2025 consultation

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10 July 2025

To: NSW Net Zero Commission
Re: Consultation paper

Thank you for the opportunity for the Institute for Energy Economics and Financial Analysis (IEEFA) to provide input to the NSW Net Zero Commission (NZC) 2025 Consultation Paper.

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.

In summary, our recommendations for consideration by the NSW Net Zero Commission include the following.

- Accelerating Emissions Reductions:
    - Model scenarios that adjust reported fossil fuel methane emission upwards by 30-100% to project potential greenhouse gas emissions.
    - Recommend that the Department of Climate Change, Energy, the Environment and Water (DCCEEW) and the Clean Energy Regulator (CER) urgently review the National Greenhouse and Energy Reporting Scheme (NGERS) to improve methane emission measurement, reporting and verification (MRV).
- Electricity and energy:
    - Review NSW energy upgrade schemes to ensure they fairly value the cost savings, emissions savings and peak demand reduction potential of household energy upgrades.
    - Enable big batteries acting as virtual transmission to accelerate emissions reductions in the electricity sector.
- Transport:
    - Develop an EV-grid integration strategy to minimise electricity system costs and maximise the potential benefits from EVs.
- Industry:
    - Introduce green-hydrogen offtake requirements for mining explosives to support the decarbonisation of ammonia production in NSW.
    - Introduce comprehensive programs (combining financial support with capability building) to support industrial energy efficiency and electrification.
- Resources:
    - Recommend that DCCEEW and the CER bring forward the review of the Safeguard Mechanism, and ask for further clarification on increasing facility baselines.

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- Recommend that DCCEEW and the CER amend the Australian Carbon Credit Unit (ACCU) scheme to extend its reach in coalmining to curtail unlimited use of offsets, and encourage new abatement projects.
- Include gas demand management measures in NSW's gas decarbonisation roadmap.
- NSW government approvals for any new fossil fuel projects or expansions should require companies to submit comprehensive methane plans.
- Introduce an emissions reduction scheme in parallel to the Safeguard Mechanism to apply to all facilities in high-emitting industries in the NSW, or;
- Implement a methane tax in NSW.
- Option to provide additional funding or tax incentives for proven abatement projects in NSW.
- Implement more stringent state-based methane regulations in NSW.

- Built environment:
  - Require new homes built in NSW to be all-electric.
  - Require gas appliances to be replaced with efficient electric alternatives at end of life.
  - Require resistive electric appliances to be replaced with efficient electric alternatives at end of life.
  - Update energy upgrade schemes and rental minimum standards to include a broader range of thermal efficiency upgrades of NSW homes.
  - Develop a plan to efficiently and equitably phase-down gas networks.
  - Require heat pump hot water systems and reverse-cycle air conditioners (RCACs) to use low global warming potential (GWP) refrigerants to be eligible for rebates.
- Developing the monitoring framework to assess progress:
  - Develop sector-specific targets to better monitor progress.

Kind regards,

[redacted]

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Accelerating Emissions Reductions

Question 5: What additional information and evidence should the commission consider when assessing progress towards NSW's targets for reducing net greenhouse gas emissions?

Model scenarios that adjust reported fossil fuel methane emission upwards by 30-100% to project potential greenhouse gas emissions.

Australia's total fossil fuel methane emissions are underreported. While there is still uncertainty about the exact amount of this underreporting, there is mounting evidence that methane emissions from coalmines and oil and gas facilities are higher than the estimates used in Safeguard Mechanism reporting. If this is not addressed, all other processes cannot work appropriately: companies cannot accurately assess the business case for methane emissions reduction; new projects' cost/benefits cannot be accurately assessed, and; the Safeguard Mechanism cannot effectively drive methane emissions down – either through a lack of inclusion of emissions-intensive facilities, or through "watered-down" financial incentives to act given companies are only penalised for a fraction of their emissions.

The commission should account for this uncertainty by modelling scenarios 30-100%[1] higher than reported fossil fuel NSW emissions and emissions reduction projections. The Department of Climate Change, Energy, the Environment and Water (DCCEEW) has asserted there is at least 30% uncertainty in the methane emissions reported by open-cut coalmines in Australia's national greenhouse gas accounts. Research by the Superpower Institute has found methane emissions could be twice as high as reported in Australia's national accounts, based on satellite data. In addition, recent United Nations research has found some coalmines in Queensland could be emitting three to eight times more methane than self-reported, based on methane data collected from plane flyovers.

Recommend that DCCEEW and the Clean Energy Regulator (CER) urgently review the National Greenhouse and Energy Reporting Scheme (NGERS) to improve methane emission measurement, reporting and verification (MRV).

Improving methane MRV is critical to improve accounting of emissions from coal and oil and gas facilities in NSW. Specifically in coalmining, an independent review by the Climate Change Authority (CCA) found, "As a matter of urgency, review Method 2 for extraction of coal in open cut coal mining with respect to sampling requirements and standards." The government agreed yet no changes have been made to Method 2 under the NGERS, as IEEFA has highlighted. The CCA review also recommended to, "Resource the department to establish higher order estimation methods for all fugitive methane emission sources included in their Measurement Determination".

[1] 100% based on the Superpower Institute finding that methane emissions could be twice as high as reported. Superpower Institute. Apparent underreporting of methane shows we need better reporting at source and verification. April 2024.

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Urgent action to improve methane MRV is needed. This includes an urgent review and improvements to Method 2 and 3 under the NGERS or establish higher-order methods to estimate methane emissions from open-cut coalmines, combined with the use of top-down verification methods such as satellites and flyovers. For example, the United States and the European Union are increasingly utilising satellite data to help understand methane emissions, and identify super-emitter events.

The government agreed with the review but has only implemented recommendation 15 – the phasing out of Method 1 for open-cut coal mines' methane emission estimation. Should the Australian government continue to delay improvements in methane MRV, NSW could set up their own measurement and reporting guidelines and requirements.

Electricity and Energy

Electricity

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?

To fast-track emissions reductions in the electricity sector, the NSW NZC should consider how to enable faster household energy upgrades and large-scale batteries acting as virtual transmission to unlock faster emissions reductions in the electricity sector. Household energy upgrades and transmission-support batteries are typically faster to implement than large-scale renewables and transmission. These measures can complement large-scale electricity generation and transmission, and reduce time pressure on large-scale build requirements.

Revise NSW energy upgrade schemes to ensure they fairly value the cost savings, emissions savings and peak demand reduction potential of household energy upgrades.

Household energy upgrades can reduce bills for households and reduce emissions. New IEEFA research has found that household energy bills in Sydney could be reduced by 94% for a typical household (from $2,782 to $167 a year) by undertaking energy upgrade measures, including installing efficient electric appliances (in place of gas appliances), rooftop solar and batteries.

Energy bill savings from appliance upgrades, rooftop solar and batteries

Source: IEEFA

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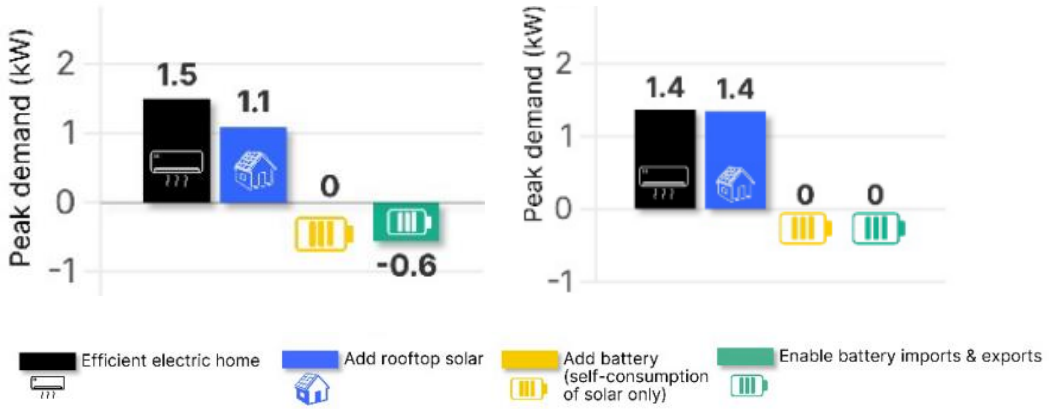
Household energy upgrades can also benefit the broader system by reducing annual demand and peak demand and taking pressure off large-scale generation, storage and network build or upgrade requirements.

IEEFA research has found:

- Distributed energy resources (DER), such as rooftop solar, batteries and flexible demand, could deliver at least $19 billion in economic benefits to Australia by 2040, from avoided network, large-scale generation and storage costs.
- Phasing out inefficient electric appliances in NSW households could reduce annual residential electricity demand by a huge 5.8 terawatt-hours, delivering a 20% reduction in residential electricity demand.
- Solar plus batteries can dramatically reduce average household peak demand in Sydney (as shown below). "When a battery is added, this can often meet a household's full energy requirements during the evening, effectively eliminating any peak demand contribution on a typical day. In fact, most households we modelled had excess battery charge available after fully meeting their daily household energy needs on a typical summer day. Those households could export energy to the grid during the evening peak period – meaning they not only reduce their own peak demand impacts, but also offset those of other users." (IEEFA)

Impact of rooftop solar and batteries on Sydney's average January (left) and July (right) peak demand



Source: IEEFA

To enable household energy upgrades, our latest report recommends that "a combination of improved minimum standards for household appliances and more comprehensive incentive schemes would be an effective way to accelerate uptake of household energy upgrades."

NSW should consider revising the Energy Savings Scheme and Peak Demand Reduction Schemes to ensure they consider the full spectrum of household energy upgrades, and fairly value their cost savings, emissions savings and peak demand reduction potential. These schemes should be sufficient to enable household energy upgrades at scale and at pace.

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NSW could also consider the potential to update its BASIX requirements, ensuring that the lifetime energy savings and emissions of efficient electric appliances are appropriately valued, encouraging all new homes and renovations valued $50,000 or more are efficient and electric.

Enable big batteries acting as virtual transmission to accelerate emissions reductions in the electricity sector.

The NSW NZC should consider how to accelerate the installation of batteries in the transmission network to support transmission lines or reduce the need for transmission build or complement transmission build – as per the Waratah Super Battery example. This could be a faster way to support grid security and decarbonisation as the transmission rollout experiences delays.

Gas

Gas demand in NSW is projected to remain relatively steady to 2044, according to the 2025 Gas Statement of Opportunities (GSOO) reported by the Australian Market Operator (AEMO). Although demand trends vary within the three main market segments: household, industrial and power generation. The AEMO report forecasts industrial gas demand to remain largely unchanged in NSW. This requires policy focus to ensure more is done to stimulate decarbonisation in the industrial sector. For example, the Victorian government is to provide grants to the food and beverage processing and manufacturing sectors to upgrade to electric sources from gas. A similar policy in NSW would be meaningful as the food sector accounts for about 15% of industrial gas consumption in the state.

Transport

Question 9: What are likely to prove the most effective approaches to accelerate rapid decarbonisation across freight and passenger transport?

The most effective approaches to accelerate rapid decarbonisation across passenger transport within NSW include developing better infrastructure to enable passengers to travel via low-emissions options such as public transport, cycling and electric mobility including EVs and E-scooters.

In addition to the decarbonisation objectives for freight and passenger transport, there are financial and energy security imperatives. NSW accounts for almost 27% of Australia's transport fuel demand, and Australia imports about 90% of its transport fuel demand. This makes NSW and Australia vulnerable to global supply chain shocks. Australia spent about $54 billion in the year to 30 April 2025 on oil imports, of which about $14.4 billion would be spent by NSW. Accelerating the EV take-up will improve NSW trade balance, keep more money within the NSW economy, and bolster its energy security.

IEEFA has specific recommendations with regards to enabling EV uptake in a way that is complementary to the broader electricity system.

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Develop an EV-grid integration strategy to minimise electricity system costs and maximise benefits from EVs.

To ensure EVs complement the electricity system as a whole and minimise system costs and emissions, they should be underpinned by an EV-grid integration strategy to make the most of the Vehicle-to-Grid (V2G) opportunity and to encourage charging of EVs outside peak demand periods.

V2G has the capability to provide a wide range of grid services, including energy, frequency control ancillary services (FCAS) and other services. An enX report found that just 10% of EVs operating with bidirectional charging could provide 37% of the National Energy Market's (NEM) total storage needs by 2050, offsetting about $94 billion in large-scale battery investment. Deferred charging of EVs (for example, charging outside peak periods or in high renewable periods) and V2G combined could deliver significant savings to consumers, according to an Australian Renewable Energy Agency (ARENA) study. Greater charging EVs in high renewable penetration periods would also be a lever to reduce emissions.

Making sure EVs complement the electricity system as a whole requires urgent development of market, technical and regulatory frameworks to enable V2G and deferred charging. This should be planned in an EV-grid integration strategy.

Industry

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?

Introduce green-hydrogen offtake requirements for mining explosives to support the decarbonisation of ammonia production in NSW.

One of the heavy industry facilities in NSW is Orica's ammonia plant at Kooragang Island. A shift from gas to green hydrogen feedstock is the most prospective opportunity to decarbonise ammonia production. However, green hydrogen deployment has been slow in Australia, which is delaying cost reductions gained through learning rates and economies of scale. A lack of demand at scale is a key barrier, with government support currently insufficient to eradicate the cost premium compared with existing technologies.

IEEFA has identified one opportunity to create demand at scale through the introduction of mandatory offtake requirements for green hydrogen-based explosives. Ammonia production is an ideal first adopter of green hydrogen in Australia for a range of reasons, and half of Australia's ammonia production is used to make explosives for the local mining industry. In our most recent update, IEEFA calculated that shifting 30% of gas feedstock to green hydrogen in existing ammonia plants (the maximum intake possible without major upgrades) by 2035 would increase mining operating costs only by 0.4%.

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Green hydrogen offtake requirements for mining explosives could complement the Safeguard Mechanism and support the decarbonisation of ammonia production in NSW.

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

Introduce comprehensive programs to support industrial energy efficiency and electrification.

IEEFA has found that industrial heat pumps could reduce the energy use of food and beverage manufacturers by 80% or more. This could not only help reduce industrial energy costs and emissions, but also alleviate gas market tightness in eastern Australia. However, adoption remains extremely slow. New Zealand provides a good example of how a moderate amount of government funding was able to catalyse industrial heat pump adoption. A comprehensive policy approach, combining financial support with capability building and engagement, was key to the success of the program. The European Union is also experimenting with fixed-premium auctions in support of projects that decarbonise industrial process heat.

Growing evidence highlights large, untapped opportunities to reduce energy use in industrial facilities, including several past programs in NSW. However, since the closure of the Energy Efficiency Opportunities program in 2014, there has been a gap in comprehensive government policy to support industrial energy efficiency. This is an area that should be targeted as a priority, especially for sub-Safeguard Mechanism facilities, given the multiple benefits for energy costs, business resilience and emissions reductions. If done in parallel to industrial electrification, energy efficiency could also offset the additional electricity use, reducing the investment required in the electricity system. A program targeting industrial heat electrification could also cover other opportunities such as energy efficiency and a shift to renewable fuels, as done in New Zealand.

Resources

Question 16: How could transparency of how coal mines meet their Safeguard Mechanism obligations be improved?

Recommend that DCCEEW and the CER bring forward the review of the Safeguard Mechanism, and ask for further clarification on increasing facility baselines.

The most recent Safeguard Mechanism data for FY2024 included improved disclosures compared with prior periods. In particular, separate reporting of fugitive emissions within Scope 1 emissions and disclosure of the reporting method(s) used was made publicly available for coalmining, oil and natural gas activities. This enabled clear identification of the reporting methods used by Safeguard facilities for fugitive methane emissions, and the status of transitioning methods under the NGERS. This disclosure is essential to build public confidence in the data reported. There is still a lack of clarity on reporting justification for when facilities re-adjust their baselines upwards, with historical Safeguard Mechanism data showing more coalmine facilities have done this compared with non-coalmine facilities. If not monitored closely,

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there is a risk that other facilities could carry a heavier burden of decarbonisation. One analysis found that six of the top 10 coal mines in Australia will be allowed to increase their emissions under the Safeguard Mechanism due to increasing baselines.

Further disclosures could focus on details of facilities' decarbonisation plans and abatement projects. This would raise further regulatory confidence that Safeguard Mechanism Credit (SMC) units are being awarded for real action on abatement, rather than merely operating below their emissions caps.

Question 17: What measures would lead to coal mines prioritising on-site abatement over offsetting?

Recommend that DCCEEW and the CER amend the ACCU scheme to extend its reach in coalmining to curtail unlimited use of offsets, and encourage new abatement projects.

Several measures could encourage coalmines to prioritise onsite abatement over offsetting, including:

- Setting a limit on the use of ACCUs and SMCs permitted to be surrendered per facility.
- Setting a premium for excess carbon credit use, such as introducing a credit units multiplier.
- A higher warming potential used to convert methane to carbon dioxide under the Safeguard Mechanism could incentivise greater onsite abatement if these projects are able to generate ACCUs or SMCs.

Under the Safeguard Mechanism, if the facility surrendered credits of 30% or more of its baseline, the required written explanation as to why more carbon abatement did not occur at the facility must be published by the CER. This occurred in nine coal and oil and gas facilities in FY2024, including several coalmines in NSW. The most frequent reasons given in ACCU surrender statements were a lack of technical or commercial readiness for the abatement strategy chosen.

While this disclosure provided some public information on the company's abatement plans and state of readiness, it did not incentivise further abatement. If instead a premium were levied for excess use (such as a credits multiplier on the volume of excess credits used) or a limit set on the maximum amount of credit units allowed to be surrendered, this would incentivise urgent action on abatement. Changes to the ACCU and SMC schemes could allow facilities to generate credit units for abatement actions taken, including coalmine waste gas (CMWG) projects.

This could include enhanced pre-drainage of methane from open-cut and underground coalmines beyond existing safety requirements, or implementing ventilation air methane (VAM) abatement, such as using regenerative thermal oxidation (RTO) technology. A remade and expanded CMWG method in the ACCU scheme offers a practical, immediate tool for the sector to achieve meaningful emissions reductions if paired with improved emissions reporting and amendments to the Safeguard Mechanism baseline-target setting.

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Potentially, recommend increasing the warming potential used to convert methane to carbon dioxide.

The higher the warming potential of methane is set when converting to carbon dioxide equivalence in the ACCU and SMC schemes, the greater the incentive for companies to take onsite abatement action for methane emissions to generate carbon credits. Conversely, this could also provide an incentive to invest in methane abatement over carbon dioxide abatement activities.

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?

Include gas demand management measures in NSW's gas decarbonisation roadmap.

Beyond onsite activities to reduce emissions the most effective way to reduce methane emissions in the resources sector is to reduce production. The NSW Government Response to the Net Zero Annual Report recognises, "There are pressures for increased emissions associated with new coal mining projects, with a sizeable pipeline of projects already submitted for consideration and determination through the planning process. If NSW is to meet its emissions reductions targets, other sectors would need to meet the shortfall to counter emissions increases associated with extended or expanded coal projects."

While NSW is not a significant gas producer, that could change if the Narrabri gas project were developed and the Port Kembla LNG import terminal goes ahead. Either of these two projects would change the emissions profile of the state's gas sector given their associated methane emissions, which in turn places additional pressure on NSW's GHG reduction ambitions. Hence, gas demand measures must be a priority to reduce the need for these gas projects; hopefully this will be reflected in the NSW gas decarbonisation roadmap.

NSW government approvals for any new fossil fuel projects or expansions should require companies to submit comprehensive methane plans.

Early planning is key to effective methane abatement, especially in open-cut coalmines, where the most effective methane reduction actions need to occur before mining starts. Approvals for any new projects, expansions or extensions should be conditional on companies submitting comprehensive methane abatement plans. This should include the rehabilitation cost estimates and proposals that miners submit as part of their environmental impact statement given the residual methane risk.

Introduce an emissions reduction scheme in parallel to the Safeguard Mechanism to apply to all facilities in high-emitting industries in the NSW.

NSW could consider establishing a specific emissions reduction scheme in parallel to the Safeguard Mechanism to apply to all facilities in high-emitting industries. This would give it more control over requiring emission reductions from high-emitting industries. In addition, NSW would not need to wait for the CER and DCCEEW to fix existing issues in the Safeguard Mechanism,

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NGER, ACCU and SMC schemes. These issues and opportunities are outlined in recent IEEFA analysis.

OR

Implement a methane tax in NSW.

Implementing a NSW methane tax could provide a lever to address their methane emissions without relying on the federal Safeguard Mechanism. This may be less resource intensive and easier to introduce than a separate, state-based version of the federal Safeguard Mechanism. Revenue from a methane tax could be fully or partially reinvested to support methane reduction.

A methane tax would increase company management attention and provide a more effective financial incentive for methane abatement. The key difference from the Safeguard Mechanism is that a methane tax would cover all methane emissions, whereas the Safeguard Mechanism only provides a financial incentive to reduce emissions below the baseline for Safeguard facilities.

Examples from other countries show that a price on carbon can drive emissions reduction action. In Germany, carbon pricing has incentivised the development of at least 39 coalmine methane abatement projects since the early 2000s.

Option to provide additional funding or tax incentives for proven abatement projects in NSW.

The NSW government recently announced $305 million of grant funding to support high-emitting facilities develop decarbonisation projects in the state.

The NSW government could increase funding or grants offered or offer tax incentives to coalmine or oil and gas operators to support methane abatement implementation. For instance, in the US, abandoned coalmine methane capture abatement projects were incentivised through the waiving of royalties on methane captured and utilised at coalmines.

In IEEFA's opinion, any financial support provided to companies should be complemented by other policies to support abatement action, and should focus on supporting companies to overcome the cost premium when adopting first of a kind abatement projects.

Implement more stringent state-based methane regulations in NSW.

These regulations could include:

- Making venting illegal and only permitting flaring in emergency situations, or companies must provide evidence on why they cannot undertake prevent these actions in cases where there are significant safety risks.
- Requiring pre-drainage of methane at open-cut coalmines and enhanced pre-drainage at underground coalmines, starting with the gassiest mines in the state, or companies must provide evidence on why they cannot undertake these measures in cases where there are significant safety risks.

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- Requiring the implementation of VAM abatement measures, leak plugging and rerouting in underground mines, and implementation of best practice equipment and processes in the gas sector, or companies must provide evidence on why they cannot undertake these measures in cases where there are significant safety risks.

Built Environment

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

Require new homes built in NSW to be all-electric.

AER data shows more than 20,000 new dwellings in NSW connected to the gas distribution network in 2024 alone, locking in many years of additional fossil gas demand and emissions.

This is also concerning given that gas distribution networks face imminent asset stranding risks. Gas network assets built today are unlikely to remain in use across their expected lifetime (often exceeding 50 years), and their costs may end up being prematurely written down. This presents a risk of unrecovered costs for gas network businesses and increased costs for consumers or taxpayers. IEEFA research last year found that "a top priority for the NSW government should be to prevent continued growth of stranded gas assets."

Further, IEEFA research has found that all-electric homes are more cost effective in the long term than dual fuel homes that are connected to both gas and electricity networks.

"Several local governments in NSW have already taken the step of introducing or are considering legislation that would ensure new buildings are all-electric." (IEEFA) This includes most recently the City of Sydney.

Given the strong financial case for households to be all-electric, and the risk of asset stranding from further expansion of the gas network, NSW should consider how to ensure new homes are all-electric i.e. not connected to the gas network. The BASIX scheme could be a key lever to ensure new homes constructed in NSW are both efficient and electric.

Require gas appliances to be replaced with efficient electric appliances at end of life.

NSW policymakers should consider phasing out gas appliances in the residential sector.

NSW households who install new gas appliances today may be locking in up to 20 years of fossil gas demand, and emissions.

In addition to avoiding growth in emissions, there are compelling financial and energy security reasons for NSW to phase out gas appliances.

IEEFA analysis states: "The residential sector is responsible for a quarter of NSW's gas demand, and is the sector with the most potential for cost-effective reduction of gas demand today.

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Supporting more households to go all-electric would free up critical supplies of gas that are needed by commercial and industrial customers, who may not be ready to switch to electricity or alternative fuels today.

“The most economical way to transition to these appliances is to ensure that when an existing gas appliance (like a heater, cooktop or hot water system) reaches the end of its useful life, it gets replaced with an efficient electric alternative.

“IEEFA’s modelling shows that if all new appliances purchased in NSW were electric from 2026, residential gas consumption would gradually phase down to near-zero by 2050.”

The Victorian government has announced regulatory measures requiring certain gas appliances to be replaced with electric alternatives once they reach end of life. IEEFA analysis found that implementing strong electrification regulations as soon as practical would lead to significant long-term reductions in fossil gas consumption. NSW should consider similar measures.

Require resistive electric appliances to be replaced with efficient electric appliances at end of life.

IEEFA analysis found the stock of electric appliances in NSW “is dominated by resistive electric heaters and hot water systems, which can consume three to five times the amount of energy as efficient heat pump-based alternatives”.

Similarly to gas appliances, phasing out the use of fixed resistive electric appliances represents an opportunity to reduce emissions in parallel with reducing consumer energy costs.

“Resistive electric appliances appear attractive due to their low upfront costs, but they have some of the most expensive running costs of any appliances. IEEFA has estimated that NSW households are locking in nearly $1.1 billion in avoidable future costs for each year they continue to purchase resistive electric space heaters and water heaters.”

“We also found that if all of NSW’s resistive electric heating and hot water appliances were transitioned to heat pump-based appliances, annual electricity demand could be reduced by a huge 5.8 terawatt-hours (TWh).” (IEEFA)

Even accounting for the net additions from the electrification of gas appliances, this would result in a 20% reduction in residential electricity demand, enabling significant emissions reductions.

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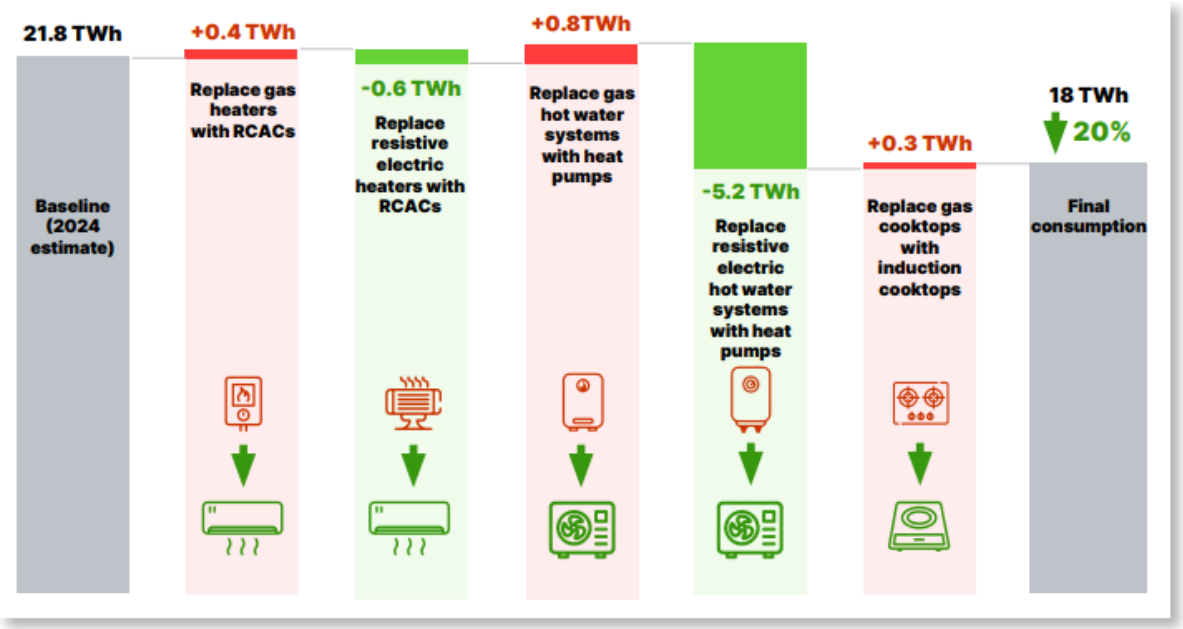
Impact of appliance upgrades on NSW residential electricity demand



Source: IEEFA analysis. Note: RCAC = reverse-cycle air conditioner. Reduction in electricity demand from replacing resistive electric cooktops with induction cooktops was not modelled, and is likely to be negligible.

Update energy upgrade schemes and rental minimum standards to include a broader range of thermal efficiency upgrades of NSW homes.

As IEEFA's analysis highlights, "Australian homes are notoriously inefficient. Although NSW's BASIX standards require new homes to meet a seven-star rating (out of 10), its existing housing stock likely falls well below this benchmark.

"NSW hosts the largest share of old homes in the country. While we don't have detailed data on the thermal efficiency of the existing housing stock, CSIRO has noted that the average star rating of an Australian home built in 2003 was only 1.8."

In addition to comfort and health impacts, inefficient homes also impose higher-than-necessary energy demand, driving up emissions from electricity production. This is especially true when high heating or cooling loads coincide with times when renewable output is lower, such as in the evening.

"A range of options exists to significantly improve the thermal efficiency of existing homes, with short payback periods. They include installing or upgrading ceiling insulation, installing wall insulation and sealing gaps. Research by Climateworks Centre found that "Thermal upgrades save significantly more energy than electrification alone" and could "represent well over half of possible energy savings" from a full household energy upgrade.

However, despite thermal efficiency upgrades being one of the most cost-effective measures to reduce energy costs (and peak demand), the full range of thermal efficiency upgrades are not

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supported via NSW's Energy Savings or Peak Demand Reduction schemes.[2] There is also very little to incentivise rental providers to improve the thermal efficiency of their investment properties, as NSW has no minimum standards for thermal efficiency of rental properties.

The NSW government should update its existing energy upgrade schemes, and its rental minimum standards, to include a broader range of thermal efficiency upgrades for homes. (IEEFA)

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

Develop a plan to efficiently and equitably phase down gas networks.

In June 2025, Jemena entered its latest five-year regulatory period, and was granted an allowance of $115 million. Jemena's original draft plan had requested an even higher amount of $300 million.

The AER also approved a broader change to Jemena's price regulation – from a price cap approach to a hybrid price/revenue cap approach.

The impact of both decisions is that Jemena's consumers are more exposed to the network's stranded asset risks.

"However, gas networks have already been compensated for some of their risks. IEEFA's research shows that gas networks, including Jemena, made $1.8 billion in supernormal profits between 2014 and 2022, which was 90% higher than the profit allowance set by the AER. Most of these profits occurred because networks delivered more gas than the forecasts they provided to the regulator in every year since 2011.

"Jemena in particular has over-recovered $490 million in revenue since 2014, which is 80% higher than any other network and is equivalent to nearly 14% of its regulated asset base.

"As supernormal profits were recovered from consumer bills, there is no clear case for those same consumers bearing even further costs to shield Jemena from its stranded asset risks.

"The NSW government should act urgently to develop guidance on how to equitably phase down its gas distribution network for residential customers. This should include guidance on how costs ought to be equitably shared during the transition, and how to support customers who may face higher barriers to leaving the gas network." (IEEFA)

[2] IPART. Home Energy Efficiency Retrofits Method Guide. Page 7.

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Question 21: What approaches could NSW consider to eliminate refrigerants with a GWP >10 from buildings?

Require heat pump hot water systems and RCACs to use low-GWP refrigerants to qualify for rebates.

NSW should consider updating its Energy Savings Scheme to require heat pump hot water systems and reverse-cycle air conditioners to use low-GWP refrigerants to qualify for rebates. This should be a low-regrets update, as many products in the Australian market are already available with low-GWP refrigerants.

Develop a monitoring framework to assess progress

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?

Develop sector-specific targets to better monitor progress.

In addition to monitoring the state's overall progress to reduce emissions, NSW should set sector-specific targets to monitor progress in key areas.

Most of the recommendations in this submission could, and should, be backed by specific targets. For example, NSW should set and track progress towards targets for installed rooftop solar capacity, the number of gas appliances switched to efficient electric alternatives, and energy efficiency improvements in the housing stock.