



Brotherhood
of St Laurence

Working for an Australia free of poverty

Submission to National Energy Performance Strategy consultation paper

January 2023

Summary

Improving energy efficiency will be critical to Australia's efforts to mitigate climate change and improve energy affordability. Accordingly, the Brotherhood of St. Laurence (BSL) welcomes the National Energy Performance Strategy (NEPS). Our submission focuses on home energy efficiency for households facing disadvantage, drawing from BSL's experience of energy efficiency pilot delivery, policy work, and research.

Too many households facing disadvantage are missing out on the benefits of energy efficiency, subjecting them to health risks, financial burden and increasing exposure to the extreme temperatures caused by climate change. Through the NEPS process, we urge government to ensure these household home energy upgrades are a priority, and to include energy efficiency in measures of energy stress. The NEPS should also be consistent with limiting global warming to 1.5° C.

Households facing disadvantage experience barriers to improving energy efficiency, including those related to finances, information, trust, split incentives and behavioural factors. We recommend policies to address these barriers, such as minimum energy efficiency standards for rented homes, grants for homeowners and information provision. We also recommend the establishment of a body to coordinate energy efficiency efforts, with a focus that includes addressing energy stress and climate change. To enable effective implementation of the NEPS, governments will need to ensure the workforce and markets are ready to deliver.

Recommendations

- 1. We recommend that the government prioritise interventions for existing homes, with a focus on low-income and energy stressed households, (including addressing information, capital, and trust barriers).**
- 2. Conduct studies:**
 - to collect baseline data on a representative sample of existing homes, including low-income people's homes, with information about tenure, energy stress.**
 - to improve the evidence base on the impacts of energy efficiency on health and wellbeing.**

- 3. Stop the expansion of the gas network to new areas (including estates).**
- 4. Prioritise electrification of low-income households and upgrading of the appliances/fixtures specified in the body of this submission.**
- 5. Accelerate the implementation of minimum energy efficiency standards for rented homes.**
- 6. The NEPS should facilitate governments funding energy efficiency upgrades in social housing.**

1 Introduction

The Brotherhood of St. Laurence (BSL) welcomes this opportunity to comment on the National Energy Performance Strategy (NEPS) consultation paper issued by the Australian Department of Climate Change, Energy, the Environment and Water (DCCEEW).

Energy efficiency is a vital tool to reduce energy stress and mitigate climate change, as well as improving health and creating employment. Too often, households facing disadvantage miss out on the benefits of energy efficiency, and we urge governments to ensure that all households can access energy upgrades via the NEPS, especially at this time of high energy prices. The NEPS should also be consistent with limiting global warming to 1.5 °C.

A key concern for the BSL is that, while the benefits of energy efficiency are well established, they are currently not being fully realised or even measured in Australia. Home energy efficiency is a key determinant of energy stress, and other jurisdictions recognise this in policy, as should Australia. For example, in the United Kingdom, energy efficiency is included in the definition and measurement of energy poverty, enabling potential solutions to address both holistically.

Our submission is focused on energy efficiency in the residential sector, particularly for households facing disadvantage. We do, however, recognise the importance of, and savings available from, improving energy efficiency across the economy.

Improved energy efficiency is a rich creator of employment (IEA 2020), including jobs that benefit local communities. We must ensure that we have a suitably qualified and trained workforce to take advantage of these opportunities.

The Brotherhood of St. Laurence and energy efficiency

The Brotherhood of St. Laurence (BSL) is a social justice organisation working alongside people experiencing disadvantage to prevent and alleviate poverty across Australia. Our approach is informed directly by the people experiencing disadvantage and uses evidence drawn from our research, together with insights from our programs and services, to develop practical solutions that work.

Our Climate Change & Energy team has been at the forefront of energy efficiency pilots and policy advocacy for over a decade. We have run, and conducted research on, a series of innovative energy efficiency pilots targeting low-income homes, such as:

- the Home Energy Efficiency Upgrade Program (HEEUP), replacing over 790 hot water systems and testing subsidy models (Commonwealth funded in 2014–16).
- Home Energy Assist: Affordable Retrofits, testing deep efficiency retrofits for 88 households, funded by the Victorian Government (2018–19).
- the Residential Energy Scorecard Not for Profit trial (Victoria) – residential energy efficiency scorecards and advice for over 250 low-income households.
- Climate Safe Homes, which has developed a new delivery model to make energy efficiency upgrades available to those impacted by chronic health challenges, aiming to maintain safe indoor temperatures and reduce their energy bills – and greenhouse gas emissions – by

working closely with partners in the health sector. (Current, funded by Lord Mayor's Charitable Foundation).

- assisting over 8000 households with advice through the Energy Assistance Program and access to the Power Saving Bonus.

Our team uses the lessons from these pilots, as well as from research, to advocate for policy related to energy efficiency and climate change. We have informed the design of government-run energy efficiency programs in several states, as well as regularly contributing to policy processes.

The subheadings of this submission refer to the questions in the consultation paper.

2 Residential, particularly low-income households and renters

What are the key opportunities to improve the energy performance of new and existing residential buildings?

Existing homes

Existing homes, especially those built before efficiency requirements commenced in 2003, present a high level of need and a large opportunity for the improvement of energy performance. People facing disadvantage more commonly live in older and less energy efficient homes than newly built and more energy efficient ones.

Recommendation:

We recommend that the government prioritise interventions for existing homes, with a focus on low-income and energy stressed households, (including addressing information, capital, and trust barriers).

Although large-scale evidence on the performance of Australian homes is scarce, the data we have suggests that most homes are very inefficient. We recommend that the NEPS should include a study to collect baseline data on a representative sample of existing homes, including low-income people's homes, with information about tenure, energy stress, and health impacts. Linking the work to a definition of energy poverty, as in the United Kingdom, would be ideal.

While the current dataset is relatively small, the most common rating for existing homes that have had an energy audit is 1.0/10 (where 0 means the home 'does practically nothing to reduce the discomfort of hot or cold weather'), and over 70% of homes score under 3/10 (CSIRO 2023; NATHERS 2022). In contrast, most new homes are rated between 6 and 7 out of 10 (CSIRO 2023), due to National Construction Code (NCC) requirements.

See following sections for recommendations about policies and specific upgrade measures including minimum standards and grants.

Recommendation:

Conduct studies:

- **to collect baseline data on a representative sample of existing homes, including low-income people's homes, with information about tenure, energy efficiency and energy stress.**

- **to improve the evidence base on the impacts of energy efficiency interventions on health and wellbeing.**

New homes

We support improvements to the NCC energy efficiency requirements, which are an efficient and effective way to improve the energy performance of new homes.

We recommend that the expansion of the gas network to new areas (including estates) be stopped. Due to the efficiency of new electric appliances, all-electric homes are cheaper to run and produce lower emissions than those with gas (ATA 2018); and they already produce zero emissions when powered by renewables. Non-electrification pathways for decarbonising domestic gas (e.g. hydrogen or biogas) are unproven and likely to require future replacement of appliances and piping. Hydrogen could also present significant climate risks, depending on the level of leakage (Ocko and Hamburg 2022; Derwent et al. 2006). Gas networks also risk becoming unviable, as reflected in the regulator’s decisions to fast-track recovery of their assets in Victoria and the ACT (AER 2021, 2022). Connecting more homes to gas runs counter to government policies and is likely to increase the cost of the gas transition.

Recommendation:

The expansion of the gas network to new areas (including estates) be stopped.

How does poor energy performance impact on disadvantaged communities?

People facing disadvantage who live in homes with poor energy performance are likely to face additional stressors on their finances, health, wellbeing and climate resilience. Large-scale Australian data linking home efficiency with cost and health data is relatively sparse, representing a research gap that should be filled, but we can draw conclusions from the overseas data and smaller domestic studies.

Lower-income households and other groups facing disadvantage – such as JobSeeker and Disability Support Pension recipients, renters, and people with chronic health conditions – face much higher levels of energy stress than average (Bryant et al. 2022). Alongside income, expenditure, and other factors, poor home energy performance is likely to be a key contributor to this level of energy stress. The impacts can be severe and include bill payment difficulty, energy rationing (with health and social function impacts such as not using heating in winter), and reduced spending on non-energy needs.

In terms of health impacts, damp or mouldy homes can increase the risk of respiratory illness and asthma in children, and cold homes are associated with increased risk of heart attacks and strokes (Braubach et al. 2011; Maidment et al. 2014). By contrast, the Healthy Homes study found lower healthcare costs, fewer days absent from activities, and better quality of life following energy upgrades in low-income Victorian homes (Sustainability Victoria 2022). Overseas studies have linked efficiency upgrades to improved mental health and lung function (Liddell and Morris 2010), reduced incidence of chronic obstructive pulmonary disease and high blood pressure, reduced severity of asthma (Barton et al. 2007), and reduced summer and winter mortality (IEA 2014).

What are the opportunities to improve the energy performance of residential buildings for low-income households?

Table 1 presents our analysis of the kinds of upgrade measures that should be included in NEPS initiatives for low-income households. We note that there is a wide variation in savings and costs, and that the costs/benefits we present are indicative only. As shown, we recommend prioritising the following improvements immediately:

- reverse-cycle air conditioning for heating and cooling
- efficient hot water (heat pump and solar)
- rooftop solar PV
- building fabric improvements including insulation and weather sealing:
- energy audits
- provision of information and advice





See following sections for policy recommendations.

We also recommend prioritising electrification. Gas is increasingly expensive, having nearly doubled in price since 2009 (SVDP and Alvis Consulting 2022:8), and electrification is a mature pathway that saves households significant running cost in most cases (ATA 2018). A Victorian household in a detached house can save over \$1,000 per year by electrifying, or more if they have solar panels (Victorian Government 2022).

Recommendation:

Prioritise electrification of the homes of low-income people and those facing energy stress and upgrading of the appliances/fixtures specified above.

Table 1 Upgrade measures to be included in NEPS initiatives for low-income households

| | Fixture / appliance | Payback | Ease of implem. | Rec. for upgrade program? | Comment | Industry / tech ready to go at scale? | Approx. cost | Approx. saving p.a. | Assumed pathway |
|---|-----------------------------|---------|-----------------|---------------------------|--|--|---|---|---|
|  | Efficient heating & cooling | ★★★★ | ★★★★★ | ✓ | Heating is major gas user in some states (esp. Vic). Substantial savings from switching from gas ducted heating. | Yes. Mature technology and industry. Some supply/cost pressures. | \$2,000 to \$3,500 (room) \$9,500 (house, for 3 units) | \$292 ¹ \$570 (no solar) ² \$1,250 (solar) ³ | 3-star gas heater to 3.5-star reverse cycle AC (RCAC) Gas ducted / evap. cooling to multi split RCAC |
|  | Solar PV | ★★★★★ | ★★★★★ | ✓ | Excellent economic proposition; helpful but not essential to electrification. Not viable in most flats. | Yes. Some supply/cost pressures. | \$6,040 ⁴ | \$950 ⁵ | 6 kW rooftop solar |
|  | Efficient hot water | ★★★ | ★★★★★ | ✓ | Relevant to virtually all households. Large gas user. Mature, safe technology. Relatively slow paybacks. | Yes. However, some scaling issues with installers and some industry development may be needed. | \$2,000 to \$4,200 | \$180 ⁶ | Gas storage to heat pump |
|  | Enabling infra. | ★ | ★★★ | ✓ | Essential for electrification but no direct benefits other than enabling other upgrades and avoiding service charge. | Yes, but some industry education/development may be needed. | Variable, but often >\$1500 | N/A (unless avoided service charge is counted - ~\$300) | Gas meter abolishment (~\$1000); switchboard replacement (~\$500) ⁷ |

¹ <https://www.sustainability.vic.gov.au/energy-efficiency-and-reducing-emissions/save-energy-in-the-home/reduce-heating-costs-at-home/calculate-heating-costs>

² https://www.energy.vic.gov.au/__data/assets/pdf_file/0039/579882/Victorias-Gas-Substitution-Roadmap-Embracing-electricity-to-cut-your-bills-at-home.pdf



³ Victorian Government Gas Substitution Roadmap, p.27

⁴ <https://www.solarchoice.net.au/residential/solar-power-system-prices/>

⁵ Victorian Government Gas Substitution Roadmap, p.26

⁶ https://www.energy.vic.gov.au/__data/assets/pdf_file/0039/579882/Victorias-Gas-Substitution-Roadmap-Embracing-electricity-to-cut-your-bills-at-home.pdf

⁷ <https://www.heatingupgrades.vic.gov.au/upgrades-owner-occupiers>

| | Fixture / appliance | Payback | Ease of implem. | Rec. for upgrade program? | Comment | Industry / tech ready to go at scale? | Approx. cost | Approx. saving p.a. | Assumed pathway |
|---|---------------------|---------|-----------------|---------------------------|---|---|---|---------------------------------|--|
|  | Building fabric | ★★★ | ★★ | Consider | Can save significant energy but industry is underdeveloped. Helpful but not necessary for electrification. Double glazing can provide large saving but very expensive in Australia. | Insulation may require industry development ⁸ – Weather sealing is valuable but requires further development. Limited number of providers. | \$13.68/m ² ⁹ \$1781 ¹⁰ | ~\$385 ¹¹ | R5 ceiling insulation R3, R4, R6 ceiling insulation |
|  | Energy audits | ★★ | ★★★ | Consider | Could be used to provide households with personalised advice. | Very few assessors in some areas ¹² | >\$400 ¹³ | ~9% of energy use ¹⁴ | Residential Efficiency Scorecard |

⁸ See the [Industry-led roadmap for quality control and safety in insulation installation](#)

⁹ <http://icanz.org.au/wp-content/uploads/2013/04/ICANZ-CeilingInsulationReport-V04.pdf>

¹⁰ BSL Home Energy Assist Affordable Retrofits Project Documentation Report (unpublished)

¹¹ <http://icanz.org.au/wp-content/uploads/2013/04/ICANZ-CeilingInsulationReport-V04.pdf>

¹² <https://www.homescorecard.gov.au/find-a-scorecard-assessor#heading-6>

¹³ BSL experience of delivery; commercial websites (<https://www.goinggreensolutions.com.au/scorecard-energy-efficiency-assessing-services.html> ; <https://www.greenmoves.com.au/residential-efficiency-scorecard/>)

¹⁴ <https://engage.vic.gov.au/home-energy-rating-assessment>

What are the financial and non-financial barriers to uptake of energy efficiency upgrades for low-income households, and what can be done to overcome them?

The most common barriers to the uptake of energy efficiency upgrades in low-income households can be divided into four categories, explained in Table 2. Householders often experience multiple barriers at once.

Table 2 Barriers to uptake of energy efficiency upgrades in low-income households

| Barriers | Groups affected | Problem description | Policies to address barriers (see next question) |
|--|---------------------------------|---|--|
| Lack of capital | Low-income homeowners | Many homeowners lack the funds to cover the upfront cost of energy upgrades, either fully or partly. | <ul style="list-style-type: none"> Grants/rebates (inc. gov rebates, white certificate schemes) No-interest loans |
| Inadequate information or knowledge | All | Many householders lack information about the benefits, availability or payback times of energy upgrades. Decisions are often made quickly when an appliance breaks down, and may tend towards like-for-like replacement (e.g. replacing a gas hot water system with another one rather than electrifying). Some people will require personalised advice (some paid and some not) and organisations like BSL can provide this. | <ul style="list-style-type: none"> Information provision incl. one-stop shops Free home audits Mandatory energy efficiency disclosure Training of tradespeople |
| Trust | All | Many households do not trust sources of information about energy efficiency and electrification. | <ul style="list-style-type: none"> One-stop shops Training of tradespeople Grants/rebates with compliance requirements on providers |
| Behavioural factors | All | Behavioural barriers include resistance to change, bounded rationality, cognitive biases (Kowalska-Pyzalska 2009), responses to uncertainty, and the free-rider problem (i.e. a sense that others will act). | <ul style="list-style-type: none"> Information provision Personalised advice |
| Split incentives | Private and non-private renters | <p>Renters generally do not have the right to make upgrades to their home. Even if they do, they have little incentive because many leases are short and insecure, so upgrades that tenants buy may not pay for themselves before the tenant leaves the home.</p> <p>Landlords have little incentive to improve their properties' efficiency because they do not benefit from the tenant's lowered energy bills or improved health, and may be unaware of inefficiencies.</p> | <ul style="list-style-type: none"> Minimum efficiency standards for rentals Tax incentives dependent on landlord performing energy upgrades |

What actions should be prioritised to assist low-income households to improve energy efficiency in their homes?

BSL recommend the following policies as priorities for improving energy efficiency for low-income households:

For renters: minimum standards for energy efficiency

While we welcome the work of Australian governments on the National Framework for Minimum Rental Energy Efficiency Requirements, we recommend that work to implement standards in all states/territories is substantially accelerated. Standards should be either features-based, covering essential items such as heating/cooling, insulation and hot water; or based on a building rating such as the Residential Efficiency Scorecard.

We welcome the first steps taken by Victoria and the ACT to introduce standards, and would like to see them expanded and strengthened. Victoria's standards have shown that features-based standards can be introduced relatively simply and quickly, especially for heating and cooling. Standards involving products with less well-developed markets (such as weather-sealing and home audits) are likely to require market development and a longer lead time.

Voluntary approaches will not be as effective as standards at improving energy efficiency, largely because landlords have little incentive to make upgrades from which they do not directly benefit. Voluntary subsidised programs have seen low uptake from landlords: for example, an insulation program run in 2008 by the Commonwealth aimed to reach 500,000 rented homes but reached fewer than 6,000 in practice (Auditor General 2010). Existing tax incentives for landlords also favour like-for-like replacements rather than upgrades, so even landlords who want to improve efficiency face a disincentive to do so.

Recommendation:

Accelerate the implementation of minimum energy efficiency standards for rented homes.

For low-income homeowners: subsidies and information

Through the NEPS, governments should enable (or incentivise) households to access efficiency upgrades that they could not otherwise afford by providing grants and rebates. We suggest tiered support depending on the household's level of need:

- **Information and advice for all.** Households with relatively high capacity to improve their energy efficiency or electrify without financial assistance are offered trusted information, personalised advice and very limited additional support. Ideally, government would set up a one-stop shop, which would provide information, advice and an access point to existing programs.
Ideally, a one-stop shop could be integrated with a large sustainable energy authority along similar lines to the Sustainable Energy Authority of Ireland (which provides support to households and business, as well as data and insights on energy efficiency and sustainable energy). This authority could be the same as the energy performance body recommended below.
- **Tailored grants and subsidies for those with moderate capacity.** Households with moderate/limited capacity to upgrade their own homes could be offered the support above, as well as access to a grant for energy upgrades, which could be provided at point of sale (as has occurred in NSW) or by applying for a rebate (like Victoria's Solar Homes). Upgrades should include rooftop solar, reverse cycle air-conditioning, hot water and optional energy audits.

- **Tailored support for those with high needs.** Households with low capacity to upgrade their own homes (due to energy hardship, chronic health issues or other factors) could be offered a higher level of support, such as a larger subsidy and more tailored assistance. BSL successfully trialled a similar model of assistance for the Victorian Government in 2018: an assessor audited a home, recommended upgrades and then provided access to a grant of 50% of the upgrade cost from a trusted supplier. This gave households a source of trusted advice and guidance on appropriate upgrades.

Recommendation:

Implement a program of grants and tailored support according to need.

What options are available to support public and community housing tenants?

For public and social housing, we recommend that the NEPS facilitate governments funding the following activities (potentially co-funded with community housing operators):

- upgrading electric appliances to more efficient models at end-of-life
- replacement of gas appliances with electric equivalents (which can also often provide cooling where it has been absent)
- upgrading building fabric.

Consideration should be given to providing funding for the marginal additional cost of upgrading to more efficient systems, and/or meeting the costs of replacing inefficient assets earlier than originally scheduled.

Upgrades in social housing could be used carefully to develop markets for upgrades where markets are currently thin (thus aiding future policy regarding private homes). This may require coordination and planning to ensure upgrades are effectively prioritised and phased, particularly in the current context of shortages of both labour for many trades and materials and supplies.

Recommendation:

the NEPS facilitate governments funding the upgrades specified above in social housing.

3 Regional, remote and First Nations

What are the key opportunities to ensure the benefits of improved energy performance are available to First Nations Australians, and Australians located in remote communities?

First Nations communities, especially in remote areas, face particular and often severe barriers to energy access and affordability (see Longden et al. 2022; QCOSS 2014) placing additional stressors on health, finances and wellbeing in households that are often already strained.

The NEPS should prioritise supporting First Nations-led solutions re energy efficient and climate-resilient homes, co-designed with Aboriginal and Torres Strait Islander groups. This will need to recognise the differences in location, e.g. remote vs city.

Regional and remote areas often have thin (or non-existent) markets for certain upgrade types, such as insulation and weather-sealing. This may be prohibitive unless market development (or temporary relocation of installers from other areas) is undertaken.

4 Governance

What new or modified coordination mechanisms or institutional responsibilities would be appropriate to better drive energy performance action in the future?

Governments currently intervene to promote energy efficiency at multiple levels (Commonwealth, State, local). There may be scope to improve the coordination and effectiveness of these efforts. Governments should establish a national body dedicated to improving energy efficiency, working across jurisdictions to promote and coordinate energy efficiency efforts, including a focus on addressing energy stress in households facing disadvantage and ensuring the NEPS is consistent with our Paris Agreement commitments. Such a body could align energy efficiency programs, monitor progress and evaluate the effectiveness of existing programs. implement programs involving co-design and co-funding across jurisdictions, and fund research and piloting of new and innovative programs.

The body should also interact regularly and deeply with other parts of government, such as those responsible for energy, climate policy, housing, skills and transport, because energy performance has significant implications for these areas that are not always well considered. For example, improving energy performance could help offset the major additional load that will be placed on electricity networks by home electrification and the rollout of electric vehicles, yet energy market bodies rarely consider energy efficiency at present.

5 Supply chains and workforce

Improving energy efficiency presents a rich opportunity to create jobs (IEA 2020), but the industry faces some challenges in Australia. Government policy, likely involving the skills system, could help develop the industry and create jobs, as outlined in RACE for 2030's recent report (2021).

Improvements in energy efficiency will both create new jobs and change the nature and scale of existing jobs. In this context, it will be important that government supports and provides pathways to decent work. Government should also address the barriers to the "decent work and quality jobs" mandated by the Paris Agreement. For example, jobs in gas may decline as employment in electric appliances and other efficiency-related fields expands, and workers should be supported to retrain and find work. In other cases, supporting tradespeople with information about new technologies (e.g. heat pump hot water systems for plumbers) could help develop the market for energy efficient products. Currently the skills system has been largely siloed from Australia's response to energy efficiency and climate, highlighting an immediate role for government to bring stakeholders in industry and education into closer collaboration.

What are the most critical supply issues hindering energy efficiency action?

In BSL's experience of energy efficiency program delivery, we have found that markets for some important products/services, such as weather-sealing and insulation, are thin even in major cities;

they are likely to be worse in regional areas. Some products, such as double-glazed windows, are consequently very expensive compared to overseas prices, which increases payback times and discourages uptake.

There is also a shortage of services to provide households with home assessments and advice, so many households do not have an opportunity to gain information about which upgrades would benefit them, which in turn reduces demand for some products and exacerbates the thin markets for other products.

6 Recommendations from other organisations

BSL also support the following recommendations made by our sector colleagues' submissions to this inquiry (sources indicated in brackets):

- 'Select a range of economy-wide energy performance targets that reflects objectives, with short and long-term goals consistent with limiting warming to 1.5 °C. Require the targets to be reviewed every five years and communicated in Australia's Nationally Determined Contributions (NDCs)'. (ACOSS)
- '[...] that the Government introduce ambitious corporate average fleet economy standards for light vehicles as a matter of urgency'. (Energy Efficiency Council).
- '[...] that the NEPS facilitates a partnership between Commonwealth, states and territories to ensure all social, community, public and Indigenous housing meets a NatHERS rating of at least 5 stars by 2030'. (Energy Efficiency Council).
- '[...] that the NEPS implements a package of foundation work to enable deployment of energy efficiency upgrades to rental homes at scale'. (Energy Efficiency Council).
- '[...] that the Government significantly reduce barriers for participation of energy efficiency and fuel-switching activities in the Emissions Reduction Fund to mobilise new sources of investment in energy efficiency activities'. (Energy Efficiency Council).

For further information or to discuss this submission, please contact:

Damian Sullivan

Principal, Climate Change & Energy

Email: dsullivan@bsl.org.au

Ph. 0405 141 735

David Bryant

Research Officer, Climate Change & Energy

Email: dbryant@bsl.org.au

Ph. (03) 9483 2470

Brotherhood of St. Laurence

67 Brunswick Street

Fitzroy Vic. 3065

ABN 24 603 467 024

ARBN 100 042 822

Ph. (03) 9483 1183

www.bsl.org.au

References

Alternative Technology Association [ATA] (2018) *Household fuel choice in the National Energy Market*.

Auditor General (2010) *Home Insulation Program*, ANAO, Canberra.

Australian Energy Regulator [AER] (2021) *AER allows revenue to support gas consumers in transition to renewables*, *Australian Energy Regulator*, <https://www.aer.gov.au/news-release/aer-allows-revenue-to-support-gas-consumers-in-transition-to-renewables>, accessed 2 February 2023.

— (2022) *Draft decision: AusNet Gas Services Access Arrangement 2023 to 2028*, <https://www.aer.gov.au/system/files/AER%20-%20AusNet%202023-28%20-%20Draft%20Decision%20-%20Overview%20-%20December%202022.pdf>, accessed 2 February 2023.

Barton A, Basham M, Foy C, Buckingham K and Somerville M (2007) 'The Watcombe housing study: the short term effect of improving housing conditions on the health of residents', *Journal of Epidemiology and Community Health*, 61(9):771–777, doi:10.1136/jech.2006.048462.

Braubach M, Jacobs DE and Ormandy D (2011) *Environmental burden of disease associated with inadequate housing*, World Health Organization, Copenhagen.

Bryant D, Porter E, Rama I and Sullivan D (2022) *Power pain: an investigation of energy stress in Australia*, Brotherhood of St. Laurence, Fitzroy, Vic.

CSIRO (2023) *Energy ratings: states and territories*, <https://ahd.csiro.au/dashboards/energy-rating/states/>, accessed 27 January 2023.

Derwent R, Simmonds P, O'Doherty S, Manning A, Collins W and Stevenson D (2006) 'Global environmental impacts of the hydrogen economy', *International Journal of Nuclear Hydrogen Production and Applications*, 1(1):57, doi:10.1504/IJNHPA.2006.009869.

International Energy Agency [IEA] (2014) *Capturing the multiple benefits of energy efficiency*, International Energy Agency, Paris, doi:10.1787/9789264220720-en.

— (2020) *Energy efficiency jobs and the recovery*, IEA, <https://www.iea.org/reports/energy-efficiency-2020/energy-efficiency-jobs-and-the-recovery>, accessed 2 February 2023.

Kowalska-Pyzalska A (2009) *What makes consumers adopt to innovative energy services in the energy market?*, Hugo Steinhaus Center, Wrocław, Poland.

Liddell C and Morris C (2010) 'Fuel poverty and human health: a review of recent evidence', *Energy Policy*, 38(6):2987–2997, doi:10.1016/j.enpol.2010.01.037.

Longden T, Quilty S, Riley B, White LV, Klerck M, Davis VN and Frank Jupurrurla N (2022) 'Energy insecurity during temperature extremes in remote Australia', *Nature Energy*, 7(1):43–54, doi:10.1038/s41560-021-00942-2.

Maidment CD, Jones CR, Webb TL, Hathway EA and Gilbertson JM (2014) 'The impact of household energy efficiency measures on health: a meta-analysis', *Energy Policy*, 65:583–593, doi:10.1016/j.enpol.2013.10.054.

NATHERS (2022) *Home energy star ratings: Nationwide House Energy Rating Scheme (NatHERS)*, <https://www.nathers.gov.au/owners-and-builders/home-energy-star-ratings>, accessed 27 January 2023.

Ocko IB and Hamburg SP (2022) 'Climate consequences of hydrogen emissions', *Atmospheric Chemistry and Physics*, 22(14):9349–9368, doi:10.5194/acp-22-9349-2022.

QCOSS (2014) *Empowering remote communities: experiences of Aboriginal and Torres Strait Islander customers using electricity pre-payment meters in Queensland*.

RACE for 2030 (2021) *Developing the future energy workforce*, RACE for 2030.

St Vincent de Paul Society [SVDP] and Alvis Consulting (2022) *The NEM – Volatile prices, vanishing retailers and vulnerable consumers*, Melbourne, https://www.vinnies.org.au/icms_docs/334622_2022_National_Energy_Market_-_Volatile_prices_vanishing_retailers_and_vulnerable_consumers.pdf, accessed 27 January 2023.

Sustainability Victoria (2022) *The Victorian Healthy Homes Program –research findings*, Sustainability Victoria.

Victorian Government (2022) *Gas substitution roadmap*, Victorian Government, Melbourne, https://www.energy.vic.gov.au/__data/assets/pdf_file/0037/579907/Victorias-Gas-Substitution-Roadmap.pdf, accessed 4 July 2022.