



20 February 2026

To: NSW Department of Climate Change, Energy, the Environment and Water
Re: Energy Security Safeguard policy reform

Thank you for the opportunity for the Institute for Energy Economics and Financial Analysis (IEEFA) to provide input to the Energy Security Safeguard policy reform consultation.

IEEFA is an independent energy finance think tank that examines issues related to energy markets, trends and policies. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy.

A significant focus of IEEFA's work is examining the role of the demand-side in delivering a least-cost decarbonised energy system. We commend the government of New South Wales for undertaking this broad-reaching review of the Energy Security Safeguard, as this represents a significant opportunity to elevate the contribution of the demand-side to NSW's energy future.

IEEFA supports an increased focus on electrification under the Energy Savings Scheme, and we believe this can be managed in a way that also supports electricity reliability.

We see opportunities to expand the Peak Demand Reduction Scheme via activities that would reduce costs for consumers while helping to manage both summer and winter peak demand.

We also support an increased effort to improve access to the ESS and PDRS – particularly for financially disadvantaged households, renters and apartment dwellers. However, we note that for such efforts to be effective, they will likely require broader policy changes such as improved minimum rental standards.

In addition to these matters, we have responded to specific consultation questions, and have provided a separate submission in response to the Energy Security Safeguard rule change reform consultation.

Further detail can be found on the following pages. Please do not hesitate to contact us if you have any queries regarding this submission.

Kind regards,

Jay Gordon, Energy Finance Analyst – Australian Electricity



Balancing electrification and reliability

There is a strong financial and energy security case for supporting NSW households to transition from gas to electricity.¹ IEEFA understands the NSW government is likely to explore this topic further in the development of a gas decarbonisation roadmap.

In Victoria, electrification incentives have been added to the Victorian Energy Upgrades (VEU) program to support consumers to shift towards appliances with lower running costs, and to support other government regulations that aim to reduce the state's dependence on fossil gas.²

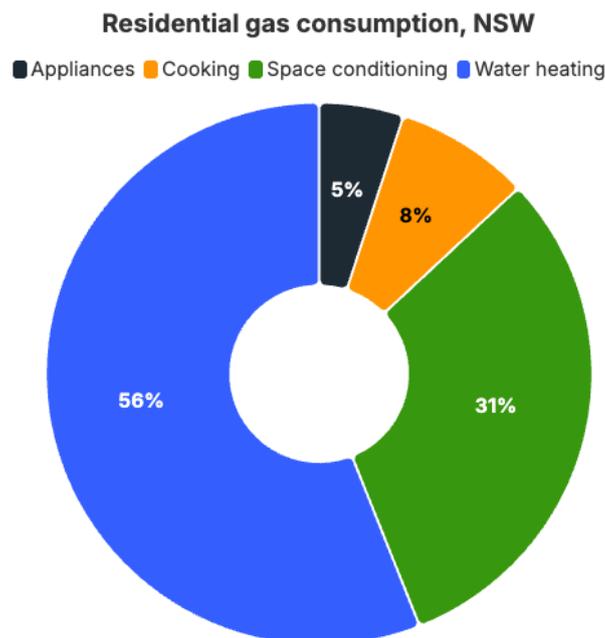
Electrification naturally increases electricity consumption – and the NSW government has raised a valid question of how it should be managed in a way such that does not impact the state's electricity system reliability.

IEEFA's analysis highlights that, if managed well, electrification of gas appliances need not present a threat to electricity system reliability. Two key strategies would help to manage this: focusing on flexible electrification of hot water, and balancing electrification with other efficient appliance upgrades.

(1) Focus on flexible electrification of hot water

Hot water systems are the most significant household electrification opportunity in NSW, accounting for more than half of the state's residential gas consumption (Figure 1).

Figure 1: Breakdown of residential gas consumption in NSW



Source: 2025 projections from Residential Baseline Study ([EnergyConsult, 2021](#)).

¹ IEEFA. [A focus on homes, not power plants, could halve energy bills](#). 9 July 2025. Page 12; IEEFA. [No shortage of solutions to gas supply gap](#). 19 April 2024. Page 6.

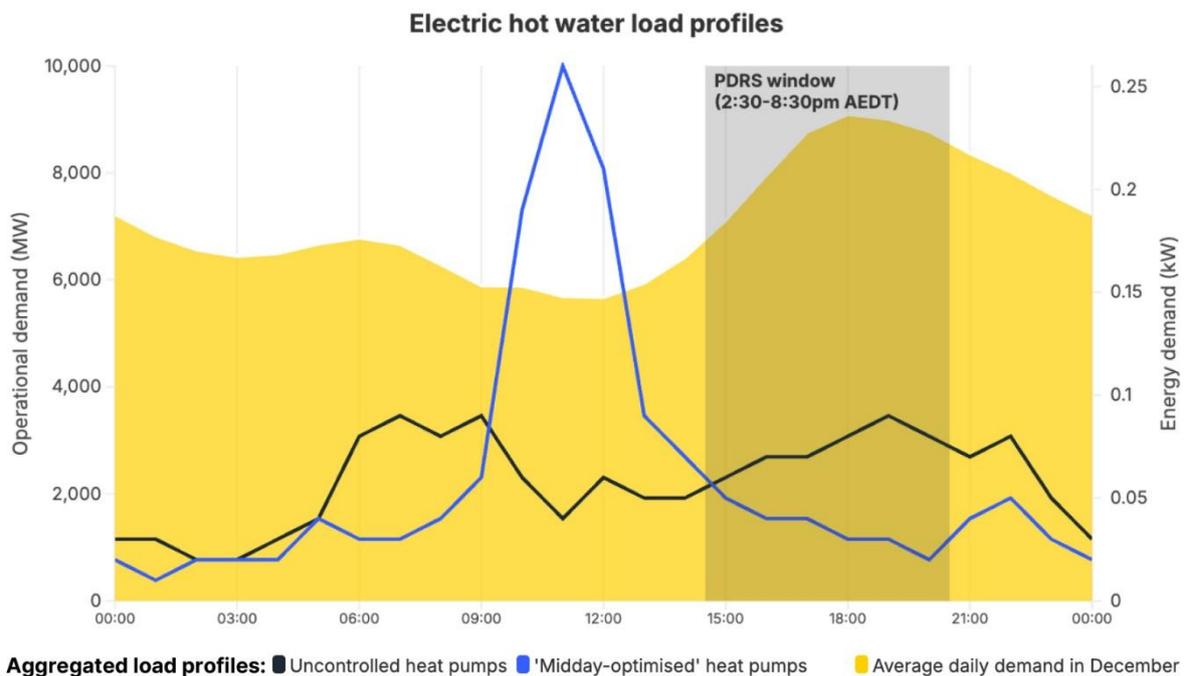
² Victorian Department of Energy, Environment and Climate Action (DEECA). [Victorian Energy Upgrades: Space heating and cooling. Response to Consultation](#). December 2022. Page 13.



The most efficient electric alternative to a gas water heater is a heat pump hot water system. Heat pump hot water systems, as with other storage water heaters, are flexible loads. Heat input can be provided at any time of the day, provided a continuous supply of hot water is available from the storage tank.³

Heat pump hot water systems that are programmed to heat up primarily during off-peak times (such as the midday solar period on most days of the year), and can mitigate reliability concerns by preventing electricity loads from being added during peak periods (Figure 2). Shifting these systems' energy inputs to the solar period can also reduce Scope 2 emissions associated with their operation.

Figure 2: Comparison of uncontrolled vs 'midday-optimised' hot water load profiles



Source: NSW December average daily load profile from [AEMO](#). Uncontrolled profiles derived from [Mohseni et al. 2023](#). 'Midday-optimised' profile derived from analysis of data from [Solar Analytics Pty Ltd](#). Adapted to NSW context via method discussed in [IEEFA 2025](#). Load profile shapes are aggregated – it may be possible to reshape 'midday-optimised' profiles to entirely avoid the PDRS window.

Passive control of hot water systems via built-in or external timer controls is relatively easy to achieve, and could readily ensure heat pump hot water systems avoid the PDRS summer peak demand period.

IEEFA analysis has highlighted that dynamic management of hot water systems would deliver the greatest benefits, and most heat pump hot water systems available to the Australian market are equipped with the underlying technology to make this possible.⁴

³ For an in-depth study on this, see UTS Institute for Sustainable Futures. [Domestic Hot Water and Flexibility](#). 16 May 2023.

⁴ IEEFA. [Australia needs more efficient, smarter home hot water systems](#). 21 August 2024. Pages 9, 6.



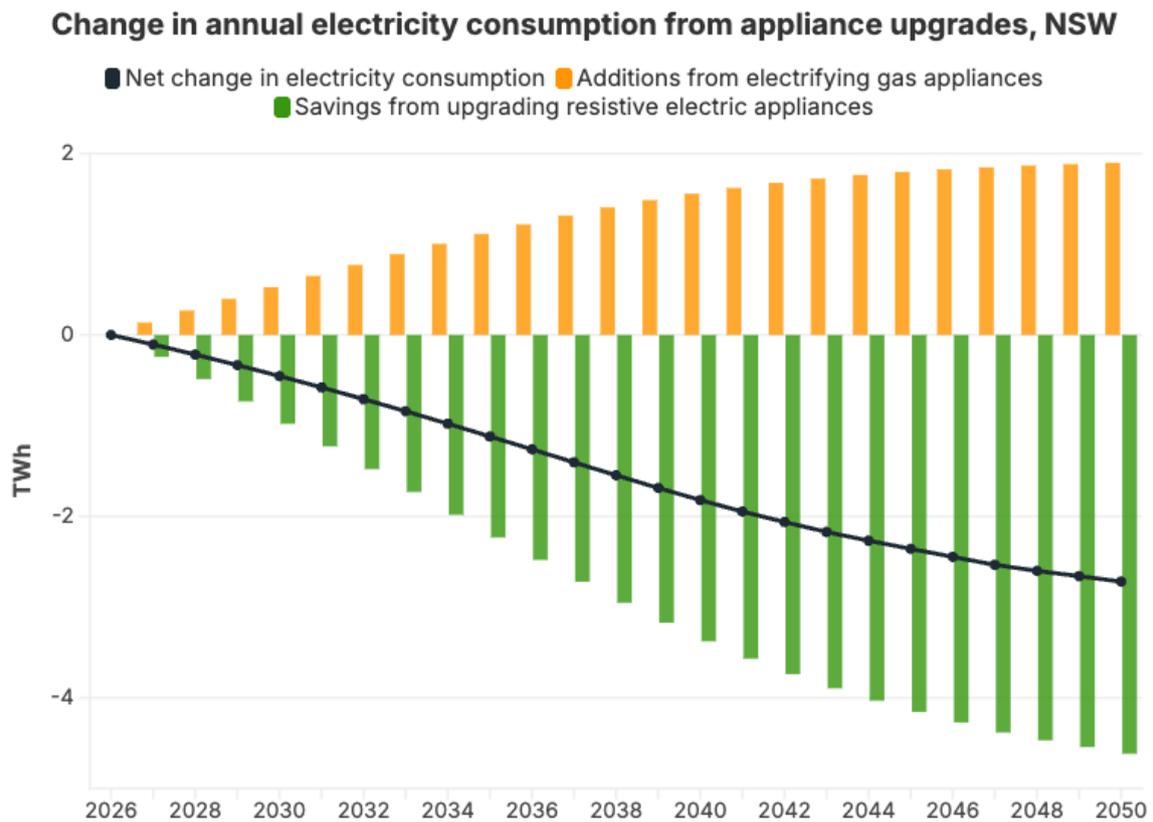
(2) Balance electrification with other efficient appliance upgrades

Data from the Residential Baseline Study suggests there are more resistive electric storage hot water systems than gas hot water systems in NSW.⁵ There are about five times the number of resistive electric space heaters as there are gas space heaters.⁶ These resistive electric appliances can consume 3-5 times the energy of an efficient electric equivalent.⁷

Consequently, for every gas appliance switched to an efficient electric appliance in NSW, there should be an opportunity to offset the additional electrical load by upgrading one or more equivalent resistive electric appliances.

IEEFA analysis shows that if all gas and resistive electric appliances were replaced with efficient electric alternatives at a similar pace (e.g. at their end of life), this would result in a net decrease in annual electricity consumption in NSW (Figure 3).

Figure 3: Impact of upgrading gas and resistive electric appliances in parallel.



Source: IEEFA modelling based on data from [EnergyConsult \(2021\)](#). Methodology aligns to that used in [IEEFA – Appliance standards are key to driving the transition to efficient electric homes](#).

We expect this net reduction would also manifest at a time-of-day level, as electrified heating or hot water loads would be offset by commensurate reductions in resistive electric heating hot

⁵ 1.8 million electric storage systems compared with 1.5 million gas systems (EnergyConsult. [2021 Residential Baseline Study for Australia and New Zealand for 2000 to 2040](#). 11 November 2022).

⁶ 3.7 million resistive electric heaters compared with 671,000 gas heaters (Ibid.)

⁷ IEEFA. [Appliance standards are key to driving the transition to efficient electric homes](#). 23 April 2024. Page 2.



water loads. If upgraded hot water systems were programmed to avoid peak periods, this would ensure an even stronger reliability benefit.

Further assurance could be provided by ensuring these upgrades are accompanied by broader thermal efficiency upgrades to dwellings; this could lower upgraded heating loads even further, providing an additional layer of assurance.

These findings indicate that it would be ideal for the ESS to support residential electrification and residential energy efficiency in parallel.

IEEFA therefore supports the NSW government's suggestion to introduce an electrification sub-target within the ESS. This sub-target should be designed in such a way that the anticipated uptake of electrification activities would be balanced by other energy efficiency activities in the long-term.

It may be possible for similar outcomes to be produced under the NSW government's alternative solution – introducing a new scheme specific for electrification. However, creating a new scheme could impose a significant administrative burden, and may take longer to implement. In IEEFA's view, it makes the most sense to support electrification via the existing architecture of the ESS and PDRS.

Expanding the peak demand reduction scheme

IEEFA sees several untapped opportunities for new peak demand reduction activities under the PDRS. These include:

- Introducing a PDRS activity for heat pump hot water systems replacing resistive electric hot water systems. To maximise impact, the activity could require systems to be configured with passive or dynamic controls to shift their energy consumption outside peak windows.
- Introducing a PDRS activity for household thermal efficiency upgrades.
- Allowing priority consumer groups to stack the BESS1 rebate with the Cheaper Home Batteries Program (CHBP) rebate – particularly those who face barriers to accessing batteries.

These opportunities are discussed in more detail in IEEFA's submission to the NSW government's ESS and PDRS rule change consultation.

Supporting summer and winter peak reduction

IEEFA has not analysed the potential for electricity demand in NSW to transition from summer peaking to winter peaking. This could be driven by several factors, including the uptake of residential electrification, energy efficiency and residential batteries.

IEEFA modelling identified that a household's average-day winter peak demand could increase significantly in Canberra and Melbourne if large gas heating loads were electrified.⁸ This is a

⁸ IEEFA. [A focus on homes, not power plants, could halve energy bills](#). 9 July 2025. Page 16.



product of households in those regions having high heating loads that are often met by gas, which may also be the case for some regions of NSW.

Therefore, while we do not specifically recommend expanding the PDRS definition to target winter peak conditions at this stage, we note that it would be helpful to prioritise PDRS activities that address winter peak conditions as well as summer. We also note that it would be useful for the NSW government to undertake further analysis on the likelihood and timing of a potential shift towards a winter-peaking electricity system.

The technologies mentioned in the suggested new activities above – hot water upgrades, thermal upgrades and batteries – are all impactful in both winter and summer peak periods.

Notably, our modelling findings for Melbourne and Canberra show that homes with a typical thermal efficiency rating and a battery used for self-consumption purposes only may have a limited ability to manage their winter peak demand. Allowing the battery to import from the grid as needed (for example via a VPP or other consumer-side controls), and/or upgrading the thermal efficiency of the dwelling were highly effective measures to address this.⁹

Improving access to the ESS and PDRS

Several demand-side barriers prevent consumers from accessing ESS and PDRS incentives. Some of these barriers are cost related. For example, some households do not have the upfront capital to participate in upgrades, even after rebates. Other households, such as apartment dwellers, face inherently higher upfront costs for some upgrades.

Other barriers are more structural. For instance, landlords have very limited incentive to make upgrades, even with existing ESS and PDRS incentives. Furthermore, some dwellings are constrained by a combination of physical or administrative barriers – as can be the case for apartments without outdoor space, or those requiring owners corporation approvals.

Introducing priority sub-targets for low-income households, rental properties and multi-unit dwellings would be a helpful first step to address these barriers. However, to be fully effective, we expect this would need to be accompanied by further policy measures.

Improving minimum energy efficiency standards for rental properties is likely necessary to meaningfully improve renters' access to upgrades. Several other jurisdictions have either increased their rental minimum standards, or are considering reforms.¹⁰

To support the uptake of solar and batteries for rental properties – additional policies may be needed, such as introducing a right for renters to request solar and batteries from their landlord, subject to a reasonable set of conditions.

More broadly, IEEFA suggests the NSW government consider how other jurisdictions are addressing these issues. In Victoria, for example, the VEU scheme is complemented by the Solar Homes program administered by Solar Victoria. Solar Homes offers incentives for rooftop solar, batteries and hot water upgrades, which are either means-tested and/or targeted specifically

⁹ IEEFA. [A focus on homes, not power plants, could halve energy bills](#). 9 July 2025. Page 20.

¹⁰ For example, Victoria ([Consumer Affairs Victoria](#) 2025) and South Australia ([SA Parliament](#) 2025).



towards hard-to-reach households such as apartments or renters. Solar Victoria publishes detailed program reporting data on its website.¹¹

The NSW government should consider establishing a scheme similar to Victoria’s Solar Homes program, which would provide targeted support for households that may otherwise struggle to access ESS and PDRS incentives.

Response to consultation questions

Table 1 contains further detailed responses to selected consultation questions.

Table 1: Response to specific consultation questions

| Question | Response |
|---|---|
| <p>1 How should the Energy Security Safeguard provide incentives for electrification upgrades in the longer-term?</p> | <p>It is appropriate for the ESS to provide incentives for electrification upgrades. If electrification is undertaken alongside other energy efficiency upgrades, the scheme could achieve both a reduction in gas demand and net reduction in electricity demand.</p> <p>Introducing an electrification sub-target would be an appropriate way to ensure the scheme achieves both electricity and gas energy savings.</p> <p>(See <i>Balancing electrification and reliability</i> above).</p> |
| <p>2 What objective should any Energy Savings Scheme (ESS) target change seek to achieve?</p> | <p>We support the NSW government’s intention to explore different target setting options for the ESS.</p> <p>Targets should be set at a level that would deliver meaningful gas and electricity savings for NSW. This should work towards the objective of increasing the state’s energy security (both for gas and electricity), and reducing consumer energy bills.</p> <p>Targets should also be set to a level consistent with NSW’s decarbonisation ambitions – noting that most decarbonisation pathways typically see the built environment decarbonising at a faster rate than the economy as a whole.¹²</p> |
| <p>3 Do you support the NEW Government’s proposal to introduce Energy Savings Certificate (ESC) expiry in the Energy Savings Scheme (ESS)?</p> | <p>The oversupply of ESCs indicates it may be appropriate to introduce an expiry for ESCs.</p> |

¹¹ Solar Victoria. [Solar Homes Program Reporting](#). Accessed 13 February 2026.

¹² For example, see Climateworks Centre. [Climateworks Centre decarbonisation scenarios 2023: Australia can still meet the Paris Agreement](#).



| | | |
|--------------|---|--|
| 4 | Do you support the NSW Government's proposal to review and set the Peak Demand Reduction Scheme (PDRS) targets annually to 2030? | <p>Ideally, PDRS targets should be set to a level that would support the goals of the program, with activities designed to support that target. By reviewing and setting targets annually, there is a risk that the opposite occurs, with actual activity uptake driving the target.</p> <p>IEEFA acknowledges the significant disruption caused by the introduction of federal battery rebates and suspension of the PDRS BESS1 activity, which made it appropriate to adjust the 2026-27 targets.</p> <p>If new activities are introduced, there may be a transition period where it would be helpful to undertake a further review of the targets. However, in our view, this should not extend to 2030, as the PDRS should ideally reach a more balanced state well before this point.</p> |
| 5 | <i>No response</i> | |
| 6 | Do you support the NSW Government's proposal to maintain the Peak Demand Reduction Scheme's (PDRS) primary focus on addressing summer peak demand while monitoring its contribution to other reliability risks? | <p>At this stage, we support the proposal to maintain a focus on summer peak demand in the PDRS.</p> <p>IEEFA notes that further analysis on the nature of winter peak demand in NSW would be warranted, and that there is a potential for winter peak demand to become more important over time, particularly in parts of NSW with high heating loads.</p> <p>For now, the NSW government should consider peak demand reduction activities that could deliver benefits in both summer and winter. This includes hot water upgrades, thermal upgrades and grid-integrated batteries.</p> |
| 7-13 | <i>No response</i> | |
| 14 | How should demand-side barriers to participation in the Energy Savings Scheme (ESS) and Peak Demand Reduction Scheme (PDRS) be addressed? | <i>See Improving access to the ESS and PDRS section above.</i> |
| 15-17 | <i>No response</i> | |
