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About the EEC

The EEC is the peak body for Australia's energy management sector.

We are a membership association for businesses, universities, governments, and NGOs that have come together to ensure Australia harnesses the power of efficiency, electrification, and demand management to deliver a prosperous, equitable, net zero Australia with:

- People living and working in healthy, comfortable buildings;
- Businesses thriving in a decarbonised global economy; and
- An energy system delivering affordable, reliable energy to everyone.

The EEC works on behalf of its members to drive world-leading government policy, support businesses to rapidly decarbonise, and to ensure we have the skilled professionals to drive Australia's energy transformation.

General comments

The EEC welcomes the opportunity to provide feedback to the Net Zero Commission 2025 consultation.

Unlocking the full potential of the demand side of the energy system – through energy efficiency, electrification and demand management – is fundamental to achieving net zero emissions and ensuring the energy transition is affordable, fast, and equitable. These measures also deliver a range of other benefits including energy bill savings, energy system stability, healthier people and business productivity.

As the climate becomes more extreme, adapting our existing building stock and ensuring that future buildings are climate-resilient must also be a core government priority. Improving buildings' energy performance directly enhances occupant health and wellbeing and will become more important in a changing climate. The Victorian Healthy Homes Program demonstrated that even modest upgrades produced health system savings around ten times greater than the associated energy bill reductions for vulnerable participants.[1] Residents also reported significant improvements in health and quality of life — highlighting the broad social value of these measures. Similar findings have been confirmed in numerous studies internationally.

Specific comments in response to selected consultation questions are provided below. The EEC's position should not be inferred from the absence of comment on any issue or question

If you would like to discuss the matters raised in this submission in more detail, please contact me at Jeremy.Sung@eec.org.au.

Yours faithfully,

Jeremy Sung,
EEC Head of Policy

[1] Sustainability Victoria, The Victorian Healthy Homes Program research findings, 2022.

Specific comments

Accelerating emissions reduction

Question 6: The speed of deployment of electricity generation and infrastructure is a key risk to emissions reduction targets. What more could be done to fast-track deployment?

In simple terms, the amount of energy generation and network infrastructure deployed should be a function of the energy needs of end users, so it follows that optimising demand minimises the supply-side deployment task. Alongside investments in generation, storage, and networks, investments in the demand side will make transforming the energy system easier, faster and more affordable.

A focus on how energy is used must include energy efficiency, electrification, and increasing the flexibility of demand, with each element able to support the transition to renewable electricity. High quality electrification can reduce renewables curtailment (for example, if timed to consume excess solar in the middle of the day) and maximise under-utilised parts of the distribution network. Increasing flexible demand complements the variable nature of renewables and helps boost grid stability. Energy efficiency is the critical third ingredient: energy-efficient appliances and equipment support maximum levels of electrification by minimising the need for new electricity infrastructure while thermally-efficient buildings lead to more flexible demand from pre-heating and cooling.

Demand-side investments would not only help to accelerate the deployment of renewables, but also help reduce the costs of the energy system paid by NSW consumers.

At a national level, the EEC recommends the establishment of a national energy performance agency and national energy performance targets to help coordinate and accelerate demand-side actions.[2] In the absence of national energy performance targets, NSW has an opportunity to lead the nation by expediting the development of the energy performance targets announced in the NSW Consumer Energy Strategy. Aligning these targets to its net zero plan would spur action on the demand side that would reduce the cost of deploying renewables and fast-track deployment.

[2] Energy Efficiency Council, Demanding Better, 2025.

Question 13: What policies or programs at a sectoral level could complement the Safeguard Mechanism to support the accelerated decarbonisation of heavy industry in NSW?

The Safeguard Mechanism provides an incentive for Australia's largest energy users and emitters to reduce their energy-related emissions. However, there are hundreds of businesses that fall below the relatively high thresholds mandating participation in the Safeguard Mechanism. In 2023 the Productivity Commission recommended that the threshold for Safeguard coverage eventually be reduced to 25,000 t CO_2-e[3], a change the EEC would support.

Particularly while Safeguard Mechanism thresholds remain high, complementary policies can incentivise businesses not covered by the mechanism, that face no regulatory or financial pressure, to decarbonise their operations. While these businesses may not be the largest energy users, their fossil fuel use is often for low-heat applications where efficient electric alternatives such as heat pumps could easily substitute.

Support changes to NGERS and the introduction of new energy management requirements

For those companies currently covered by the National Greenhouse and Energy Reporting Scheme (NGERS) that are not covered by the Safeguard Mechanism, an opportunity exists to introduce phased additional requirements to encourage them to manage and reduce energy use and emissions.

At a minimum, entities whose scope 1 emissions exceed the NGERS threshold should face some type of additional requirements designed to help them to start decarbonising, such as a requirement to demonstrate that the business has an effective system in place to manage energy use and emissions (Table 1).

Although not responsible for these requirements, the EEC encourages the NSW Government to consider calling for the lowering the NGERS threshold to include businesses with scope 1 emissions of 10,000 t CO2-e per annum at both corporate and facility level. This could result in a graduated scheme that imposed greater requirements with increasing energy and emissions (Table 1).

[3] Productivity Commission, 5-year Productivity Inquiry: Managing the climate transition, 2023.

Table 1 Current and proposed measures to encourage industrial sector energy management

Scope 1 emissions (t CO2-e/annum)	Proposed requirement	Signal to decarbonise
0 – 10,000	None	Educate, incentivise
10,000 – 25,000	Include in NGERS	Measure and report energy and emissions
25,000 – 100,000	NGERS + Energy / carbon management reporting	Measure, report and manage energy and emissions
100,000 +	Current requirement: NGERS + Safeguard + declining baselines	Legally required to decarbonise

An additional change would be to add requirements for NGERS and Safeguard reporting businesses to have a credible transition plan in place. This is currently not required under the Safeguard Mechanism nor under climate related financial disclosure regulation (transition plans only need to be disclosed if they exist).

Support entities that fall below the Safeguard threshold

The EEC recommends expanding support for energy performance upgrades in industries that fall below the Safeguard Mechanism threshold, ensuring that small and medium energy intensive businesses have a clear pathway to thriving in a net zero economy.

Energy management can significantly reduce operating costs for industry, but many businesses – particularly smaller businesses, without a dedicated energy and carbon manager – lack the data and expertise to manage their energy usage. The EEC recommends delivering a comprehensive package of financial incentives to improve business energy productivity. The package should consist of assistance for businesses to:

- Install energy metering, sub-metering and monitoring infrastructure (potentially through a further round of Metering Plan Implementation Grants);
- Implement an Energy Management System (EnMS);
- Upgrade and optimise equipment and processes where the EnMS identifies cost-effective upgrades; and
- Develop credible transition plans by extending the Net Zero Planning Grant and ensuring alignment of plans created with the upcoming Treasury transition plan guidance.

An alternative or complementary approach to funding sub-Safeguard threshold businesses reduce their emissions would be for the Australian Government to allow these businesses to generate Safeguard Mechanism Credits (SMCs) through voluntary actions (like electrifying their operations). These actions would be funded by Safeguard entities, purchasing the SCMs to meet their obligation, minimising costs for government. NSW could assist by allowing the Australian Government to credit actions taken through project-based or metered baseline methods from the Energy Savings Scheme (or by developing some sort of hybrid approach where actions using these methods generate a combination of ESCs and SCMs). The EEC would be happy to discuss this idea in more detail.

Question 14: What measures could accelerate industrial heat electrification in NSW, where technology is viable?

Process heating and steam production are major energy end uses across industrial and commercial sectors. Around 52% of industrial energy use is for process heat, an energy service with an indicative value of $8 billion per year.[4] This heat is currently delivered predominantly by gas combustion, with coal as the second largest source.[5]

Heat pumps can be used for a range of industrial applications, both for heating and cooling. Until recently, heat pumps were only considered viable for lower (less than 120 °C) temperatures, however, that temperature range is increasing, with high temperature heat pumps now being developed and tested for high-heat applications such as drying of building products.[6]

There is substantial opportunity to reduce emissions and energy costs through electrification and improved efficiency, particularly in older facilities. To support NSW businesses where electrification is viable, a combination of education, technical guidance, and financial support – to help manage the high upfront cost of replacing fossil fuel-using equipment – is needed.

Better quality data on fossil fuel use would help policymakers and the private sector deliver more industrial heat electrification

One of the most important foundational measures needed is to improve data on fossil fuel use. Currently, there is very little information for policymakers, advocates, and the private sector, on exactly how and where fossil fuels are being used. The Australian Energy Statistics relies on high-level

[4] ITP for ARENA, Renewable Energy Options for Industrial Process Heat, November 2019.
[5] Ibid.
[6] A2EP, Heat pumps for industrial and commercial applications.

data from gas networks and diesel retailers, combined with NGERS reporting, to assign energy use to different sectors within NSW. This is sufficient for energy and emissions inventories but insufficient for targeted policy design. Outside of NGERS-reporting firms, very little is known about how fuels are used in industry (ie, for heating water, as a feedstock, etc) and where they are combusted. In the absence of a public source of information on industrial fossil fuel use, ad-hoc approaches to identifying fossil fuel use are being used.

For example, one major NSW electricity distribution company has surveyed over 85 large gas-users within its network to identify potential customers that could benefit from electrifying their operations, while also helping reduce excess headroom in their network. But this is just one part of the state, and the information is not public.

The NSW Government could collaborate with businesses such as gas and electricity distribution networks and others, to create a rich (ideally public) database of major fossil fuel uses in the state. This could then inform policy and new business models for energy service companies and others to help these businesses electrify their operations.

Question 18: What measures should be considered beyond the Safeguard Mechanism to reduce emissions of the resources sector, particularly methane emissions, to meet NSW's emissions reduction targets?

There are opportunities to improve energy performance of various mining processes on site. Comminution, blasting and sorting generally use the most energy and therefore offer the best scope for savings. For example, selective smart blasting uses data to target high ore concentration areas with greater blast energy, to optimise the blast and reduce net total energy consumed by up to 30 per cent.[7]

Similarly, analysis by Climateworks Centre for the EEC on energy efficiency and electrification opportunities across the economy suggests that the electrification of diesel use in NSW coal, copper and iron ore mines could have a sizeable impact on energy use and emissions. Diesel-use in coal mines appears to present a particularly large opportunity.

This suggests a combination of regulatory or financial incentives targeting emissions reductions through energy efficiency and electrification in the resources sector would deliver tangible benefits.

[7] DFAT, Energy Management in Mining, 2016.

While the EEC supports measures to reduce fugitive methane emissions from the resources sector, this is beyond the scope of the EEC's expertise.

Question 19: What additional measures could accelerate electrification and increase energy efficiency of new and existing buildings?

The EEC advocates for governments to prioritise a broad suite of sensible reforms that support households and businesses to increase energy efficiency and to electrify. These include:

- **Upgrade homes for health, comfort and efficiency** – supercharge social and community housing retrofits, implement minimum rental energy standards, and roll out a national home energy rating system.
- **Modernise energy governance** – Reform energy governance frameworks to prioritise demand-side measures.
- **Strengthen the role of the demand side in the electricity market** – Reform existing incentives for demand management and ensure new capacity mechanisms incentivise flexible demand capacity.
- **Align and modernise retailer energy efficiency schemes** – Re-align schemes to focus on optimising the energy system, reducing peak demand, and shifting energy use to periods of high renewable generation.
- **Develop a skilled workforce** – Invest in workforce training, upskilling, and certification to ensure NSW has the skilled professionals needed for efficient electrification and the energy transition.
- **Improve energy literacy** – Launch an energy efficiency awareness campaign to help households and businesses cut energy costs through informed choices.
- **Boost research and innovation** – Increase investment in energy-related research and development to drive practical solutions for a net zero economy.

In relation to improving the energy performance of new buildings specifically, NSW should adopt the measure already taken by Victoria and ACT in requiring new residential and commercial buildings to be all-electric. There is little justification for connecting new buildings to gas, given the available alternatives. All-electric buildings offer opportunities for reduced energy bills or operating costs using mature and widely available efficient technologies like heat pumps. Connecting new buildings to gas locks in higher costs for occupants and the likelihood of additional costs for electrification in the future.

A suite of policy measures must be implemented to improve the energy performance of existing homes and commercial buildings. These include:

- Ensuring the availability of energy ratings through programs including NatHERS and NABERS and requiring the disclosure of ratings at the point of sale and lease. NSW has committed to introducing *voluntary* disclosure in 2025 and this should be transitioned to a mandatory scheme as soon as possible;
- Supporting the expansion of the Commercial Buildings Disclosure program to new building types and a transition to minimum energy performance standards for existing commercial buildings;
- The phaseout of gas appliances by requiring electric replacements at the end of life;
- Consumer support and incentives through rebates, schemes, and consumer support services that make accessing retrofits easier; and
- Introducing mandatory minimum standards for rental homes.

Question 20: How could social equity be better addressed in the transition to an electrified built environment?

There are significant risks to equity in the energy transition, as well as significant opportunities to take action to reduce the costs of energy and deliver benefits. Key principles must include centring people in the energy transition, establishing consumer safeguards, ensuring costs are shared equitably, and prioritising support for people and communities experiencing disadvantage.

Retrofitting homes for improved energy performance and electrification delivers major benefits to households in the form of reduced energy bills, improved health and improved comfort. However, barriers to retrofits risk exacerbating existing inequality and making the broader energy transition less fair. In particular, policy must address barriers experienced by renters and low-income households.

Rental homes have worse energy performance on average than owner occupied homes, largely due to the split incentive problem, in which landlords are responsible for the upfront cost of upgrades while reduced energy bills accrue to renters. In response, NSW should introduce minimum energy performance standards for rental homes, in line with jurisdictions such as Victoria and ACT. In those jurisdicionts minimum rental standards have included requirements for insulation, draft sealing,

efficient heating and cooling, and the phaseout of gas appliances. A range of complementary policy measures are available to enable effective standards.[8]

Owner-occupier households with low incomes are often unable to undertake energy retrofits due to the barrier of upfront costs. Financial and practical support should be made available in the form of rebates – potentially through the Energy Security Safeguard schemes, or consumer support services.

Question 22: What should be included in a monitoring framework for NSW in the context of the transition to net zero, including any specific metrics and indicators?

NSW should expedite the development of its energy efficiency and electrification targets announced as part of the Consumer Energy Strategy and develop appropriate metrics to support the measurement of these targets. For energy efficiency, the International Energy Agency has developed a range of energy efficiency indicators for each sector.[9] Reporting against these indicators would be a good starting point for improving the way NSW reports on the role of energy efficiency in helping to progress the state to reaching net zero emissions.

Adapting to a changing climate

Question 23: The adaptation objective is for NSW to be more resilient to a changing climate. The Act allows for regulations to further define the adaptation objective. What does a more resilient NSW look like to you?

A resilient NSW will have efficiently electrified most, if not all, of its built environment, including substantial improvements in the thermal performance of buildings, especially homes and workplaces.

Thermal performance is both the first and last line of defence against extreme temperatures. It is critical to the success of electrification, helping to support efficient heating and cooling by maximising the use of renewable electricity in the daytime, reduce peak demand stress on the grid,

[8] Energy Efficiency Council, Complementary measures to minimum rental energy performance standards, 2025.

[9] For more information on energy efficiency indicators, see IEA (2014), *Energy Efficiency Indicators: Fundamentals on Statistics*, https://www.iea.org/reports/energy-efficiency-indicators-fundamentals-on-statistics; and IEA (2014); *Energy Efficiency Indicators; Essentials for Policy Making*, https://www.iea.org/reports/energy-efficiency-indicators-essentials-for-policy-making

and keep emissions down. It also underpins effective climate adaptation by ensuring that buildings provide safe, comfortable spaces (even during extreme heat or cold), with minimal reliance on heating/cooling systems.

Urban resilience would also involve better management of urban heat islands through smart planning and passive design principles. Measures such as increased canopy cover, shading devices, and thoughtful urban layouts help reduce radiative heat, lower energy demand, and create more liveable public and private spaces.[10] Western Sydney remains both a clear example of, and a priority area for, urgent action to address the urban heat island effect.[11]

Building resilience also requires a systems approach, recognising how interconnected challenges can be addressed together. For example, with the likelihood of more frequent droughts, water-saving measures will be critical not only for community resilience but also for energy system stability.[12] Reducing water use through leak prevention and efficient appliances also decreases the energy required for pumping and heating, benefiting both water and energy efficiency.[13]

A resilient NSW will prioritise interventions that deliver co-benefits – addressing climate risks while enhancing liveability (health and comfort), system performance (efficiency, cost management, and productivity), and long-term sustainability (ensuring homes and businesses are built to be climate-resilient and net zero compatible).

Question 24: What additional information and evidence should the commission consider when assessing progress towards the adaptation objective?

Health should be a central consideration when assessing progress toward the adaptation objective. It is one of the clearest indicators of whether our built environments and systems are truly resilient.

The Commission should examine whether at risk populations in NSW (including children, older people, and those with pre-existing health conditions), are still being exposed to preventable risks. For example:

[10] NSW Government, Climate change impacts on urban heat.
[11] NSW Government, Urban heat.
[12] IEA, Introduction to the water-energy nexus, 2020.
[13] DCCEEW, Water efficiency.

- Are residents exposed to indoor air pollutants from gas stoves, and how does this intersect with health outcomes such as asthma and respiratory illness?[14]
- Are indoor temperatures in homes (particularly for renters, social housing tenants, and those in low-income households) consistently meeting World Health Organisation temperature guidelines[15] for healthy living conditions?
- Are the homes being built today designed to withstand the more extreme temperatures expected in the coming decades, without relying excessively on mechanical heating or cooling?[16]

These questions point to the need for a broader and more people-centred evidence base when tracking adaptation progress. Health data, occupant experience, and building performance should be regularly monitored to assess whether NSW is genuinely building resilience, not just in infrastructure, but in the lived experience of its people.

Ultimately, the resilience of NSW should be measured not only by what is built, but by how safely and comfortably people can live, especially during extreme weather events. The Commission has a vital role to play in ensuring these human outcomes are not overlooked.

Effective use of climate change projections

Question 25: How can adaptation planning better use the NSW Government's climate change projections (NARCliM)?

Housing construction and design standards under BASIX, the National Construction Code (NCC) and the Sustainable Buildings State Environmental Planning Policy (SEPP) should integrate projected climate data to define a resilience standard and requirements for energy efficiency.

Current NCC and BASIX standards are based on past climate data (using years 1990-2015), whereas projections suggest that homes built today are likely to be in use under significantly changed climate conditions including more extreme heat events. Western Sydney has been identified as a region with high vulnerability to climate impacts and homes likely to offer limited resilience.[17]

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[14] National Asthma Council Australia, Gas stoves and asthma in children.

[15] Telfar Barnard L, Howden-Chapman P, Clarke M, Ludolph R. Web Annex B. Report of the systematic review on the effect of indoor cold on health. In: WHO Housing and health guidelines, Geneva: World Health Organization, 2018.

[16] Sweltering Cities and Renew, Future Climate Impacts on Home Energy Standards, 2024.

[17] WSROC, Future Proofing Residential Development in Western Sydney.

Exploring NSW's preparation and responses to extreme heat events

Question 27: What initiatives should the commission consider in assessing NSW's preparation and responses to extreme heat and humidity events in NSW?

To assess NSW's preparedness and response to extreme heat and humidity, the Commission should consider monitoring initiatives that improve the thermal performance and liveability of homes, particularly for health or economically disadvantaged households.

At a bare minimum the government could consider initiatives to ensure disadvantaged households have access to basic measures to improve the thermal comfort of their homes such as:

- Insulation;
- Effective draught proofing;
- Suitable internal window coverings; and
- Energy efficient ceiling or pedestal fans.

These interventions can be low-cost, high-impact ways to improve indoor comfort and reduce health risks during heat events. Critically, they reduce reliance on energy-intensive cooling appliances, lowering energy bills and relieving pressure on the electricity grid during peak periods.

One way of establishing a 'floor' in energy access for a large part of the population is via regulations such as minimum rental standards that ensure that all tenants, especially those in low-income or marginalised groups, have access to safe, healthy homes. Renters are among the most vulnerable during extreme heat, and landlords, who profit from the occupation of their properties, should be required to meet basic thermal performance benchmarks. At a minimum, all rental properties should meet the World Health Organisation's safe indoor air temperature guidelines[18] without the need for costly, inefficient cooling devices in every room.

[18] Telfar Barnard L, Howden-Chapman P, Clarke M, Ludolph R. Web Annex B. Report of the systematic review on the effect of indoor cold on health. In: WHO Housing and health guidelines, Geneva: World Health Organization, 2018.

Access to low-interest finance and targeted public subsidies will be vital in helping householders and afford necessary upgrades. This must be paired with widespread community education to raise awareness of the health risks of extreme heat, and the solutions available to reduce them.

Each of these items provides an opportunity for the Commission to measure progress and build a much-needed, more detailed understanding of the resilience of NSW's building stock, particularly its capacity to withstand extreme heat events.