AUSTRALIAN CONSERVATION FOUNDATION

29 SEPTEMBER 2023

Submission to Senate Inquiry into Residential Electrification

Efficient Electrification of all Australian households

Recommendations:

***Recommendation 1**: Build the manufacturing base for energy efficiency and electrification equipment and appliances, such as monitoring equipment and technology, insulation, windows, shading and industrial equipment, including heat pumps, as well as advanced manufacturing including solar and wind componentry, electrolysers, batteries and grid control technology, as part of Australia's response to the US Inflation Reduction Act.*

***Recommendation 2:** The federal government should develop a targeted workplace and skills strategy, including national and regional skills assessment, subsidies for retraining at university and certificate level courses, to ensure there is a sufficient pipeline of local and international workers and students trained in the critical minerals, modern manufacturing and ensure there is the workforce in place to meet the increased demand.*

***Recommendation 3:** Establish a nation-wide professional development campaign to support electricians and plumbers to upgrade their skills understanding of opportunities to provide accurate information and continue supporting households as trusted advisers.*

***Recommendation 4:** Establish a dedicated energy efficiency, electrification, and demand management agency, including a plan for all households to get off gas, and a strategy to support renters and rental providers to electrify (including minimum standards for energy efficiency and improved tenure security).*

***Recommendation 5:** Work with states fast-track an effective nationally consistent framework for energy efficiency minimum standards (National Framework for Minimum Energy Efficiency Requirements for Rental Properties* (the National Framework), *and mandatory disclosure for rental properties, using features- or performance-based standards, facilitating assessor training, and developing a standardised certification website. The framework should be based on the Community Sector Blueprint on the National Framework for Mandatory Minimum Energy Efficiency Rental Standards, including following best practice, and adhering to the principles of the Blueprint in federally owned public housing.*

***Recommendation 6:** Prioritise electrification, insulation, hot water and space heating and cooling in any auditing and retrofit program, regardless of the level of state based minimum standards. A retrofit program could be leveraged by other jurisdictions to co-fund more impactful programs or energy efficiency minimum standards. Retrofit programs should include an auditing component and run by trusted third party social enterprises, or social or environmental organisations.*

***Recommendation 7:** Establish targets and timing for household electrification, considering household tenure, existing or new homes, and its contribution to decarbonisation.*

***Recommendation 8:** Ensure electrification makes better use of daytime generation of solar through demand response, especially for households that cannot install solar, such as renters and those without the appropriate roof.*

Recommendation 9: *State and federal governments jointly commit to significant investment to fund energy efficiency programs including energy audits and retrofits, particularly for low-income homes (public and community housing, low-income homeowners, and low-income rental properties), and that this be based on the broader measures in the National Low-income Energy Productivity Program (NLEPP) update (ACOSS 2021), including funding energy efficiency upgrades for low-income households and rentals. Such programs should be run by trusted third party social enterprises, or social or environmental organisations, and include a transition plan for all households to electrify and get off gas.*

Recommendation 10: *Integrate an education component into electrification policy, ensuring service providers, tradespeople and households understand the full benefits and opportunities for electrification, and the problems of using gas.*

Recommendation 11: *The federal government work with states and territories to co-fund electrification and appliance upgrades, including grants for extremely low-income households, and no- and low-interest loans for low- and medium-income households.*

Recommendation 12: *Integrate energy literacy programs with other assistance measures, such as rebates, finance and upgrade and auditing programs, and ensure energy advice and support programs are maintained at the decadal scale.*

Recommendation 13: *The federal government update Australian tax law to limit negative gearing only to properties that undertake energy efficiency upgrades.*

Recommendation 14: *Develop an economy wide electrification plan as part of the National Energy Transformation Partnership (NETP), consulting with sector peak bodies and stakeholders, thereby ensuring more affordable and low emissions electricity.*

Introduction – Electrification for All

The Australian Conservation Foundation (ACF) welcomes the opportunity to make a submission to the Senate Economics References Committee on Residential Electrification. ACF strongly supports electrification of all new and existing Australian households, that those households should have access to improved energy performance to benefit household energy equity, affordability and health, and that they should be powered by clean and sustainable renewable energy accelerating progress to zero emissions and a more resilient economy and community.

ACF is Australia's national environment organisation. We are 700,000 people who speak out for the air we breathe, the water we drink, and the places and wildlife we love. We are proudly independent, non-partisan and funded by donations from our community. ACF believes Australia and the world face an unprecedented climate and mass extinction crisis caused first and foremost by digging up and burning fossil fuels like coal, oil, and gas. Transitioning Australia's electricity sector to a clean, electrified, and renewable energy-based system is a critical element of Australia's transition to net zero emissions and economy-wide action on climate change. The Australia's emissions projections 2022 report[1] found that currently Australia will not achieve its target of a 43% reduction in

[1] https://www.dcceew.gov.au/climate-change/publications/australias-emissions-projections-2022

emissions by the year 2030 (based on 2005 levels), but that it'll likely be closer 32% (but excludes the safeguard mechanism (SGM) and the target of 82% clean energy target). Australia's policies and programs must however be robust and effective to ensure we remain below 1.5 degrees of warming, including no new coal and gas, and renewable energy, electrification targets and decarbonisation goals need to contribute.

Demand side solutions, such as electrification, but also energy efficiency, demand response, and fuel-shifting (especially getting off gas) are the big environmental, economic and social opportunities for Australia. Electrification reduces emissions and the cost of living, and electric appliances are more efficient than their fossil fuel-based counterparts, meaning that less energy overall will be needed for a renewably powered electrified economy.

Australia will not be able to decarbonise without electrification and energy efficiency, which fortunately are also a jobs bonanza and anti-inflationary. ACF is pleased to see the more wholistic approach to energy performance and electrification and congratulates the Federal Government in its recent *Energy Savings Package*,[2] including the $1.3B *Household Energy Upgrades Fund*. Barriers to electrification in the residential sector, however, are not just economic and financial in nature. There are social and regulatory barriers, such as tenure type and the agency of renters, mis- and dis-information and issues around trust, or different priorities in people's lives that also need addressing, many of which we have solutions for if we had the political will.

Economic opportunities of household electrification

> ***Recommendation 1**: Build the manufacturing base for energy efficiency and electrification equipment and appliances, such as monitoring equipment and technology, insulation, windows, shading and industrial equipment, including heat pumps, as well as advanced manufacturing including solar and wind componentry, electrolysers, batteries and grid control technology, as part of Australia's response to the US Inflation Reduction Act.*

A key challenge for widespread decarbonisation is deployment. This includes a skilled workforce, but also supply chains, including distribution, materials, technology and manufacturing. Most nation states are planning for transforming their energy systems, including looking for opportunities to decarbonise through renewable energy and improved energy performance and electrification. This is creating competition for raw and processed materials, supply chains and skilled workers. The current supply chain issues offer an opportunity to improve or create Australian manufacturing of energy efficiency and electrification equipment and appliances, such as monitoring equipment and technology, insulation, windows, shading and industrial equipment, including heat pumps, such as locally manufactured Reclaim heat pumps.[3] Lower cost renewable energy holds the potential for a renaissance of Australian manufacturing, with the potential for Australia to produce at scale a range of renewable

[2] https://ministers.treasury.gov.au/ministers/jim-chalmers-2022/media-releases/helping-australians-save-energy-save-energy-bills
[3] https://earthworkerenergy.coop

energy products, including batteries, wind turbine parts, solar panels, and biofuels (TNI 2022). Other areas than could be included include manufacturing of industrial heat processes with a significant opportunity in energy efficiency and electrification. Electrical heating technologies provide a fast route to high efficiency, as they can halve the heat energy input to many industrial processes (BZE 2020).

Australia has a small manufacturing base in battery assembly, with downstream production of batteries currently worth $0.3 billion (expected to reach $432 billion by 2040) (Accenture 2021). Nonetheless, positive steps are already being taken towards a local battery manufacturing industry, for example the feasibility study for the proposed Townsville 18GWh lithium-ion battery manufacturing factory, the Australian Made Battery Plan, the National Battery Strategy, the Battery Manufacturing Precinct in Queensland, and the Powering Australia Industry Growth Centre.

Australia should investigate options to manufacture appliances, solar panels and batteries, processing critical minerals on shore, as well as build our workforce of skilled workers. This includes developing incentives and programs for domestic institutions to boost R&D and ensure commercialisation of ideas, technology and intellectual property remains in Australia.

Long-term reduction of energy price inflation

See comments in the section below - *Impacts of household electrification on reducing household energy spending and energy inflation as a component of the consumer price index*.

Long-term employment opportunities

Recommendation 2: *The federal government should develop a targeted workplace and skills strategy, including national and regional skills assessment, subsidies for retraining at university and certificate level courses, to ensure there is a sufficient pipeline of local and international workers and students trained in the critical minerals, modern manufacturing and ensure there is the workforce in place to meet the increased demand.*

Of the National Reconstruction Fund's $15 billion, investment of up to $3 billion aims to support renewables manufacturing and the deployment of low-emissions technologies, ensure secure jobs, targeting regions undergoing rapid change, enabling them to capitalise on the nation's natural resources. To be successful, industry needs a robust framework that provides the right drivers and access to funding mechanisms.

The scale of electrification needed, as well as competition from other countries for skilled workers in research, and potentially manufacturing and installation, means that Australia needs to carefully plan for the workforce and skills needed. Training and hiring needs to be local. If an employer did needs to import overseas workers they should demonstrate why and provide a commitment to further local recruitment.

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The scaling up of domestic capacity

Recommendation 3: *Establish a nation-wide professional development campaign to support electricians and plumbers to upgrade their skills understanding of opportunities to provide accurate information and continue supporting households as trusted advisers.*

Many tradespeople are not currently qualified to do both electrical and plumbing work, and many are not fully aware of the opportunity that electrification presents to their industry. They are also often seen as the most trusted advisers for households when investigating their options for appliance upgrades. They do however sometimes give bad advice against heat pumps and controllable devices. The gas industry and some building peak bodies actively campaign against electrification and energy efficiency (disinformation), and the tradespeople on the ground are not necessarily providing accurate information (misinformation).

Macro-barriers to increasing the uptake of home electrification

Recommendation 4: *Establish a dedicated energy efficiency, electrification, and demand management agency, including a plan for all households to get off gas, and a strategy to support renters and rental providers to electrify (including minimum standards for energy efficiency and improved tenure security).*

Recommendation 5: *Work with states to fast-track an effective nationally consistent framework for energy efficiency minimum standards (National Framework for Minimum Energy Efficiency Requirements for Rental Properties* (the National Framework), *and mandatory disclosure for rental properties, using features- or performance-based standards, facilitating assessor training, and developing a standardised certification website. The framework should be based on the Community Sector Blueprint on the National Framework for Mandatory Minimum Energy Efficiency Rental Standards, including following best practice, and adhering to the principles of the Blueprint in federally owned public housing.*

The biggest barriers to household electrification are upfront capital and tenure type (ACTCOSS 2023; BSL 2023). Renters, and private renters in particular, have minimal agency to electrify their homes due to current tenancy laws, there being no market or other incentives for landlords, tax barriers preventing installation as landlords are unable to claim a tax deduction or depreciation for energy efficiency upgrades on their rental properties. These barriers are unlikely to change without significant supportive policy, changes to tax law, or mandatory energy efficiency standards that include electrification outcomes. This cohort represents over a third of Australian households. They are likely to miss out on the more impactful opportunities for electrification, emission reduction and improved affordability and health, including upgrades to the built fabric, and distributed energy resources such as solar, batteries and heat pumps.

ACF supports the proposal of developing a dedicated national energy efficiency, electrification, and demand management agency. There is a large amount of information available for homeowners and renters, but it can feel overwhelming, there are issues of what is trusted advice, or homeowners and renters may have other priorities. Information on government websites is not enough to get the uptake we need. Further, regulatory and energy agencies do not take advantage of the full opportunities that energy efficiency and demand management offer the market, households, and businesses, including market failures, such as their being no incentives for property managers and owners, and co-benefits such as emission reductions, health, and affordability.

A national energy performance agency would enable industry and business, which will in turn support residential electrification that rely on the goods and services from those industries and businesses. Without targeting our largest, most energy intensive and climate polluting businesses, as well as supporting small business and households, Australia will continue missing significant opportunities for cost reduction, health benefits and climate resilience, as well as achieving emission reduction, renewable energy, net zero and energy efficiency targets. A national energy performance agency will assist businesses lower their energy bills and build their capability to become more internationally competitive. Such an agency can work with sector based peak bodies to streamline energy performance across the economy, rather than responsibility for energy performance being spread over a number or government agencies and other stakeholders.

Upfront finance is not the only barrier facing households when it comes to electrification. There is the opportunity for Community Power Hubs (CPH), potentially run by existing and trusted community organisations, to run public education and literacy campaigns on how and why to electrify homes, and not be misled into continuing with gas (especially by the gas industry[4]). Such a CPH model can provide consumers with unbiased advice on home electrification, enabling household decision makers in understanding and comparing options. CPH's can also support other areas of public policy, such as providing train the trainer programs to enable social housing providers to undertake energy efficiency and electrification, support training of trades people, support community development and engagement in and adjacent to communities hosting Renewable Energy Zones and transmission.

All Australian governments have committed to implementing a national plan that aims to achieve zero energy and carbon-ready residential buildings, including existing buildings. Through the Trajectory for Low Energy Buildings (DCCEEW 2019), federal, state, and territorial governments have agreed to establish a *National Framework for Minimum Energy Efficiency Requirements for Rental Properties* (the National Framework). It is intended that this framework builds on existing jurisdictional work and outlines the settings for minimum rental standard schemes that can be adopted and implemented by jurisdictions. While all jurisdictions are participating, many have no framework, while those that do are limited in scope and/or ambition. Civil Society members involved in the process feel the current proposed framework does not go far enough, and it is being delayed. The federal government can assist in developing a nationally consistent approach, as well as facilitating assessor training and a certification website. It is particularly important to ensure ongoing training during the implementation stage to embed the reliability of the scheme and build public confidence.

To guide its implementation, several community sector organisations developed a blueprint to provide an outline of key characteristics that should be present in the forthcoming National Framework. The Community Sector Blueprint (Healthy Homes for Renters 2022), which ACF has supported and signed, takes a principles-based approach to key elements that should be in the government Framework and offers suggestions to meet these principles. In some cases, the blueprint endorses specific approaches. The blueprint covers private, public and

[4] https://reneweconomy.com.au/gas-lobby-launches-new-scare-campaign-on-electrification-saying-it-will-break-the-grid/

community housing in the national framework, and assists jurisdictions to meet their net-zero emissions targets, as well as lower energy bills and improve the health and wellbeing of renters.

An implementation plan is required to bring property managers on the journey, with any initial features-based standards capable of contributing to the later performance-based standards. Such standards need to have independent third-party compliance and enforcement. It should not be up to tenants to ensure compliance of their landlord. This also speaks to the need for tenant protections across all jurisdictions, such as removing eviction without cause and introducing rental caps.

Along with energy efficiency minimum, there are adverse impacts on renters if mandatory disclosure is not included. Lessors need to affirm compliance in rental advertising or state what exemption exists. Rental ads should include a link to the energy efficiency certification with its star rating and a certification statement should also be included as part of the rental contract.

The compliance framework must include mandatory disclosure based on a third-party assessment of the energy efficiency rating of the home. Homeowners should be given a reasonable amount of time to comply with the new home energy rating scheme, providing the right balance between compliance costs on owners, so that the industry can respond to the demand for energy efficiency improvements, while ensuring the benefits to tenants.

Total upfront cost and longer-term benefits of household electrification and alternative models for funding and implementation

Recommendation 6: *Prioritise electrification, insulation, hot water and space heating and cooling in any auditing and retrofit program, regardless of the level of state based minimum standards. A retrofit program could be leveraged by other jurisdictions to co-fund more impactful programs or energy efficiency minimum standards. Retrofit programs should include an auditing component and run by trusted third party social enterprises, or social or environmental organisations.*

It is clear and commonly accepted that while upfront costs of new electric appliances are high, the lifetime costs of electric appliances are significantly lower than gas appliances. For example, RENEW (2021) and Environment Victoria (2023) found that it is more cost-effective to go all-electric than to connect to gas. Induction cooktops are not only cheaper over their lifetime than gas, but they are also healthier for household environments as they do not release gas into the home environment.

In this time of an affordability crisis, households need to be empowered to make the choice that's right for them, and it needs to be a genuine choice. That is, they could choose to install a new induction cooker or heat pumps with the assistance of an appropriately targeted rebate, grant (for the lowest income households) or no- or low-interest loan for progressively higher income households. (Note our commentary on grants and loans in the section on low-income households below).

Efficiency must come with electrification to ensure the full longer-term benefits. There is strong evidence that renters are significantly worse off than most private live-in homeowners, with some tenants sweltering through temperatures above 30°C in their homes for extended periods in summer, with night-time temperatures being hot enough to impair sleep almost 50% of the time (Better Renting 2022a). Better Renting (2022b) also looked at winter temperatures, and found that rental properties were below the World Health Organisation minimum healthy temperature of 18°C 74% of the time, or over 17 hours a day, including days (39% of the time) where a researcher's recorded temperature never once went above 18°C. This is unacceptable. Some houses had air conditioning and heating, but the poor level of insulation meant that the heat or coolth was often lost, meaning greater emissions and costs. At a minimum, insulation needs to be part of a retrofit program, or a features-based minimum standard, as recently announced in the ACT. ACF supports Better Renting's suggestion (reported in Kelly 2023) that "Having insulation in a home is like having glass in the windowpanes, like having a flushing toilet," "It should be seen as an absolute basic. Leaving it out is not making an adequate home to rent". This is only expected to be exacerbated as the number of high temperature increase.

It has also become increasingly clear that gas appliances in homes contribute to adverse health impacts.[5] The increased emphasis on energy performance of homes, including updates National Construction Code (NCC) and mandatory energy efficiency standards for rentals, mean that many houses will see improved draft sealing and balancing that with ventilation. Design and upgrades for ventilation needs to be done well, or it will only exacerbate the potential health impact of gas. Electrification, especially through induction stoves and heat pumps, will negate this risk.

Marginal cost of abatement for household electrification compared to alternative sectors and options to decarbonise the economy

No comment.

Optimal timeline for household electrification

Recommendation 7: *Establish targets and timing for household electrification, considering household tenure, existing or new homes, and its contribution to decarbonisation.*

The opportunity for electrification and energy performance to make the greatest contribution to decarbonisation in the near term is before Australia decarbonises its grid, and there are other benefits once we do decarbonise, including lower costs, reduced need for installed capacity and grid services.

[5] https://www.climatecouncil.org.au/resources/gas-harming-our-health-what-you-need-know/#unique-identifier-2

The government should set targets, potentially based on housing tenure, age and sector, such as new and existing, owner occupied and rentals, and public, community and Indigenous housing. Targets could, for example, aim to electrify all households by 2035, with new homes under the National Construction Code (NCC) being built as all electric by 2025, and existing homes by the later date of 2035. As the owners of public housing, governments could prioritise retrofits in the homes they own, and support community housing providers to retrofit social housing by 2035. Rental standards for energy efficient and electric homes could be mandated by 2025 (under the A national framework for minimum energy efficiency rental requirements[6]), with a 3 to 4 year compliance period be efficient (e.g. 5 star) and fully electric by 2035.

Impacts and opportunities of household electrification for domestic energy security, household energy independence and for balance of international trade.

Recommendation 8: *Ensure electrification makes better use of daytime generation of solar through demand response, especially for households that cannot install solar, such as renters and those without the appropriate roof.*

Electrification powered by renewable energy can be expected to increase energy security, as Australia would be less reliant on fossil fuels and the impact of events, such as Russia's invasion of Ukraine. Improving household access to demand management, demand response and grid services through electrification will also improve energy security, access to renewables, energy independence, as well as reduce to size of the build of both renewable energy and transmission, and therefore potential impacts, such as on nature.

Electrification can be further expected to help the grid, as it will help address an emerging problem of minimum demand. Households who can access demand response and batteries will be able to make use of excess solar generation in the middle of the day. This however will require smart meters and appropriate tariffs, as well as the energy literacy or automation to make it happen. This will also benefit solar households, who will face less export limits due to the increased demand for daytime solar.

Impacts of household electrification on reducing household energy spending and energy inflation as a component of the consumer price index

While up-front costs are a barrier, electrification clearly reduces long term energy costs. However, cost of living challenges for households, especially vulnerable households, acts as a barrier to investment, as household prioritise food, rent and just keeping on top of utilities for example. Without assistance for the upfront costs, this is an opportunity lost and an inequity. The Brotherhood of St Lawrence (BSL 2023), for example, found that "households facing barriers to electrification also experience many other financial challenges and may therefore be unable to prioritise electrification even if they have the necessary information and inclination".

[6] https://www.healthyhomes.org.au/news/community-sector-blueprint

Electrification, especially if powered by most forms of renewable energy, including the more common forms of wind and solar, is also anti-inflationary. These forms of renewable energy when compared to fossil fuels, 1) have no fuel costs, and 2), fossil fuel costs are always increasing. This is evidenced by the recent significant costs of energy for households and businesses, having significant impacts on the costs of living. Electrification by its nature, is also more efficient than other uses of energy, further reducing the energy costs of homes and businesses, and installation costs are further expected to continue dropping for solar, heat pumps and electric vehicles.

This opportunity, however, needs to be leveraged by a significant home and business energy auditing and appliance retrofit program, including energy efficiency to get the greatest emission and cost reduction impacts of the upgrades. In particular, electrification of business reduces their costs and therefore the costs of living.

Solutions to the economic barriers to electrification for low-income households

Recommendation 9: *State and federal governments jointly commit to significant investment to fund energy efficiency programs including energy audits and retrofits, particularly for low-income homes (public and community housing, low-income homeowners, and low-income rental properties), and that this be based on the broader measures in the National Low-income Energy Productivity Program (NLEPP) update (ACOSS 2021), including funding energy efficiency upgrades for low-income households and rentals. Such programs should be run by trusted third party social enterprises, or social or environmental organisations, and include a transition plan for all households to electrify and get off gas.*

Recommendation 10: *Integrate an education component into electrification policy, ensuring service providers, tradespeople and households understand the full benefits and opportunities for electrification, and the problems of using gas.*

Household energy costs have been estimated to account for 6.4% of income for Australia's poorest households, compared with just 1.5% for high-income households (ACOSS 2018). This is attributed to not just their lower incomes, but due to living in less expensive but poorer quality homes and owning or using inefficient appliances. There are more than 9.7 million existing homes in Australia. Many of these homes have poor energy performance. It is estimated that existing homes in Australia average a 1.7-star rating compared to new homes averaging 6.1 stars (Bladen 2018; QCOSS 2017). Worsening impacts from climate change and the increased awareness of the health and affordability issues from poor quality housing demonstrates the urgency for the need for housing improvements. The recently announced Federal Governments *Energy Savings Package*,[7] including the $1.3B *Household Energy Upgrades Fund*, while welcome, will mostly support live-in homeowners and property investors. Market and regulatory barriers discussed elsewhere in this submission, will mean that in reality, renters and low-income households will likely miss out. Recommendations in this section needs to be backed up by changing the Australian tax rules (as recommended in the section on '*Macro-barriers to increasing the uptake of home electrification*'),

[7] https://ministers.treasury.gov.au/ministers/jim-chalmers-2022/media-releases/helping-australians-save-energy-save-energy-bills

and by states introducing mandatory energy efficiency standards and mandatory disclosure (as recommended in the section on '*Effectiveness of existing Australian Federal, state and local government initiatives*').

A key opportunity is for State and Federal governments to co-fund a dedicated large-scale education, retrofit and appliance program for renters and low-income households, prioritising water heating, cooking, space heating and cooling (including active (e.g. heat pumps) and passive (e.g. insulation, shading and ventilation) heating and cooling), and refrigeration. Australia needs to take strong action on converting from gas to electric using heat pumps for space and water heating, and upgrade household insulation. Efficiency and climate resilience need to be integrated into electrification. Climate change means we are expecting more heat waves, meaning we need to make sure new and existing houses are more resilient to temperature extremes. Such programs should be run by environmental or social organisations, which is particularly important for education and trusting advice (see our recommendations on Community Energy Hubs). Both the ACT (currently) and QLD (beginning later this year) use trusted not for profit organisations, with the Australian Competition and Consumer Commission making a similar recommendation in their review of energy prices (ACCC 2018). It should be noted that insulation would target older properties or properties with a lower rating, and bring them into line with contemporary building requirements. The proposed National Low-income Energy Productivity Program (NLEPP) update (ACOSS 2021) includes costing and options for financing energy efficiency upgrades for low-income households and rentals, an implementation plan and financial modelling.

Gas appliances are not only less efficient than electric appliances, but they also mean households pay two lots of network charges, whether it's hydrogen or natural gas. ACF does not support the use of hydrogen in the residential sector, leaving hydrogen for harder to decarbonise sectors. Hydrogen appliances cannot directly replace existing gas appliances due to particle size causing leaks, meaning there will be a cost upgrading. Upfront costs of appliances and disconnecting from the gas network, and the absence of market incentives for renters means they will be stuck with fossil gas appliances, or at the whims of property managers. Analysis by RENEW (2018) found that it is more economic to go all-electric rather than remaining connected and continuing with to the gas grid. Consideration should be made to mandate energy efficient electric induction stoves and hot water, such as heat pumps, at the time of replacement.

ACF supports no-interest loans (NILs), low-interest loans and loan guarantees, but they may leave the more vulnerable households struggling to pay back the loan. As such, these most vulnerable households are often rejected on NILs applications. It can still be possible to offer loans to wealthier households that can absorb the loan and pay it off with the operation savings of appliances. Loan guarantees could for example, be offered to middle income households and grants provided to those either on a hardship program with their retailer or talking to financial counsellors.

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Effectiveness of existing Australian Federal, state and local government initiatives to promote and provide market incentives for household electrification

Recommendation 11: *The federal government work with states and territories to co-fund electrification and appliance upgrades, including grants for extremely low-income households, and no- and low-interest loans for low- and medium-income households.*

Recommendation 12: *Integrate energy literacy programs with other assistance measures, such as rebates, finance and upgrade and auditing programs, and ensure energy advice and support programs are maintained at the decadal scale.*

Recommendation 13: *The federal government update Australian tax law to limit negative gearing only to properties that undertake energy efficiency upgrades.*

The Queensland government has recently announced an energy efficiency rebate. The rebate allows households to get the rebate after buying secondhand goods, providing they fit the criteria, such as being energy efficient. This is good in that it reduces waste, and potentially allows households to access cheaper goods, but it may be less likely that households would find such goods second hand. The fund is also limited and will expire when funds are exhausted. The Queensland government has also announced an energy literacy program for low-income and vulnerable households, due to be run in 2024 and 2025, but the rebate funds are likely to be spent. To be effective, assistance needs to be provided along with energy literacy. Households that miss out on the rebate may be provided with the literacy needed without access to the upgrades. A key barrier is also the stop start nature of many programs. Running the literacy program over just two years, during a critical time for affordability, equity and climate action, is inadequate. The grant guideline does include outcomes evaluation criteria around the extent to which the benefits of the project are likely to continue, but these will be limited without ongoing support. The UK has had several iterations of home energy advice and support, such as The Carbon Trust,[8] the Energy Saving Trust,[9] the Community Action for Energy (CAFÉ) program, Community Energy England,[10] Community Energy Scotland,[11] and localised support such as Plymouth Energy[12]. That is, there has been some form of significant home energy advice throughout the UK for decades.

As a subset of residential buildings, people who rent and low-income households are significantly disadvantaged when it comes to energy efficiency. Many renters and low-income households live in the poorest quality homes of just 1- to 2-star. Raising a 2-star home to 3-star has a greater impact than raising a 7-star to an 8-star home. ACF acknowledges the federal government is developing its $1.3B *Household Energy Upgrades Fund*. For reasons noted

[8] https://www.carbontrust.com/
[9] https://energysavingtrust.org.uk/
[10] https://communityenergyengland.org/
[11] https://communityenergyscotland.org.uk/
[12] https://plymouthenergycommunity.com/

below, the recent *Household Energy Upgrades Fund Finance Consultation Pre-reading pack*, however, suggests the financial options on the table may not support many households in need. This includes renters, as they have minimal agency to install electric heat pumps (for space heating and cooling or water heating), solar or batteries. Furthermore, the lowest income households are unlikely to access no- and low-interest loans on offer, as No Interest Loans (NILs) providers are unlikely to put those households at risk of not being able to afford other essentials like food, medication, and utilities). These more vulnerable households are likely to need grants to participate in affordable electrification upgrades.

There is a strong need to introduce mandatory energy efficiency standards with mandatory disclosure for private rental accommodation, focusing on bringing the poorest quality homes up to minimum health, safety, and affordability standards. Unlike homeowners, renters cannot undertake energy efficiency upgrades to their home, while there are no market or other incentives or requirements for homeowners to invest in significant or effective energy efficiency upgrades. With more than a third of Australian renting, that's a significant number of Australians missing out. Without significant national and/or jurisdictional energy efficiency financing program and an update of regulations, renters and low-income households will continue to miss out on the climate, health, and affordability benefits of energy efficiency upgrades on their homes. Most Australian states have either no or poor policies and regulation for the energy performance (including electrification). Such standards need to be integrated with electrification, such as features based standards for efficient electric space and water heaters, not gas. The eligible devices for the current Queensland rebate, for example, do not include gas appliances. We note gas heaters are uncommon in Queensland, but a similar requirement could be included in eligibility criteria in any jurisdiction.

Evidence to date suggests landlords and developers won't act unless they're forced to through legislation and regulation, even when of benefit to themselves (QCOSS 2017). In principle, program design may need to remove the agent or owner from the decision-making process. ACF recommends including conditions for negative gearing, i.e. that negative gearing is only allowed if the property meets energy efficiency minimum standards. While not including such a policy improves the finance for investors, it does so at the expense of emissions, affordability, and health of renters.

Australia's current standing against international standards, particularly with respect to the uptake of rooftop solar, batteries and electric household appliances

Australia is known to be a world leader in the installation and support of rooftop solar. We are however seen as a laggard of energy efficiency (see Figure 1), including minimum or mandatory energy efficiency stands in rentals. Globally, nations leading in energy management, which includes energy efficiency and broader demand management options such as demand response, treat energy management as a core strategy for meeting the energy needs of homes and businesses. Australia, however, is a laggard in energy efficiency (See Figure 1), scoring particularly poorly in industrial energy efficiency (22nd out of 25) (Castro-Alvarez 2018), meaning that industry is paying more than it should to service its energy needs. We are missing opportunities for increased productivity, greenhouse gas reductions, training and employment, safe and healthier work and living environments, resource efficiency, reducing grid infrastructure, and facilitating renewable energy targets.

Other countries have energy efficiency minimum standards (see previous section on macro-barriers to increasing the uptake of home electrification). The absence of such schemes in most Australian states means Australian renters are often living in poorer quality homes. The are several examples of minimum energy efficiency standards for rentals in other international jurisdictions, including some cities (Sustainable Energy Partnerships 2017), and include:

- Boulder, Colorado USA
- England and Wales
- Netherlands
- Scotland
- Emerging "Building Performance Standards" in US Cities
    - Berkeley, California USA
    - Burlington, Vermont USA
    - Ann Arbor, Michigan USA
- New Zealand
- Flanders, Belgium

In the UK example, compliance is ensured by banning the rental of properties that don't meet the performance-based standard. New Zealand also has energy efficiency standards, with significant rights for renters to ensure compliance, including a financial penalty of up to $4,000 against the landlord that is usually awarded to the tenant as compensation.[13] Australia is a laggard with rental energy efficiency schemes, which need to be integrated with electrification and getting off gas.

[13] https://mcdonald.eieio.co.nz/blog/penalty-for-healthy-homes-non-compliance

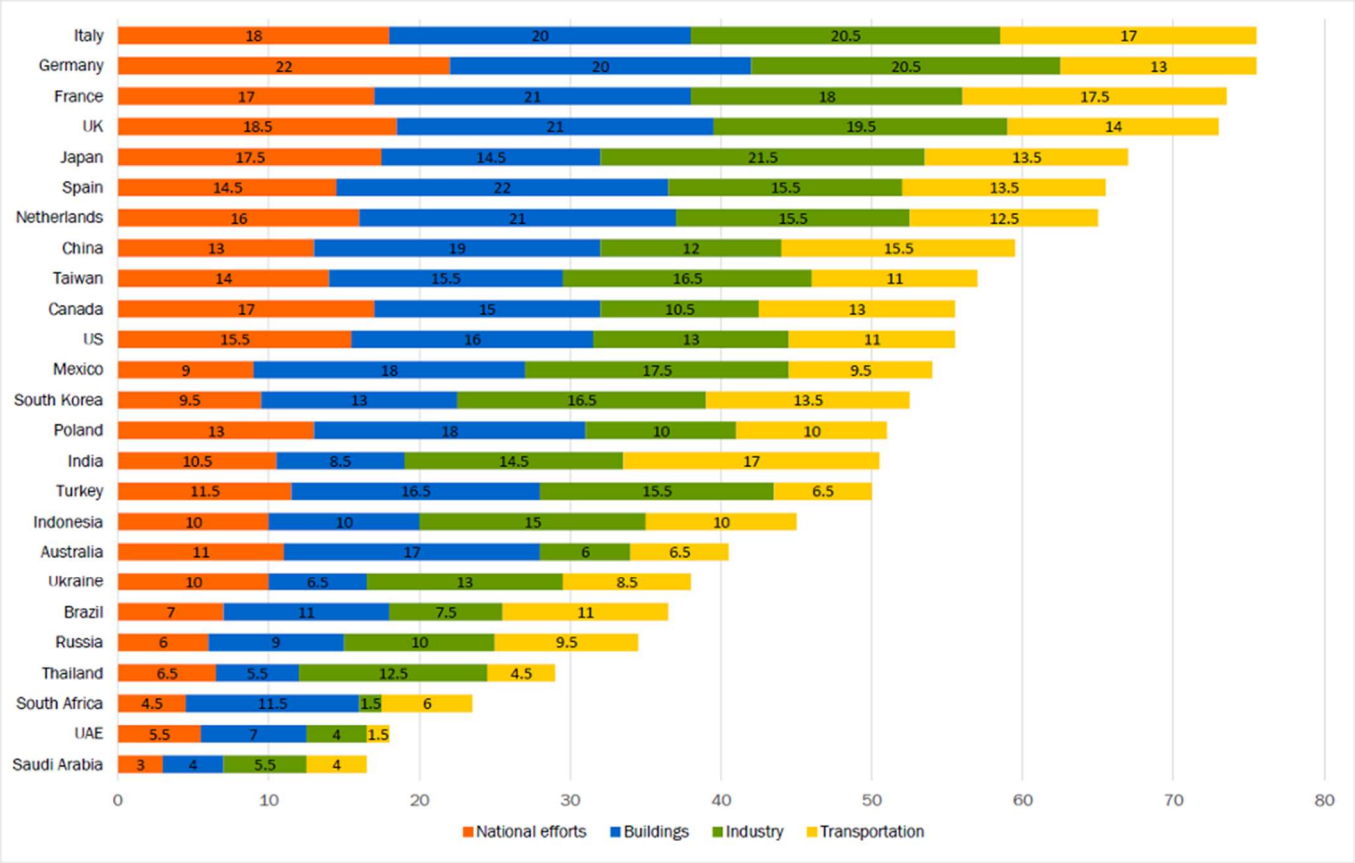

Figure 1: Energy efficiency policy and practice ratings for the world's largest energy users (Source: Castro-Alvarez 2018)

Other Matters

National Energy Transformation Partnership (NETP)

Recommendation 14: *Develop an economy wide electrification plan as part of the National Energy Transformation Partnership (NETP), consulting with sector peak bodies and stakeholders, thereby ensuring more affordable and low emissions electricity.*

Electrification needs to be prioritised in the energy transition and in supporting the Australian Government's emissions reduction objectives. The National Energy Transformation Partnership (NETP) lists electrification under "*Understand Demand Evolution*" as a key priority. We need to go beyond understanding and plan for electrification of the entire economy. Renewable energy is increasingly cheaper than coal and gas, and electric appliances and processes can be more efficient than gas motors and appliances, sometimes by up to 50% (BZE 2018). We know that replacing fossil fuels with low-emissions electricity in is one of the most important drivers of emissions reductions in the NZE scenario, and that no new fossil fuel development and exploration is required to remain within 1.5C above pre-industrial levels (IEA 2021). Our homes, businesses and industries all

need to be electrified and run on renewable energy if we are to reach net zero, and this needs to happen sooner than later. As grid demand increases, efficiency will be as important as electrification. Emissions savings associated with electrification are often largely due to energy efficiency (EEC 2022), and as such, electrification must be matched with energy efficiency and other demand side solutions to reduce the installed capacity, reduce costs, and improve storage utility. Electrification with renewable energy will also reduce Scope 1 emissions.

A recent report from the Australian Sustainable Built Environment Council (ASBEC) (2022) for example, demonstrated that 100% electrification[14] is the lowest cost, fastest emissions reduction pathway for Australia's built environment, saving $49 billion between 2024 and 2050 over the 'business as usual' strategy of electrification, gas and offsets. This last point cannot be understated – 100% electrification in 100% renewable grid, would save 199 Mt CO2-e before offsets, and we need to get beyond the use of carbon offsets, limiting them to 5% of decarbonisation goals.

Getting off gas

Electrification needs to be addressed from many angles. That is, Australian Federal, state and local governments need to enable all Australian homes (and small business) to get off gas alongside electrification, and this should be for both new and existing homes. Homes can create more demand for electric appliances, making it easier for existing homes to make the switch, and quit the existing gas networks. This is particularly important for states that use more gas for home heating. It should be noted that winter peak demand is lower than summer in all states except Tasmania (ENA and AEC 2020), and that this is by several GW,[15] meaning there is capacity for higher electrical demand for winter water and space heating through heat pumps for example.

References

Accenture 2021. Sunshot: Australia's opportunity to create 395,000 clean export jobs. https://d3n8a8pro7vhmx.cloudfront.net/auscon/pages/19495/attachments/original/1634172513/Clean_exports_detailed_report_vf_FINAL.pdf

[14] Other scenarios included 1. electrification + green Hydrogen and 2. electrification + gas blend + offsets
[15] https://www.aer.gov.au/wholesale-markets/wholesale-statistics/seasonal-peak-demand-regions

Australian Competition and Consumer Commission (ACCC) 2018. Restoring electricity affordability and Australia's competitive advantage Retail Electricity Pricing Inquiry—Final Report. https://www.accc.gov.au/node/78496

Australian Council of Social Service (ACOSS) 2021. Proposal and implementation plan for a national low-income energy productivity program (NLEPP) A national building program to reduce poverty, improve health, cut pollution, and create sustained jobs. https://www.acoss.org.au/wp-content/uploads/2021/08/Brief-Proposal-and-implementaion-plan-for-National-Low-income-Energy-Productivity-Program-September-2021.pdf

Australian Council of Social Service (ACTCOSS), 2023. Supporting a fair, fast and inclusive energy transition in the ACT: ACT small energy consumers' understanding, planning and support needs. https://actcoss.org.au/wp-content/uploads/2023/08/2023-Report-Supporting-a-fair-fast-and-inclusive-energy-transition-in-the-ACT.pdf

Australian Sustainable Built Environment Council (ASBEC) (2022). Unlocking the pathway: Why electrification is the key to net zero buildings. https://www.asbec.asn.au/research-items/unlocking-the-pathway-why-electrification-is-the-key-to-net-zero-buildings/

Better Renting 2022a. Hot homes: Renter Researchers' experiences of summer 21-22. https://www.betterrenting.org.au/renter_researchers_summer21-22

Better Renting 2022b. Cold and costly: Renter Researchers' Experiences of Winter 22. https://apo.org.au/sites/default/files/resource-files/2022-08/apo-nid319010.pdf

Beyond Zero Emissions (BZE) 2018. Zero Carbon Industry Plan: Electrifying Industry. https://bze.org.au/research_release/electrifying-industry/

Bladen (2018) Canberra renters in worst properties in the market. https://www.allhomes.com.au/news/canberra-renters-in-worst-properties-in-the-market-according-to-new-report-20180413-h0ypdm

Brotherhood of St Lawrence (BSL) 2023. Enabling electrification Addressing the barriers to moving off gas faced by lower-income household. https://library.bsl.org.au/bsljspui/bitstream/1/13361/2/BSL_LCC_Enabling_electrification_2023v2.pdf

Castro-Alvarez, F., Vaidyanathan, S., Bastian, H. and King, J. 2018. The 2018 International Energy Efficiency Scorecard, American Council for an Energy Efficient Economy, Washington DC. https://www.aceee.org/research-report/i1801

Department of Climate Change, Energy, Environment and Water (DCCEEW) (Australian Government) 2019. Trajectory for Low Energy Buildings. https://www.energy.gov.au/government-priorities/buildings/trajectory-low-energy-buildings

Energy Efficiency Council (EEC) 2022. Energy Efficiency Council submission to the Safeguard Mechanism Reforms consultation paper. https://consult.dcceew.gov.au/safeguard-mechanism-reform-consultation-paper/submission/view/105

Energy Networks Australia (ENA)and the Australian Energy Council (AEC) 2020. FACTSHEET: Heatwaves and Electricity Supply summer 2020. https://www.energynetworks.com.au/resources/fact-sheets/heatwaves-and-electricity-supply-fact-sheet-2019/

Environment Victoria 2023. IT'S A GAS: How ditching gas this winter can cut heating bills by 75%. https://environmentvictoria.org.au/2023/07/19/its-a-gas-how-ditching-gas-this-winter-can-cut-heating-bills-by-75/

International Energy Agency (IEA) 2021. Net Zero by 2050: A Roadmap for the Global Energy Sector. https://iea.blob.core.windows.net/assets/deebef5d-0c34-4539-9d0c-10b13d840027/NetZeroby2050-ARoadmapfortheGlobalEnergySector_CORR.pdf

Kelly, C. 2023. Not cool: push for insulation in all Australian rental homes as study shows dangerous heat levels. https://www.theguardian.com/australia-news/2023/jan/16/not-cool-push-for-insulation-in-all-australian-rental-homes-as-study-shows-dangerous-heat-levels

Queensland Council of Social Service (QCOSS) 2017. Choice and Control? The experience of renters in the energy market. https://www.qcoss.org.au/wp-content/uploads/2019/05/QCOSS-Choice-and-Control-the-experience-of-renters-in-the-energy-market.pdf

RENEW 2018. Gas versus electricity: Your hip pocket guide. https://renew.org.au/renew-magazine/efficient-homes/gas-versus-electricity/

RENEW 2021. Are we still cooking with gas?: Making the switch from gas to electric. https://renew.org.au/research/are-we-still-cooking-with-gas/

Sustainable Energy Partnerships 2017. Minimum Energy Standards for Rented Properties: An International Review. https://www.energy.gov.au/sites/default/files/BEET%2010%20Minimum%20Energy%20Standards%20for%20Rented%20Properties%20-%20An%20International%20Review.pdf

The Australia Institute (TAI) 2021. Something new under the sun - https://australiainstitute.org.au/wp-content/uploads/2021/01/P943-Something-new-under-the-sun-Web.pdf

The Next Economy (TNI) 2022. Transforming Queensland: The Case for a Transition Authority. https://nexteconomy.com.au/work/transforming-queensland-the-case-for-a-transition-authority

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