Energy Savings Scheme and Peak Demand Reduction Scheme statutory reviews 2025

EEC Submission

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About the EEC

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.

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.

Summary

Thank for providing the opportunity to comment on the Energy Savings Scheme (ESS) and Peak Demand Reduction Scheme (PDRS) statutory reviews 2025 Consultation Paper.

The EES and PDRS have been crucial in driving energy performance improvements in NSW. The next statutory review comes at a critical junction in NSW's energy transition, characterised by the need to:

- rapidly reduce emissions associated with fossil fuel use,
- unlock the power of energy management to integrate more variable renewables into the electricity grid while retiring the coal power fleet, and
- improve the thermal performance of buildings to support higher levels of electrification and flexible demand as well as the other co-benefits for NSW homes and businesses.

With reforms to their objectives, design and delivery, the ESS and PDRS could deliver even greater improvements to energy performance. These reforms are summarised below.

Scheme objectives

- Ensure the objectives of the ESS and PDRS complement each other and focus on the desired end states of each scheme.
- Change the primary objective of the ESS to be optimising energy use, including fuel switching to drive electrification.
- Retain a focus on 'capacity' in the PDRS objective to complement other incentives for flexible demand 'generation'.

Scheme design

- Change ESS certificate conversion factors for electricity in the Act to drive electrification.
- Consider sub-targets or certificate multipliers for vulnerable cohorts to improve equity.
- Consider complementary measures to manage equity concerns associated with retiring the gas network.
- Consider adjusting the summer peak demand periods and rewarding winter peak demand reductions.
- Add new methods to encourage thermal performance upgrades, potentially packaged with other upgrades.

- Add new baseline measurement methodologies to unlock commercial and industrial flexible demand in the PDRS.

Scheme delivery

- Ensure better transparency and consistency of guidance on product registration and testing methods.
- Work closely to align NSW schemes with other state schemes.
- Improve consultation with scheme participants to provide certainty.
- Improve coordination between NSW agencies to strengthen compliance.

Data and evaluation

- Conduct higher levels of ex-post evaluation to verify the accuracy of deemed methods.
- Consider leveraging new technologies for M&V and to underpin new methods.
- Work with energy market bodies to obtain and share data to inform place-based activities.

More information on each of these reforms is provided in the sections that follow.

For further information, or to discuss any of the ideas contained within this submission, please contact jeremy.sung@eec.org.au.

Yours sincerely,

Jeremy Sung, Head of Policy

1. Scheme objectives

Ensure objectives focus on the desired end state

It is important that objectives focus on the clear 'end state' which the schemes are designed to achieve.

The objectives of both the ESS and the PDRS currently refer to the creation of a 'financial incentive.' This is the mechanism for achieving the ultimate goal of energy saving activities (in the case of ESS) and activities that create peak demand reduction capacity (in the case of the PDRS).

A precise reading of the current wording, the schemes' success is based on whether they *created a financial incentive* to save energy or reduce peak demand, rather than whether they saved energy or reduced peak demand. Put another way, the current wording allows for both schemes to be evaluated as successful if they create financial incentives, even if these incentives are not taken up by businesses and households, meaning no energy is saved or peak demand reductions occur.

Changes to the wording of both objectives to improve their use in assessing scheme efficacy are suggested below.

Optimising energy use should be the primary objective of the ESS

The EEC recommends that the primary ESS objective should become optimising energy use, rather than creation of financial incentives or energy savings per se. Increasing levels of renewable energy are profoundly changing the characteristics of our electricity system. *When* energy is used is increasingly important, both financially and for system management. For example, one byproduct of the rising penetration of rooftop solar is that the electricity system operator is increasingly concerned about maintaining minimum operational demand in the middle of the day to maintain the integrity of the electricity system and minimise the curtailment of renewables.

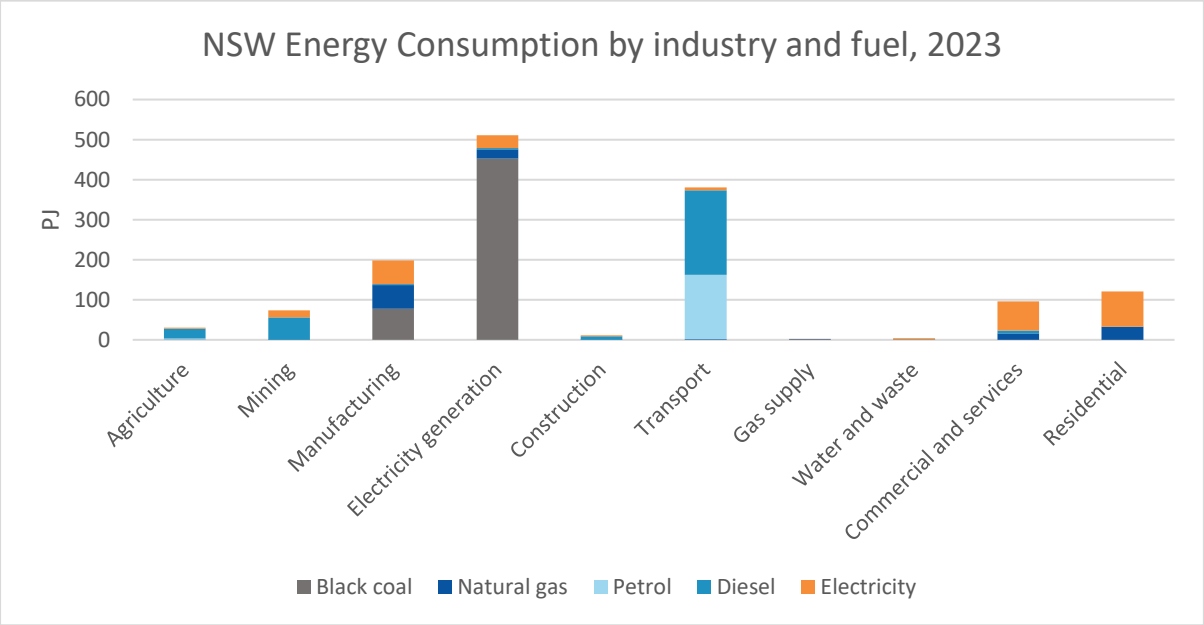
Optimising energy use encompasses:

- Reducing energy waste, for example by improving the poor thermal performance of existing buildings.
- Replacing the consumption of fossil fuels with electricity (electrification). Efficient electric devices tend to reduce energy waste by converting electrical energy into useful energy with fewer losses compared with devices that combust fossil fuels. As the electricity grid decarbonises, they will also produce less GHG emissions than devices that combust fossil fuels.
- Shifting electricity consumption to times of the day when there is a surplus of emissions-free renewable electricity and reducing or avoiding demand when variable renewable energy generation is low.

All three of these strategies will be critical if NSW is to meet its legislated emissions reduction targets cost-effectively.

Optimising energy use also drives down emissions. Data from the Australian Energy Statistics (Figure 1) show that NSW's energy consumption is dominated by fossil fuels, so reducing wasted energy, particularly fuels other than electricity, will directly reduce greenhouse gas (GHG) emissions reductions.

Figure 1 NSW energy consumption by industry and fuel, 2022-23



Source: Australian Energy Update 2024, Table F, Australian energy consumption, by state and territory, by industry and fuel type, energy units

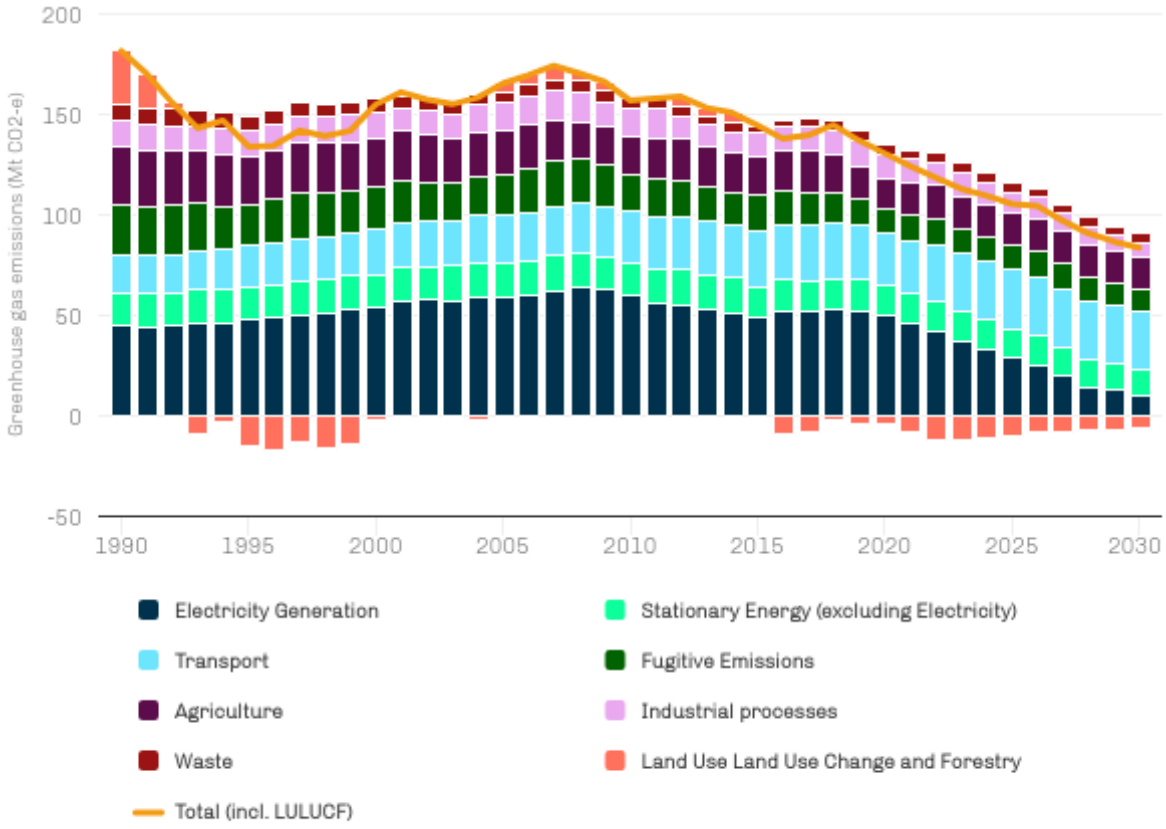
With NSW committed to ambitious emissions reduction targets for 2030 and particularly 2035, the primary reason for reducing energy waste is to reduce fossil fuel related GHG emissions. Nonetheless, there are also compelling reasons for the proposed objective of 'optimising energy use', including:

1. **Optimising energy use as the primary objective maintains a focus on the demand side of the energy system**, for which policy is generally under provided. Making GHG emissions reduction the primary objective opens the possibility that other emissions reduction activities should be included in the scheme – unrelated to reducing energy waste.
2. **Optimising energy use as the primary objective would maintain energy as the metric used to measure the impact of activities under the scheme**. Shifting to an emissions reduction objective would imply a change to GHG emissions as the metric used to measure the impact of scheme activities, which could take time to accurately calibrate.

That said, revising the objectives as proposed would require a change to the certificate conversion factors in schedule 4A of the Act to ensure the scheme drives electrification activities (See Section 2 below for more detail).

Why electrification should be included in the primary objective

Figure 2 NSW projected greenhouse gas emissions, 1990-2030



Source: Greenhouse Gas Emissions | NSW State of the Environment

Electricity-related emissions are projected to decline to 2030 as the state's coal-fired power stations reach their end of life (Figure 2). In contrast, other stationary energy-related GHG emissions are currently projected to remain relatively unchanged, as the consumption of fossil gas and diesel continues in sectors of the economy beyond electricity generation.

Encouraging fuel switching from fossil fuels to electricity should therefore become a primary objective of the ESS as it will support NSW to achieve its legislated target to achieve net zero emissions, by reducing sources of emissions from the Stationary Energy (excluding Electricity) sector.

Efficient electrical devices also tend to be more efficient at converting energy into useful services, like heat. For example, an electric heat pump hot water heater has a coefficient of performance of at least 3, versus gas boiler of less than 1. Switching from fossil fuelled devices

to efficient electric devices therefore supports the EEC's proposed objective of optimising energy use, by reducing energy waste.

Finally, only grid-integrated electric devices – unlike fossil fuel burning devices – can provide grid services (e.g. demand response, frequency control, etc) that are increasingly valuable for electricity system management.

Retain 'capacity' in the PDRS objective

The PDRS's primary objective contains a reference to 'capacity'. The EEC supports retaining a focus on capacity as it reinforces that the scheme exists partly to reward providers of 'flexible demand capacity'.

This is important given that current market mechanisms for flexible demand – for example the Wholesale Demand Response Mechanism (WDRM) – tend to reward providers of flexible *energy* demand (i.e., providers of MWh) as opposed to *capacity* providers, that may be called upon to provide grid services (MW).

The PDRS can play an important complementary role, alongside other flexible demand energy markets (like the WDRM) by providing direct incentives for the 'construction' of flexible demand capacity, similar to the incentives that exist for both the construction and operation of renewable energy assets on the supply side.

Proposed changes to the ESS objectives

The EEC proposes the following changes to the ESS objectives, to improve clarity and better reflect the current policy and energy market context:

To ~~create a financial incentive to reduce~~ optimise the consumption of energy by encouraging energy saving and fuel switching activities

- To assist households and businesses to reduce ~~energy consumption and~~ energy costs.
- To ~~complement any national scheme for carbon pollution reduction by making the~~ reduce~~tion of~~ energy-related greenhouse gas emissions ~~achievable at a lower cost~~.
- To reduce the cost of, and the need for, additional energy generation, storage, transmission and distribution infrastructure.

Proposed changes to the PDRS objectives

The EEC proposes the following minor changes to the PDRS objectives:

To ~~create a financial incentive to~~ reduce peak demand for electricity by encouraging activities that create peak demand reduction capacity.

- To improve the reliability of electricity supply.
- To reduce the cost of electricity for customers.
- To improve the sustainability of electricity generation.

2. Reform opportunities

2.1 Scheme design

Objectives should support ESS and PDRS alignment

As discussed in section 1 above, the EEC recommends adjusting the objectives to better reflect the changing nature of the energy system.

Irrespective of the precise wording in the schemes' objectives, it is critical that the ESS and PDRS are aligned and complement each other: energy savings should not be achieved at the expense of flexible demand, and vice versa.

In practice, this means closely examining the methods under each scheme to ensure they reinforce each other. For example, hot water and space heaters installed under the ESS will align well the PDRS if they are controllable, with the potential to shift their energy use away from peak periods to periods of high solar penetration. Conversely, incentivising a switch from gas to electric water and space heaters through the ESS that only operated during peak periods would directly contradict the aims of the PDRS.

Change ESS certificate conversion factors for electricity in the Act to drive electrification

Clause 33(1) of Schedule 4A in the *Electricity Supply Act 1995* (the Act) effectively rewards activities that reduce electricity demand over activities that reduce consumption of other fuels via certificate conversion factors that function as de facto emissions factors. Energy savings from electricity are multiplied by 1.06, which is higher than other fuels, a legacy of the scheme prioritising savings from an electricity grid dominated by coal power throughout the day.

The changing nature of electricity supply – dominated by renewables in the middle of the day – and the need to incentivise electrification activities, necessitates a more nuanced approach to certificate creation from electricity savings, which recognises that:

- savings at peak periods are more valuable than savings in the middle of the day; and
- minimum operational demand is a growing problem that could be reduced by shifting some electricity consumption in the middle of the day.

There are a range of policy options available to the NSW Government including:

1. Adjusting the certificate conversion factors to reduce the difference between electricity and other fuels.
2. Removing certificate conversion factors altogether so electricity savings are not prioritised over other fuels.
3. Introducing time-of-use electricity certificate conversion factors that award more certificates from electricity savings at certain times of the day. An illustrative example of what these factors might look like is provided at Appendix A.

There may be other options to address this issue and it is up to the NSW Government to determine which would best address the policy problem while striking the right balance of administrative burden versus accuracy. The ECC suggests that certificate conversion factors are removed from the Act, and any replacement factors are instead included in the Scheme Rule, to allow for the Government to respond more nimbly as new energy system challenges emerge over time.

Consider sub-targets or certificate multipliers for vulnerable cohorts to improve equity

EEC members report that a large share of energy savings activities under the ESS have taken place in commercial buildings relative to households, including vulnerable households. This is backed up by data showing that 85% of the energy savings from deemed methods were from commercial lighting between 2009-21[1].

To ensure that a greater diversity of energy consumers benefit from the schemes, the NSW government could consider setting sub-targets to ensure a minimum level of activity occurs within vulnerable households, similar to the approach adopted in the South Australian Retailer Energy Productivity Scheme. An alternative would be to introduce certificate multipliers for certain activities, where those activities are delivered to vulnerable households.

Setting sub-targets for priority customers may impose additional costs to obligated parties so the Government would need to conduct a thorough cost-benefit analysis to confirm that the

[1] Energy Security Safeguard Schemes - Schemes update 2022–23 - Supplementary data | IPART (nsw.gov.au)

additional costs of compliance do not exceed the benefits and to determine if other complementary measures might be a better way of assisting vulnerable cohorts.

Consider complementary measures to manage equity concerns associated with retiring the gas network

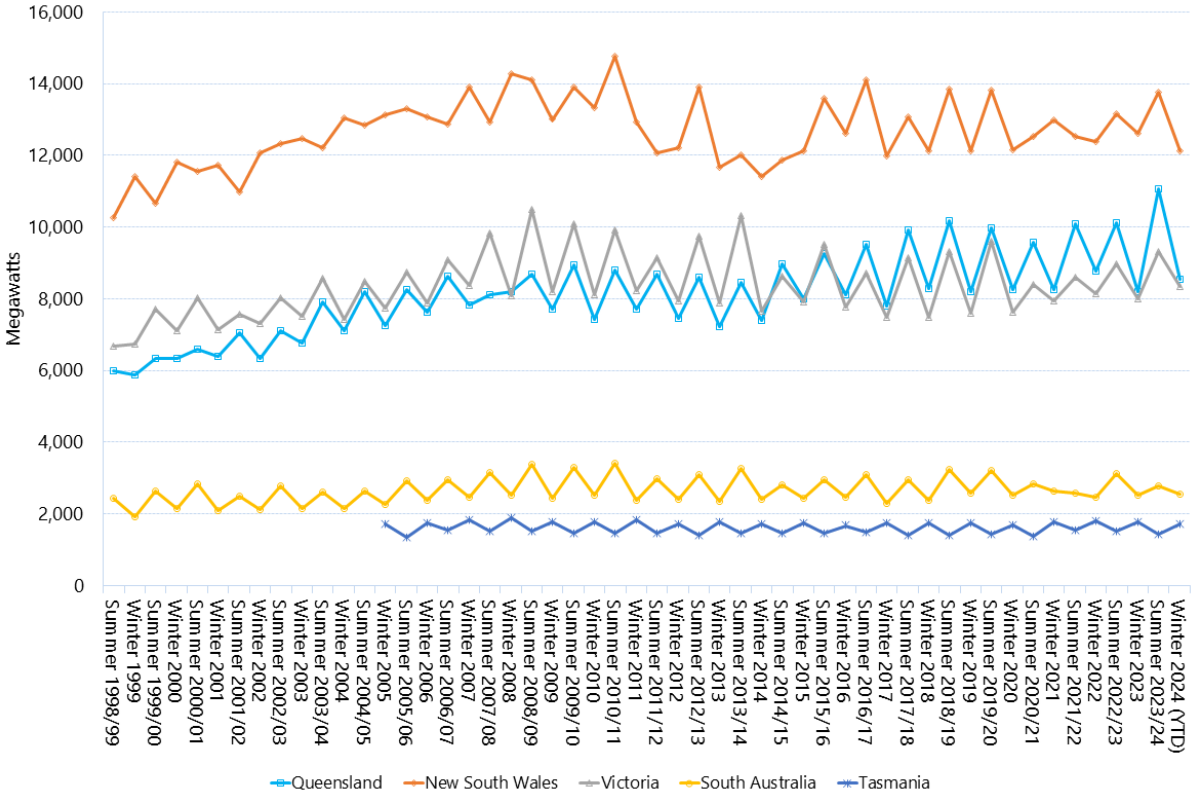
Adjusting the ESS to include electrification as a primary objective will incentivise energy consumers to leave the gas network. Over time, consumers that remain connected to the gas network (often not by choice, in the case of cohorts such as renters) will face higher fees to remain connected unless action is taken to manage those costs in other ways. Complementary policies will be needed to ensure the most vulnerable consumers are not left paying higher connection fees to remain connected to the gas network serving fewer and fewer connections over time.

Consider adjusting the summer peak demand periods and rewarding winter peak demand reductions

The PDRS currently defines the peak demand period as being between 2:30pm and 8:30pm from 1 November to 31 March (i.e. summer peak demand). Some of the EEC's members have suggested minor adjustments could be made to recognise that summer peak demand periods appear to continue beyond 8:30pm.

Winter demand is already high in NSW, and with the shift to electric space and water heating, is likely to become 'peakier'. Already NSW electricity demand has experienced years (for example in 2012-13 and 2020-23) when there is less difference between the Winter and Summer peaks (Figure 3). This indicates there would be merit in rewarding winter peak demand reductions through the PDRS.

Figure 3 Winter and Summer peak demand by region



Source: Seasonal peak demand - regions | Australian Energy Regulator (AER)

Add new methods to encourage thermal performance upgrades, potentially packaged with other upgrades

Improving the thermal performance of residential buildings has significant peak demand benefits. Good thermal performance allows smaller reverse cycle air conditioners can be installed and means they do not need to run as 'hard' to maintain a comfortable temperature.

Good thermal performance also opens the opportunity of pre-heating or cooling residential buildings, shifting load out of peak periods and assisting with managing minimal operational demand.

Conversely, space conditioning activities under ESS and PRSR are less likely achieve their desired outcomes in buildings with poor thermal performance: Even using high quality reverse-

cycle air conditioners, occupants are more likely to experience discomfort[2] and continue to condition their spaces during peak periods[3].

This suggests there is a strong imperative for thermal performance activities to be added into the ESS, as a complement to the PDRS.

Any move to introduce insulation into the ESS should ensure the following:

- **Trained and certified installers**: insulation installation must be undertaken by an EEC Certified Insulation Installer, or equivalent;
- **Product certification**: insulation materials used should have independent third-party building product certification through the Australian Building Codes Board administered CodeMark Certification Scheme, or similar JAS-ANZ governed certification scheme;
- **Application**: products should be applied where they are fit for purpose, supported by appropriate warranties;
- **Electrical safety**: electrical safety inspections should undertaken by a licensed electrician prior to installation;
- **Compliance**: independent audits should be conducted after insulation installs, with material consequences for non-compliance; and
- **Stability**: the activity should be kept in the scheme for a sustained period of time to avoid goldrush scenarios that create conditions for non-certified installers and non-conforming product to flood the market.

One possible barrier to including insulation in the ESS is that the certificate price may not be sufficiently high to drive uptake of an insulation activity on its own, if only the direct energy savings or GHG emissions impacts of the activity are accounted for. However, given the co-benefits that flow from well insulated homes – including improved comfort and health outcomes[4], not to mention peak demand reduction – there is a strong argument for including a certificate multiplier as part of the design of any new thermal performance activities.

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[2] Replacing gas heating with reverse-cycle aircon leaves some people feeling cold. Why? And what's the solution? (theconversation.com)

[3] Wilmot, K. et al. (2021). Residential solar pre-cooling and pre-heating. Final report of the H1 Opportunity Assessment. RACE for 2030 CRC. https://racefor2030.com.au/wp-content/uploads/2023/03/H1-Residential-Solar-Pre-cooling-OA-report_Final-1.pdf

[4] Page, K. *et al.* (2024). Outcomes from the Victorian Healthy Homes Program: a randomised control trial of home energy upgrades. medRxiv preprint doi: https://doi.org/10.1101/2024.07.24.24310955

There could also be benefits in packaging insulation upgrades with other technology upgrades as part of a new integrated retrofit activities. For example, there is a logical fit with upgrading a home's insulation and its space heating and cooling systems. In Ireland, government programs require a minimum level of thermal performance to be achieved as part of electrification of space heating, ensuring that the reverse cycle air conditioner is appropriately sized.

Additional opportunities for integration include home energy management systems or simple timers to control electric devices, as well as upgrades to lighting upgrades and related electrical infrastructure that require access to the roof cavity.

The relationship between ceiling insulation and lighting is significant from both a safety and energy performance perspective. For example, downlights are common in many homes but are often not designed and certified by the manufacturer for contact with combustible materials or for enclosure by thermal insulation. They also tend to have large gaps where heat can escape into the ceiling in winter, or cool in summer. Upgrading the lighting system to modern, IC4 rated LED fittings saves energy from the lighting and by preventing heat losses around the light fitting in winter, or cooling losses in summer. These light fittings also allow for the safe installation of ceiling insulation above them, offering even greater energy savings benefits.

New baseline measurement methodologies to unlock commercial and industrial flexible demand in the PDRS

The proposed Wholesale Annual Response Mechanism method requires commercial and industrial facilities to be eligible to participate in the WDRM. However, the WDRM, as currently designed, has stringent eligibility criteria that essentially limits participation to facilities with flat load profiles. Some EEC members estimate this excludes 80–95% of commercial and industrial loads and is therefore a major barrier to scaling.

To assist with the challenges of baseline measurement in commercial and industrial facilities, which are an impediment to the scaling of flexible demand, the PDRS could enable testing of alternative baseline measurement methodologies that are recognised in international jurisdictions – similar to the metered baseline approach in the ESS. Impacts could be reviewed after 2–3 years.

2.2 Delivery

Ensure better transparency and consistency of guidance on product registration and testing methods

EEC members report that the existing processes for registering new products under the schemes can be opaque and confusing, with different processes required for registering and testing similar products. This is resulting in barriers for reputable product manufacturers registering their products under the schemes.

In addition, some EEC members report that scheme administrators providing guidance on product testing methods have sometimes provided inconsistent advice, leading to confusion. These issues were mentioned in relation to heat pump products, but may be present in other product categories.

Work closely to align NSW schemes with other state schemes

EEC members note that while the ESS shares many similar activities with other state schemes, alignment between the schemes could be improved. This includes but is not limited to product registration and installation requirements.

For example, for heat pump hot water systems, the Victorian Energy Upgrades program (VEU) sets several product and installation requirements that are absent from the ESS, such as use of refrigerants with a global warming potential of less than 700, inclusion of timers, and appropriate sizing. These requirements are designed to shift the market towards higher-quality and appropriately-sized products, installed to higher standards. Aligning with other schemes in instances such as this will improve quality, reduce ambiguity for businesses operating across borders, and increase consumer trust in energy efficient products.

It is positive that administrators of each of the state schemes are meeting more frequently and the EEC would be happy to provide more detailed feedback from our members on areas where collaboration and alignment could improve scheme

Improve consultation with scheme participants to provide certainty

EEC members suggested that improvements could be made to the way the NSW Government consults with industry on changes to the schemes. Some members noted that while the annual stakeholder forum is useful, email communications from IPART are sometimes missed, meaning industry stakeholders miss important news about changes to the schemes.

Some members suggested that NSW could adopt features of Solar Victoria's industry consultation processes. For example, each year Solar Victoria publishes an annual notice to market[5] that provides industry with clarity as to what is required to participate in the programs for the coming year, noting that many of the changes tend to be flagged one year in advance, providing adequate lead time to prepare.

Improve coordination between NSW agencies to strengthen compliance

Some EEC members noted that coordination between NSW agencies responsible for overseeing the schemes, electrical work, plumbing work, and building work is not well coordinated, meaning oversight of certain activities may be poor. These members pointed to recent efforts in Victoria to create a regulatory taskforce to oversee energy performance upgrades. This involved the scheme regulator (Essential Services Commission) collaborating with Solar Victoria, DEECA, Energy Safe Victoria, and the Victorian Building Authority, to ensure that heat pump hot water systems being installed under Victorian Government incentive programs are done safely and in compliance with relevant regulations.

[5] For a recent example, see: Notice to Market 2024-25 | solar.vic.gov.au

2.3 Data and evaluation

Conduct higher levels of ex-post evaluation to verify the accuracy of deemed methods

While there are obvious cost advantages to using deemed energy savings methods as part of the ESS, the trade-off with deemed energy methods is accuracy. Deemed methods that overstate energy savings and emissions savings risk compromising NSW's progress towards achieving its ambitious emissions reduction goals by misrepresenting the impact of the schemes. This also adds unnecessary costs for energy consumers.

EEC members have raised particular concerns with methodologies for commercial and industrial heat pump hot water systems that may be overstating energy savings due to inaccurate assumptions on their time of use, among other issues.

Deemed methods that do not accurately capture the time of energy savings are increasingly problematic as the timing of energy savings becomes more important with the shift to greater shares of variable renewables in the grid.

With these issues in mind, deemed methods should be adjusted and developed that better consider the timing of energy savings. Importantly, ex-post evaluation should be conducted on a representative sample of installations to verify that the deemed savings assumed are accurate. Alternatively, new methods could be developed that make better use of metered data and new technologies (see below).

Consider leveraging new technologies for M&V and to underpin new methods

Technology has advanced significantly since the ESS was established. Technologies such as artificial intelligence and machine learning increasingly allow for the precise identification of changes to energy use patterns with relatively few data points from smart meters. This opens the possibility of creating new methods that can more accurately predict ex ante energy savings.

Examples from other jurisdictions include various US states where smart meter data is used in concert with weather and other data in machine learning algorithms that generate predicted energy savings from energy efficiency upgrades with very high accuracy[6].

For monitoring and evaluation, these technologies hold the prospect of reducing the administrative burden, time and cost, which some EEC members report is relatively high in NSW compared with other states, owing to 'double handling' by auditors and IPART.

Work with energy market bodies to obtain and share data to inform place-based activities

Ideally, both the ESS and PDRS should support the efficiency, reliability and sustainability of the National Electricity Market (NEM) in NSW, especially given one of the current objectives of the ESS is to reduce the cost of, and the need for, additional energy generation, transmission and distribution infrastructure.

This implies better data sharing, between scheme administrators, retailers, network operators and energy market bodies. Scheme administrators would benefit from having data from retailers and DNSPs highlighting constraints in the distribution network where targeted investments in energy performance upgrades in homes and businesses could reduce pressure on the grid. This data is available at the NMI level but is not easily available to policymakers working on the schemes. Having access to this data would permit scheme administrators to design targeted interventions by geographical location (i.e., potentially setting sub-targets for network-constrained areas of the grid).

Conversely, DNSPs and the energy market operator responsible for designing and delivering new generation, transmission and distribution infrastructure would benefit from having more detailed information about recently installed and planned energy performance upgrades by post-code or NMI, which would allow them to better predict future demand and avoid overbuilding and overinvesting in more costly supply-side infrastructure.

[6] See for example, products from Recurve, used by various US utilities, https://www.recurve.com/.

Energy Efficiency Council

Level 18, 1 Nicholson Street,
East Melbourne 3002
Victoria, Australia

eec.org.au