Investing in cheaper, cleaner energy and the net zero transformation inquiry

Questionnaire response 72

Name: Anonymous

Submission date: 6/06/2025

1. Reduce the cost of meeting carbon targets

1. What could be done to improve the cost-effectiveness and alignment of policies to reduce emissions across the industrial, electricity and transport sectors?

Reviewing the economic regulation of electricity distribution networks

There is evidence suggesting that the economic regulation of Australian electricity distribution networks is not delivering efficient network costs. Historic over-investment has inflated network asset values despite falling utilisation. Supernormal profits across distribution and transmission networks have been measured by IEEFA at $15 billion (on top of “allowed” profits of $17.6 billion) over 2014-2023. This is contributing to higher electricity bills for consumers and undermining economic productivity.
With distributed energy resources (DER) increasingly capable of providing network services, current regulation based on monopoly assumptions for electricity networks is outdated. International examples show how reforms like totex regulation, flexibility or network services provision, and moves from technical to negotiated economic regulation processes have the potential to improve efficiency. A first-principles Productivity Commission-led review of the economic regulation of distribution networks is essential to redesign the regulatory regime for productivity, affordability, and the energy transition. The Productivity Commission is well placed to perform this review given its experience and expertise.

Accelerating distributed energy resources uptake and integration

DER like rooftop solar, batteries and flexible demand could deliver at least $19 billion in economic benefits to Australia by 2040, with the benefit arising from avoided network, large-scale generation and storage costs. DER can be built more quickly than transmission, large-scale generation and storage so can be a strong contributor to faster decarbonisation. There is further $10 billion in value to 2040 that could be gained through DER reducing wholesale power prices, cutting costs to consumers.
To unlock these economic gains, urgent reforms to market and regulatory structures are needed to treat DER as an integral, flexible part of the energy system. This includes ensuring appropriate technical standards are in place, unlocking flexible demand through standards (explored further below) and incentives, and removing static constraints on rooftop solar exports.

Planning for a managed phase-down of gas networks

National gas regulations embed the assumption of long-term growth of gas networks. However, the financial case for a residential shift from gas to efficient electric appliances is now compelling. Several state governments are now progressing with policies that would encourage a shift from gas to electricity, and the Australian Energy Market Operator (AEMO)’s central scenario expects a fast decline of buildings’ gas use. Gas

networks and regulators agree that gas distribution assets are likely to become stranded. However, the federal government does not have any plan or target for a residential gas phase-down, or for how to deal with stranded asset risks. In fact, in most states gas connections are still increasing, as is the value of the Regulated Asset Base of gas distribution assets, and the size of asset-stranding risks. It is urgent for the government to provide certainty for investors on where the country is heading in terms of buildings' gas use, and how the phase-down of gas distribution assets will be managed, both from a logistical and financial perspective.

Improving demand-supply optimisation in energy planning

Various energy planning tools such as AEMO's Integrated System Plan (ISP) and Electricity Statement of Opportunities (ESOO) are highly focused on the supply-side actions that could satisfy demand, like building new generation and transmission assets. Demand-side measures such as demand flexibility, energy efficiency and electrification are not explored in as much detail. While there are currently efforts underway to bring more demand-side elements into the ISP through incorporating more inputs from distribution networks, more could be done in this space.
In particular, IEEFA recommends a co-optimisation between demand and supply in ISP modelling as soon as possible. If this is not feasible right away, we recommend in the interim that further ISP scenarios or sensitivities should be run that explore higher DER uptake levels, to determine the costs and benefits of greater DER uptake and the impact on large-scale generation and transmission build requirements.

Addressing policy failures on methane emissions

Methane is both a powerful greenhouse gas and a short-lived one compared with carbon dioxide. Therefore, achieving significant reductions in methane emissions would have a rapid and significant effect on atmospheric warming potential.
While carbon dioxide emissions are projected to halve between now and 2035, methane emissions are expected to stay flat, so they could singlehandedly jeopardise state and federal emissions reduction targets. In addition, a number of organisations have suggested that reported methane emissions are likely grossly underreported, and underreporting could be worsening with the shift from Method 1 to Method 2 measurement in coal mining.
The Safeguard Mechanism is not effective at driving methane emissions reductions, despite their low cost of abatement and the economic and financial benefits that could be derived from utilising the captured methane. It is urgent to address those issues to avoid late surprises in Australia's emissions inventory, to ensure emitters are held liable for the right level of emissions, and to minimise the cost of emissions reductions across the economy.

Ensuring coal exits are timely and well orchestrated

Currently, the coal power stations in the National Electricity Market are 38 years old on average, close to the average historical retirement age of 42 years. There has recently been a range of proposals to extend the life of coal-fired power stations, including in Queensland. However, this comes with a range of costs and risks. The reliability of coal power plants deteriorates as they near retirement – historical experience for plants that have closed indicates that as the neared retirement 34% of their capacity was

unavailable on average. Proposals to extend the life of ageing power plants often fail to plan for poor coal reliability, which could lead to electricity supply shortfalls. To cover such power supply shortfalls using gas could strain the domestic supply of gas and lead to spikes in the price of both electricity and gas.
Unexpected coal outages can drive wholesale power price spikes, as has been observed in recent quarters by AEMO. Extending the life of coal-fired power plants can have significant associated costs as we outlined in a prior report: "High costs were seen with proposed or finished refurbishments at Muja AB, Hazelwood and Liddell, with project costs ranging from $400 million to $1.3 billion (in 2025 dollars). For both Hazelwood and Liddell the refurbishment cost was deemed too expensive and problematic to be worth pursuing. For Muja AB, refurbishment did go ahead, but the project had many technical issues and cost overruns, and the plant only operated for a short time at an extremely low utilisation rate – reportedly 20% – before closing."
Further risks associated with coal plant extension include safety risks at ageing power plants, financing risks, and the risk of exceeding emissions budgets.

2. Are there gaps in the emissions-reduction policies in the industrial, electricity and transport sectors which should be addressed?

Introducing a net cost-benefit assessment in all coal and gas projects approvals

Coal and gas extraction are responsible for about 20% of Australia's reported emissions. Moreover, it is suspected that underreporting of fugitive methane emissions would increase this contribution to about 25% of total emissions.
While global coal and gas consumption needs to fall rapidly to meet global climate goals, Australia is still approving new coal and gas developments without properly accounting for their domestic and global emissions impact, as well as their net economic cost-benefit. IEEFA's research has shown that there are high economic risks associated with many new coal and gas developments:

New LNG projects: In the context of an enormous looming global LNG supply glut, new LNG projects could worsen the financial situation of existing LNG projects by further pushing global LNG prices down and worsening oversupply. Existing LNG projects in eastern Australia have had disappointing financial results, and have led to significant economic costs by driving a tripling in domestic gas prices in the eastern states, which has in turn driven significant industrial facility closures and decreases in gas generation. In addition, LNG projects are associated with very large gas use and emissions, which cannot be adequately addressed by carbon capture and storage.

New coal developments: Australia has already approved more coal mines than are needed to meet projected demand, especially as the government has systematically overestimated metallurgical coal demand forecasts. Global demand for metallurgical coal is expected to fall as low-emissions steel production gains pace, and Asia's coal power project pipeline is unlikely to sustain seaborne thermal coal markets in the long term.
New coal mines come at significant economic costs, including through their very high freshwater use, often competing with other water users in already fully allocated water catchments. They can also impact other economic sectors through their water discharges. Coal mines are highly emissions-intensive, compounded by the suspected underreporting of methane emissions, and a lack of visibility on the future emissions intensity of proposed mines.

As coal mines expand, their rehabilitation costs and complexities rise – with potential to cost tax payers hundreds of millions or billions of dollars to rehabilitate each mine. To date Australia has no examples of the successful rehabilitation of a large, open-cut coal mine.

Updating appliance efficiency and flexibility standards

Australia is locking in $3.4 billion in avoidable ongoing costs for each year that inefficient gas and electric appliances are installed instead of efficient electric appliances. Efficient electric appliances, especially heat pumps, use a fraction of the energy that gas appliances and inefficient electric appliances do, so they are significantly cheaper to run. Efficient electric appliances can also ease electricity demand pressures when they are operated flexibly. Both hot water and air conditioning are two key loads that could be flexibly operated to use more power during the day in the solar period, rather than during the evening in the peak period. This can reduce pressure on large-scale generation and network build requirements. Upgrading appliance standards to encourage households to purchase efficient, flexible electric appliances would help reduce household energy bills and broader energy system costs.

Introducing policies to support industrial energy efficiency and electrification

There are multiple pieces of evidence to show that there are large untapped opportunities to reduce energy use in industrial facilities. However, since the closure of the Energy Efficiency Opportunities (EEO) 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.
IEEFA has found that industrial heat pumps could reduce the energy use of food and beverage manufacturers and some alumina refining processes by 80% or more. This could not only help reduce industrial energy costs and emissions, but also alleviate gas market tightness in Victoria and Western Australia. However, adoption remains extremely slow in Australia. 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.

Catalysing the green hydrogen industry through large-scale demand creation

Green hydrogen production presents a large economic opportunity for Australia. However, deployment is slow, which will also delay 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 used by the local mining industry. In our most recent update, IEEFA calculated that shifting 30% of current gas feedstock to green hydrogen in existing ammonia plants (the maximum intake

possible without major upgrades) by 2035 would increase mining operating costs by about 0.4%.

3. Are there any duplicative emissions-reduction policies in the industrial, electricity and transport sectors which could be streamlined?

   The participant did not respond to this question.

2. Speed up approvals for new energy infrastructure

1. Are planning and approvals processes for large energy infrastructure taking too long? If so, what causes the most delay?

   The participant did not respond to this question.

2. How can planning and approvals processes be sped up without unduly compromising regulatory standards?

   Streamlining the integration of approvals and the Capacity Investment Scheme (CIS)

   Australia's Capacity Investment Scheme (CIS) is at risk of creating "zombie" projects that are awarded a CIS contract but never get built due to other obstacles such as not getting the necessary approvals. These projects could take the place of more viable projects, reducing the effectiveness of the CIS. There is also a risk that the CIS could result in the duplication of other existing approval processes. In order to avoid those issues, IEEFA recommends:
   • Making it a condition of tender eligibility that projects must already have necessary government planning and environmental approvals: Projects should only be allowed to participate in CIS tender rounds if they already have planning and environmental approvals. This will reveal the speed of planning and environmental approval processes in each state, allowing for course correction earlier on.
   • Dropping criteria relating to community engagement and social license and leave these issues to be dealt with through planning approval policies: The CIS tender rounds should focus on the technical and commercial viability of projects, leaving community engagement and social licence considerations to existing approval processes. Planning approval processes in the states should be improved on a case-by-case basis if issues have been identified.

3. Should clean energy projects be treated differently to other projects for the purpose of environmental and other approvals? If so, how?

   The participant did not respond to this question.

4. What can be done to build local community support for new energy infrastructure projects?

   The participant did not respond to this question.

5. Please outline any evidence showing the productivity benefits of faster approvals for energy projects.

   The participant did not respond to this question.

3. Encourage adaptation by addressing barriers to private investment

1. What are the barriers and enablers impacting decisions by owner-occupiers, landlords and developers about how housing is built and updated over time so that it is resilient to the effects of climate change?

Households that are easier to heat and cool, and that can produce and consume more of their own energy, will be more resilient to the effects of climate change. Improving household thermal efficiency, upgrading gas or inefficient electric appliances to efficient electric alternatives, installing rooftop solar and storage, and shifting key loads to run in the solar period would enable greater resilience for more households.
Key barriers to this include:
• Rental providers have no incentive to undertake household energy upgrades, and renters lack the ability or incentive to invest in upgrades that result in a capital improvement to a home they do not own. The upfront cost of many household energy upgrades can be prohibitive, especially given the tendency for "hyperbolic discounting" – the tendency to prioritise smaller, immediate rewards over larger, delayed rewards.
• Minimum appliance efficiency standards are poor, and consumers are often drawn to appliances with low upfront costs but very high running costs.
Key enablers would include more consistent national rebate schemes for household energy upgrades (as opposed to the current inconsistent arrangement across states), improved and expanded minimum performance standards for appliances, and revised minimum standards for rental properties.

2. What information do people need to make decisions about where to live, how to build and how to upgrade their homes to appropriately factor in climate change?

Consumers need more information around the long-term energy costs associated with their homes and appliances. Improved energy performance standards, flexibility standards, better labelling of appliances, and energy performance disclosure at point of sale or rent could provide helpful information and guidance to consumers to choose the lowest-cost option for their homes.
For example, Australia's existing appliance labelling scheme is inconsistent. Gas appliances are rated on a separate, industry-led voluntary scale, which prevents consumers from making accurate decisions between gas and electric appliances.

3. What are the most cost-effective retrofitting options for improving the resilience of Australia's existing housing stock? What are their costs and benefits?

Most cost-effective retrofitting options to improve the resilience of the housing stock are measures that improve the energy performance of households such as thermal insulation, and measures that reduce household energy costs for heating and cooling such as efficient flexible electrification of appliances and rooftop solar. IEEFA is currently working on an upcoming report on the costs and benefits of various energy upgrades and will provide a copy to the Productivity Commission when it is available.

4. What role might minimum standards play in ensuring the resilience of Australia's housing stock?

Updating appliance efficiency and flexibility standards (repeated from above)

Australia is locking in $3.4 billion in avoidable ongoing costs for each year that inefficient gas and electric appliances are installed instead of efficient electric appliances. Efficient electric appliances, especially heat pumps, use a fraction of the energy that gas appliances and inefficient electric appliances do, so they are significantly cheaper to run.

Efficient electric appliances can also ease electricity demand pressures when they are operated flexibly. Both hot water and air conditioning are two key loads that could be flexibly operated to use more power during the day in the solar period, rather than during the evening in the peak period. This can reduce pressure on large-scale generation and network build requirements. Upgrading appliance standards to encourage households to purchase efficient, flexible electric appliances would help reduce household energy bills and broader energy system costs.

5. The impacts of climate change are being factored into the regulation of where and how houses are built in different ways around Australia. What does leading practice look like? Where is there room for improvement? Are there lessons we can learn from other countries?

The participant did not respond to this question.

Cover sheet: Supporting document #1

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6 June 2025

To: Productivity Commission
Re: Investing in cheaper, cleaner energy and the net zero transformation

Thank you for the opportunity for the Institute for Energy Economics and Financial Analysis (IEEFA) to provide input to the Productivity Commission's consultation on Investing in cheaper, cleaner energy and the net zero transformation.

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.

We would encourage the Productivity Commission to consider the below areas as important focus areas for reform and further work:

- Reviewing the economic regulation of electricity distribution networks.
- Accelerating uptake and integration of distributed energy resources (DER).
- Planning for a managed phase-down of gas networks.
- Improving demand-supply optimisation in energy planning.
- Addressing policy failures on methane emissions.
- Streamlining the integration of approvals and the Capacity Investment Scheme (CIS).
- Ensuring coal exits are timely and well orchestrated.
- Introducing a net cost-benefit assessment in coal and gas projects approvals.
- Updating appliance efficiency and flexibility standards.
- Introducing policies to support industrial energy efficiency and electrification.
- Catalysing the green hydrogen industry through large-scale demand creation.

Kind regards,

Amandine Denis-Ryan
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Section 2. Reduce the cost of meeting carbon targets

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There is evidence suggesting that the economic regulation of Australian electricity distribution networks is not delivering efficient network costs. Historic over-investment has inflated network asset values despite falling utilisation. Supernormal profits across distribution and transmission networks have been measured by IEEFA at $15 billion (on top of "allowed" profits of $17.6 billion) over 2014-2023. This is contributing to higher electricity bills for consumers and undermining economic productivity.

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In particular, IEEFA recommends a co-optimisation between demand and supply in ISP modelling as soon as possible. If this is not feasible right away, we recommend in the interim that further ISP scenarios or sensitivities should be run that explore higher DER uptake levels, to determine the costs and benefits of greater DER uptake and the impact on large-scale generation and transmission build requirements.

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2. Are there gaps in the emissions-reduction policies in the industrial, electricity and transport sectors which should be addressed?

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Section 3. Speed up approvals for new energy infrastructure

5. How can planning and approvals processes be sped up without unduly compromising regulatory standards?

Streamlining the integration of approvals and the Capacity Investment Scheme (CIS)

Australia's Capacity Investment Scheme (CIS) is at risk of creating "zombie" projects that are awarded a CIS contract but never get built due to other obstacles such as not getting the necessary approvals. These projects could take the place of more viable projects, reducing the effectiveness of the CIS. There is also a risk that the CIS could result in the duplication of other existing approval processes. In order to avoid those issues, IEEFA recommends:

- **Making it a condition of tender eligibility that projects must already have necessary government planning and environmental approvals:** Projects should only be allowed to participate in CIS tender rounds if they already have planning and environmental approvals. This will reveal the speed of planning and environmental approval processes in each state, allowing for course correction earlier on.

- **Dropping criteria relating to community engagement and social license and leave these issues to be dealt with through planning approval policies:** The CIS tender rounds should focus on the technical and commercial viability of projects, leaving community engagement and social licence considerations to existing approval processes. Planning approval processes in the states should be improved on a case-by-case basis if issues have been identified.

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Section 4. Encourage adaptation by addressing barriers to private investment

9. What are the barriers and enablers impacting decisions by owner-occupiers, landlords and developers about how housing is built and updated over time so that it is resilient to the effects of climate change?

Households that are easier to heat and cool, and that can produce and consume more of their own energy, will be more resilient to the effects of climate change. Improving household thermal efficiency, upgrading gas or inefficient electric appliances to efficient electric alternatives, installing rooftop solar and storage, and shifting key loads to run in the solar period would enable greater resilience for more households.

Key barriers to this include:

- Rental providers have no incentive to undertake household energy upgrades, and renters lack the ability or incentive to invest in upgrades that result in a capital improvement to a home they do not own. The upfront cost of many household energy upgrades can be prohibitive, especially given the tendency for "hyperbolic discounting" – the tendency to prioritise smaller, immediate rewards over larger, delayed rewards.

- Minimum appliance efficiency standards are poor, and consumers are often drawn to appliances with low upfront costs but very high running costs.

Key enablers would include more consistent national rebate schemes for household energy upgrades (as opposed to the current inconsistent arrangement across states), improved and expanded minimum performance standards for appliances, and revised minimum standards for rental properties.

10. What information do people need to make decisions about where to live, how to build and how to upgrade their homes to appropriately factor in climate change?

Consumers need more information around the long-term energy costs associated with their homes and appliances. Improved energy performance standards, flexibility standards, better labelling of appliances, and energy performance disclosure at point of sale or rent could provide helpful information and guidance to consumers to choose the lowest-cost option for their homes.

For example, Australia's existing appliance labelling scheme is inconsistent. Gas appliances are rated on a separate, industry-led voluntary scale, which prevents consumers from making accurate decisions between gas and electric appliances.

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11. What are the most cost-effective retrofitting options for improving the resilience of Australia's existing housing stock? What are their costs and benefits?

Most cost-effective retrofitting options to improve the resilience of the housing stock are measures that improve the energy performance of households such as thermal insulation, and measures that reduce household energy costs for heating and cooling such as efficient flexible electrification of appliances and rooftop solar. IEEFA is currently working on an upcoming report on the costs and benefits of various energy upgrades and will provide a copy to the Productivity Commission when it is available.

12. What role might minimum standards play in ensuring the resilience of Australia's housing stock?

See response to question 2.