance, workforce and governance aspects, evaluation and monitoring of outcomes, and ensuring continuity of service delivery. They could also simultaneously consider or execute more immediate, lower-cost sustainability upgrades (such as HVAC optimisation, occupancy-sensor lighting, and catalytic destruction of nitrous oxide) and synergistic strategies to reduce scope 3 emissions, such as electrifying transport systems[50]. Feasibility study findings could then assist in prioritising and planning electrification and other sustainability upgrades in hospitals across Australia.

Frankston Hospital Redevelopment, Victoria, Australia

The Victorian Government has delivered a $1.1 billion redevelopment of Peninsula University Hospital, formerly known as Frankston Hospital. This is the largest ever health infrastructure investment in Melbourne's south-east.

Image 14: Frankston Hospital Redevelopment, Victorian Health Building Authority

50 Thanekar, U. D., Hensher, M., Patrick, R., Keel, G., & Forrester, M. (2024). Exploring opportunities to reduce scope 3 emissions in renewably powered health services. *Medical Journal of Australia*, 220(11), 550–553

References

1. Australian Centre for Disease Control (2023). *National health and climate strategy* https://www.cdc.gov.au/resources/publications/national-health-and-climate-strategy

2. Australian Medical Association (2019). *AMA formally recognises climate change as a health emergency*. https://ama.com.au/sites/default/files/documents/030919_AMA_Calls_Climate_Change_A_Health_Emergency_1.pdf

3. Royal Australasian College of Physicians (2016). *Climate change and health position statement* https://www.racp.edu.au/docs/default-source/advocacy-library/climate-change-and-health-position-statement.pdf

4. Australasian College of Emergency Medicine (2019). *ACEM declares climate change a medical emergency* https://acem.org.au/News/November-2019/ACEM-declares-climate-change-a-medical-emergency

5. Royal Australian College of General Practitioners (2019). *Climate change is a health emergency, RACGP declares* https://www1.racgp.org.au/newsgp/racgp/climate-change-is-a-health-emergency-racgp-declare

6. Australian College of Rural and Remote Medicine (2019). *ACRRM recognises climate change as a rural health emergency*. https://www.acrrm.org.au/about-us/news-events/media-releases/2019/11/20/acrrm-recognises-climate-change-as-a-rural-health-emergency_

7. University of Sydney (2025). *World's leading medical journal details the climate emergency* (news story) https://www.sydney.edu.au/news-opinion/news/2025/10/29/worlds-leading-medical-journal-details-the-climate-emergency.html

8. Australian Climate Service (2026). *National climate risk assessment.* https://www.acs.gov.au/pages/national-climate-risk-assessment

9. ibid.

10. ibid.

11. Malik A, Lenzen M, McAlister S & McGain F. (2018). The carbon footprint of Australian health care. *The Lancet Planetary Health*, 2, e27-e35 . https://www.thelancet.com/journals/lanplh/article/PIIS2542-51961730180-8/fulltext

12. Burch, H., Anstey, M. & McGain, F (2021). Renewable energy use in Australian hospitals. *Medical Journal of Australia* . Accessed Aug 3rd 2026 at https://www.mja.com.au/system/files/2021-04/Burch%20mja20.01466%20-%2022%20April%202021.pdf

13. Australian Institute of Health and Welfare (2026). *Australian hospitals at a glance.* https://www.aihw.gov.au/hospitals/overview/hospitals-at-a-glance

14. Chrisman, M. (2025). Making the case for all-electric hospitals. *Healthcare Design Magazine.* https://healthcaredesignmagazine.com/trends/159938how/159938/

15. NHS Trust (2026). *Reducing the environmental impact of powering our hospitals.* https://www.imperial.nhs.uk/about-us/news/reducing-the-environmental-impact-of-powering-our-hospitals

16. ibid.

17. ibid.

18. UNSW Sydney (2025). *UNSW powers ahead.* https://www.unsw.edu.au/newsroom/news/2025/06/unsw-powers-ahead-college-electrification-leads-the-sustainability-charge

19. Melville-Rea, K., & Arndt, S. K. (2024). Net-zero heroes? Climate change mitigation efforts and strategies across Australian Group-of-Eight universities. *Sustainability*, *16*(7), 2937. https://doi.org/10.3390/su16072937

20. Hewett, R. (2022). *Public hospital funding: an overview.* https://www.aph.gov.au/About_Parliament/Parliamentary_departments/Parliamentary_Library/Research/FlagPost/2022/July/Hospital-funding

21. Berquist, V. (2024). Private equity investment in health care delivery, Australia, 2008-2022. *Medical Journal of Australia.* https://www.mja.com.au/journal/2024/220/7/private-equity-investment-health-care-delivery-australia-2008-2022

22. Carbon Risk Real Estate Monitor (2026). *INREV identifies CRREM Misalignment Year as a material input for valuation.* https://crrem.org/news-article/inrev-crrem-misalignment-year/

23. ibid.

24. Department of Climate Change, Energy, the Environment and Water (2025). Net zero. https://www.dcceew.gov.au/climate-change/emissions-reduction/net-zero

25. Op. cit. Australian Centre for Disease Control (2023).

26. Armstrong, F. (2026). The health sector – led campaign to realise Australia's national Strategy on health and climate change. The Journal of Climate Change and Health, Volume 28, 2026, https://doi.org/10.1016/j.joclim.2025.100624

27. Australian Medical Association (2023). One Health position statement. https://www.ama.com.au/articles/one-health-position-statement

28. Royal Australasian College of Physicians (2026). Physicians call for fossil fuel phase out due to severe health impacts. https://www.racp.edu.au/news-and-events/media-releases/physicians-call-for-fossil-fuel-phase-out-due-to-severe-health-impacts

29. Doctors for the Environment (2024). Fossil fuels are a health hazard. Accessed 3rd August 2026 at https://assets.nationbuilder.com/docsenvaus/pages/1412/attachments/original/1723787686/Fossil_Fuels_Health_-2_compressed.pdf?1723787686

30. Royal Australasian College of Physicians (2026). A healthy future beyond fossil fuels position statement. https://www.racp.edu.au//docs/default-source/advocacy-library/racp-health-fossil-fuels-position-statement.pdf

31. Healthy Futures (2026). All-electric healthy hospitals. https://www.healthyfutures.net.au/all_electric_healthy_hospitals

32. ibid.

33. Commonwealth of Australia (2025). Trajectory for low energy buildings update. https://www.energy.gov.au/sites/default/files/2025-08/update-to-the-trajectory-for-low-energy-buildings.pdf

34. ibid.

35. ibid.

36. Infrastructure Australia (2021). Guide to Economic Appraisal. www.infrastructureaustralia.gov.au/sites/default/files/2024-02/Assessment Framework 2021 Guide to economic appraisal.pdf

37. Department of Health and Human Services Victoria (2026). Environmental performance reporting 2024-25 machine readable dataset https://www.health.vic.gov.au/sites/default/files/2026-02/environmental-performance-reporting-2024-25-machine-readable-dataset.xlsx

38. Op. cit. Burch, H., Anstey, M. & McGain, F. (2021).

39. Department of Climate Change, Energy, the Environment and Water (2025). Australia's emissions projections 2025. https://www.dcceew.gov.au/climate-change/publications/australias-emissions-projections-2025

40. Victorian Health Building Authority (2026). Renewable electricity in public hospitals. https://www.vhba.vic.gov.au/fact-sheet/renewable-electricity-public-hospitals

41. Op. cit. Department of Climate Change, Energy, the Environment and Water (2025)

42. Infrastructure Australia (2024). Valuing emissions for economic analysis. https://www.infrastructureaustralia.gov.au/publications/valuing-emissions-economic-analysis

43. Op. cit. Infrastructure Australia (2021).

44. Op. cit. Infrastructure Australia (2021).

45. Op. cit. Infrastructure Australia (2021).

46. Australian Bureau of Statistics (2020). *Survey of motor vehicle use, Australia.* https://www.abs.gov.au/statistics/industry/tourism-and-transport/survey-motor-vehicle-use-australia/latest-release

47. National Transport Commission (2025). *Light vehicle emissions intensity in Australia: trends over time report.* https://www.ntc.gov.au/light-vehicle-emissions-intensity-australia

48. Op. cit. Infrastructure Australia (2024).

49. Op. cit. Infrastructure Australia (2021).

50. Thanekar, U. D., Hensher, M., Patrick, R., Keel, G., & Forrester, M. (2024). Exploring opportunities to reduce scope 3 emissions in renewably powered health services. *Medical Journal of Australia*, 220(11), 550–553. https://doi.org/10.5694/mja2.52308

Image Credits

Cover Image: Hospital Emergency Entrance, Peterspiro, Getty Images

Image 1: Celebrating 10 years of Healthy Futures, 22nd June 2025, Healthy Futures

Image 2: Veja Mate Offshore Wind Farm, source: Global Energy World

Image 3: Artist Impression: Aerial view at dusk, Victorian Health Building Authority

Image 4: Wind Turbines on a Mountain, Francesco Ugaro , Pexels.

Image 5: Solar Farm Array Generating Clean Renewable Energy,Tartezy Images

Image 6: Infografía. Hospital Vithas Valencia Turia. España, OHLA Progress Enablers, 18 October 2023, https://www.ohla-group.com/ohla-amplia-su-cartera-de-infraestructuras-hospitalarias-con-la-adjudicacion-del-hospital-vithas-

Image 7: Castle Hill hospital now completely powered by it's own on solar energy, NHS, 2022. https://www.hey.nhs.uk/news/2022/05/09/castle-hill-hospital-now-completely-powered-by-its-own-solar-energy/

Image 8: Solar panel technician installing solar panel system, ArtistGNDphotography, Getty Images Signature.

Image 9: Castle Hill Hospital, NHS, https://www.nlg.nhs.uk/hospitals/castle-hill/

Image 10: Kangaroo Island Hospital, Daily SA, https://www.indailysa.com.au/news/in-depth/2025/05/30/sas-first-electric-hospital-sets-tone-for-climate-ready-health-system

Image 11: Canberra Hospital opened its first all-electric building in August 2024 (own image).

Image 12: Solar Panel Technician with Drill Installing Solar Panels, zstockphotos, Canva Pro

Image 13: Smart Charging Technology, St Vincents Hospital, Ocular, https://ocularcharging.com.au/case/st-vincents-hospital/

Image 14: Frankston Hospital Redevelopment, Victorian Health Building Authority, www.vhba.vic.gov.au/health/hospitals/frankston-hospital-redevelopment

Appendix

Input	Source/ Assumption
Electrification benefit timing	Savings assumed to start from six months after costs incurred. 50% of the savings applied in the year of electrification, 50% in the following year.
Near-term energy price Retail electricity price: • VIC: $154 per MWh • NSW: $242 per MWh • QLD: $198 per MWh • SA: $196 per MWh • NT: $168 per MWh • WA: $168 per MWh • TAS: $160 per MWh • ACT: $242 per MWh Retail gas price: • VIC: $22.28 per GJ • NSW: $22.21 per GJ • QLD: $20.63 per GJ • SA: $21.71 per GJ • NT: $19.80 per GJ • WA: $19.80 per GJ • TAS: $22.08 per GJ • ACT: $22.21 per GJ	Wholesale electricity price sources • Australian Energy Regulator. State of the Energy Market 2025. Wholesale electricity base future price for 2026, 2027 and 2028 (futures as priced 15 April 2025). Historic volume weighted weekly average prices. (VIC, NSW, QLD, SA, TAS) • Australian Energy Market Operator (AEMO). Time-weighted reference trading prices for the Wholesale Electricity Market (WEM) (2023, 2024, 2025). (WA) Electricity price method • Wholesale prices for 2026 estimated based on base futures if available. • For Tasmania base futures were not available, historic data was used with an adjustment based on the typical reduction in energy consumption seen across eastern states. • For WA, average WEM trading prices from 2023 to 2025 were used. • ACT and NT were assumed to have the same price as NSW and WA respectively. • Retail price assumed to be 2x wholesale price. Wholesale gas price sources • ACIL Allen. 2025 Natural Gas Price Forecast Report, prepared for Australian Energy Market Operator (AEMO) Gas Statement of Opportunities 2026. ResCom Forecast Wholesale Gas Prices for VIC, NSW, QLD, SA, NT, TAS. Gas Price Method • Wholesale prices for 2026 estimated based on forecast data. • ACT and WA were assumed to have the same price as NSW and NT respectively. • Retail gas price assumed to be 1.65x wholesale price. • No distinction has been made between bottled gas and gas provided in a pipeline in this analysis.
Energy price escalation	Gas and electricity prices assumed to increase with inflation.
Energy Emissions Factors	State based electricity grid emissions factors (Scope 2) as sourced from DCCEEW Australia's Emissions Projections 2025. For WA, the grid electricity emissions factor (Scope 2) for WEM and NWIS markets have been averaged (without weighting). Renewable energy procurement activities by individual departments or organisations has not been considered in this study, and would be an additional benefit. All gas, whether provided in a pipeline or bottled, has used an emissions factor of 51.53 kg CO_2 per GJ, as sourced from DCCEEW NGA Factors 2025.
Carbon Price	Infrastructure Australia Valuing emissions for economic analysis. This number has been adjusted from 2023 dollars to 2026 using a CPI inflation rate of 10.4%. The carbon price scales from $84 to $416 depending on year of emission.

HEALTHY FUTURES

Lucid

Healthy Futures is a grassroots organisation of healthcare workers and community members working to limit climate change and its health impacts. Healthy Futures is an affiliate group of Friends of the Earth Australia.

DONATE chuffed.org/project/gas-free-healthy-hospitals

Connect with us!

facebook.com/HealthyFuturesAU

admin@healthyfutures.net.au

instagram.com/healthyfuturesau

linkedin.com/company/healthy-futures-au