



Submission to the Select Committee on Energy Planning and Regulation in Australia

October 2024

About Rewiring Australia

Rewiring Australia welcomes the opportunity to make this submission to the Select Committee on Energy Planning and Regulation in Australia.

Rewiring Australia is a non-profit research and advocacy organisation dedicated to representing the people, households and communities in the energy system. We deliver practical climate progress by working with government, industry, and communities to electrify everything. Co-founded in 2021 by Dr Saul Griffith and Dan Cass, Rewiring Australia highlights the positive climate and economic outcomes possible for Australia, and the world, with electrification of fossil fuel machines. www.rewiringaustralia.org

In addition to co-founding Rewiring Australia, Saul Griffith is also the co-founder and Chief Scientist of Rewiring America. Rewiring America and Saul worked closely with the Biden Administration in the drafting of the Inflation Reduction Act to drive investment in clean, electric machines and in supporting households and the larger U.S. economy to electrify.

Key points and recommendations

1. Energy and Climate Change Ministerial Council should commission an urgent, short, comprehensive review of energy market governance
2. Electrification delivers the lowest cost energy system and enables the fastest emissions reduction so this should be reflected in how market bodies apply the national energy objectives.
3. The emerging deep coupling of energy, transport and industry as well as the rise of consumer energy resources should be reflected by a “governance coupling” of energy to transport, industry and housing policy.
4. A new agency that oversees energy and emissions data should be established.
5. Households must be elevated in their representation in energy governance to reflect that they are investors, not just stakeholders and consumers.
6. The role and economic regulation of DNSPs should be a particular area of reform and improvement
7. The orderly shutdown of residential gas networks should be a clear priority
8. Market reforms are aligned with policy reform to accelerate a fast and equitable transition for households.

Introduction

Energy markets in Australia and around the world were designed well before the rapid rise of electrification, renewable energy and extreme weather events driven by global heating.

This shift means the energy market needs to be fundamentally reconceived to be fit for purpose. A reform of this scale is a considerable undertaking but it is urgently required. If energy markets enabled electrification then this would deliver the lowest cost energy and transport systems and provide a considerable cost of living benefit for all consumers. It would also deliver macroeconomic benefits for Australia.

Rewiring Australia believes that fundamental reform of energy markets should be a priority for the Australian Parliament and Government. Given the short period of one month timeline for making a submission to this inquiry and short period of two months for the committee to then write its report, this submission will provide a brief outline of our thinking on these issues.

Core to the submission and recommendation is the view that the Government should fund and conduct a swift but thorough review of governance and market design. It is critical that this should be led by energy Ministers and not the market bodies.

Electrification is the most important trend in the energy system

Australia's energy market institutions and governance frameworks were designed for a different era; centralised generation, passive consumers, separate electricity and fossil fuel supply chains and no carbon budget. Yet today, we are witnessing a clear transition toward distributed, all-electric, grid-connected homes powered by rooftop solar and batteries. This shift is not driven by policy or regulation, but by household economics and consumer preferences. Modern electric appliances are significantly more efficient than gas alternatives, rooftop solar offers compelling returns, and electric vehicles are becoming cheaper to own than conventional cars. When combined, these technologies create all-electric homes that are cheaper to run than dual-fuel alternatives.

This unstoppable technological and economic trend raises fundamental questions about the fitness of our energy market governance framework. The Australian Energy Market Operators's (AEMO) Integrated System Plan (ISP), while evolving, still struggles to fully capture the scale and speed of distributed energy adoption. The Australian Energy Regulator (AER) must balance network investment against rapidly evolving consumer preferences for local generation and storage. And the Australian Energy Market

Commission (AEMC) faces the challenge of designing market rules for a system where millions of households are both producers and consumers of energy.

Governments and the market bodies have attempted to keep up with the rapidly evolving state of energy markets within current arrangements, but this has failed. The Independent Review into the Future Security of the National Electricity Market created an Energy Security Board (ESB) of the three market bodies and two independent members. The Energy and Climate Ministerial Council (ECMC) commissioned the ESB to create a post-2025 market design for the future of the National Electricity Market (NEM). The ESB worked hard but failed to deliver the post-2025 NEM design.

ECMC then again attempted to fix the problem within existing arrangements by reforming the national energy objectives, to add jurisdictional climate policies to the original price, security and reliability objectives. This has not led to the profound step change in market making that is required.

Heads of the market bodies need to be aligned with the emerging economics of energy and the cost savings for consumers. This requires cultural shifts within the market bodies which must be demonstrated by the leadership.

It is time that governments work together to rewrite the legislation governing energy. This may involve a substantial reorganisation of the market bodies. The purpose is to deliver the design of the long-term future market (around 2035) and also the transition arrangements between 2025 and 2035.

Energy Consumers Australia (ECA) has an essential role in representing household interests, but all our market bodies must recognize that consumers are no longer passive price-takers. They are active participants making rational economic choices about generation, storage, and electrification that will fundamentally reshape our energy system.

Historically the consumer has a simple and passive role in the energy system. Energy Consumers Australia (ECA) plays the lead role of representing consumers and each market body has engaged with consumer advocates. Electrification is a paradigm shift in which households (and businesses) are becoming investors and market participants *at the same time as being consumers*. This is a fundamental shift in perspective and must be reflected in governance. All market bodies should be reformed to include at least one consumer representative on the board. Further a climate scientist should also be included in the board of each market body - which will assist with ensuring the leadership and culture of the bodies reflect the importance of upholding the climate reality our energy system is operating within. ECA should be consulted in this process

and empowered to also update its own governance to reflect the profound shift required to fully represent the household as an investor and market participant.

The statutory framework for energy market governance must evolve to reflect this new reality. We need integrated approaches that recognize the inevitable shift toward electrification. Rather than treating distributed energy resources as a challenge to be managed they should be seen as an opportunity to be enabled.

This Committee has a unique opportunity to examine whether our energy market institutions are fit for purpose in this rapidly evolving landscape. The distributed, electrified energy future is inevitable because it aligns with household economic interests. The question is whether our governance frameworks will help accelerate this transition in ways that benefit all consumers, or whether they will act as a brake on progress that households are already choosing to make.

The transition to electrification is a far more profound one than the transition from fossil fuel generation to large-scale renewables. In Figure 1 we outline the difference between the three energy scenarios, the past dominated by coal, the present where coal's dominance in the market is being eroded by clean energy and government planning and the market design is focused on large-scale renewables, and the future state where electrification of the economy has allowed households and business to become energy asset owners.

Figure 1 : Governance comparison of three energy scenarios: Past (coal), Present (large-scale renewables transition), Future (electrification)

	Past (coal dominant)	Present (large scale renewables transition)	Future (electrification)
Assets	Dozens of coal, oil, gas & hydro generators. Transmission and distribution networks. Petrol stations. Hundreds of megawatts of demand response by a handful of large	Hundreds of solar, wind & battery farms. Few hydrogen electrolyzers. Hundreds of megawatts of demand response	Tens of millions of household and business electrification assets. Gigawatts of demand response across diverse industrial sectors and small resources.

	energy users.		
Asset owners	Incumbents - sophisticated institutional investors	Incumbents plus new sophisticated clean energy institutional investor	Households as retail investors plus incumbents and clean energy investors
Storage function of vehicles	None	Possible	Mandatory
Governance required	Existing scheme	Existing scheme could work but requires more input from investors	Fundamental reform required to represent households

Electrification is already inevitable, but governance and policy should support and accelerate it

While the transition to all-electric homes is inevitable due to compelling household economics, the speed and equity of this transition matters enormously. Accelerating electrification through coordinated policy and market reform would deliver significantly greater benefits than leaving existing market settings to deliver less efficient progress. By bringing forward the transition, we can achieve larger emissions reductions sooner, maximise infrastructure savings through coordinated planning, and ensure no households are left behind paying ever-increasing costs for legacy fossil fuel systems.

The economics of electrification already work for many households - those who can afford upfront costs, who own their homes, and who can navigate complex energy decisions. But without supportive policy and reformed market structures, we risk creating a two-speed transition where renters and low-income households become trapped paying escalating costs for legacy gas and electricity networks while others forge ahead with solar, batteries and efficient electric appliances. This would be both inequitable and economically inefficient, as it would leave significant societal benefits unrealised.

While this Inquiry is focussed on market governance reform, it is critical that the Parliament understands that the necessary regulatory reforms do not occur in a vacuum and will be most efficient if paired with policies that accelerates an equitable and accessible transition for all homes.

Market governance and policy frameworks should therefore actively support and accelerate electrification. This means:

- Reforming rental laws and strata regulations to overcome split incentives
- Creating innovative financing mechanisms that eliminate upfront cost barriers
- Ensuring energy concessions and support programs focus on electrification rather than just bill relief
- Coordinating neighbourhood-level transitions to reduce infrastructure costs
- Reforming network tariffs to reward flexible demand and storage
- Supporting education and decision-making tools for households

The economic case for bringing forward electrification is compelling. Earlier adoption means larger cumulative savings for households. Coordinated neighbourhood transitions can significantly reduce the cost of network upgrades compared to piecemeal change. And maintaining high customer density on legacy networks for longer than necessary imposes unnecessary costs on those least able to afford them.

Our energy market governance should therefore be judged not just on whether it enables the inevitable electrification transition, but on whether it accelerates this transition in ways that maximise benefits for all Australians. This requires frameworks that actively support coordinated action rather than simply responding to change, and that ensure equitable access to the benefits of electrification rather than allowing market forces alone to determine outcomes.

Electrification will couple transport, industry and other sectors into the energy market

The electrification revolution extends far beyond households - it is fundamentally reshaping transport, industry, and the broader economy. As these sectors electrify, they become part of our energy system in ways our governance frameworks were never designed to handle. This “sector coupling” should be reflected in energy market “governance coupling” with transport, industry and housing policy.

Transportation offers the clearest example. Electric vehicles are not just a transport technology - they represent a massive distributed storage resource that could help balance the grid, reduce infrastructure costs, and enable higher renewable energy penetration. Yet our energy market frameworks treat EVs primarily as a load to be managed rather than an opportunity to be optimised. Reforms could include:

- Requiring AEMO to explicitly model vehicle-to-grid services in the ISP
- Creating market mechanisms that reward EV owners for grid services

- Integrating transport and energy planning to optimise charging infrastructure
- Developing standards for smart charging and grid integration
- Ensuring network tariffs encourage charging at optimal times
- Supporting trials of neighbourhood-level EV-grid integration

Industrial electrification presents different challenges. Large industrial loads like hydrogen electrolyzers, electric arc furnaces, and heat pumps could provide valuable flexibility to the grid, but only if market structures encourage it. Reform opportunities include:

- Developing specific market products for industrial demand response
- Creating planning frameworks that co-optimize industrial and energy infrastructure
- Ensuring network connection processes support industrial electrification
- Developing standards for industrial load control and grid integration
- Supporting demonstration projects for flexible industrial loads

Our energy governance frameworks should therefore:

- Create formal coordination mechanisms between energy, transport and industrial planning
- Ensure market rules enable value stacking across different services
- Develop shared data standards and platforms across sectors
- Support innovation in business models that span traditional sector boundaries
- Build capability in our market bodies to understand cross-sector opportunities

Data collection and analysis could improve whole-of-government approach

Energy and emissions data and analysis is currently dispersed across federal and intergovernmental agencies and departments. It would improve efficiency for this to be consolidated in one agency.

Given the politics of climate policy it is vital that Australia has a trusted source of truth for the public, governments, investors and the UNFCCC. The new agency should be established with legislation that creates an independent board and long term funding certainty.

The scope of the new agency's data and analysis should be future-proof. Given the electrification disruption and rising role of consumers, the data will have to move beyond physical metrics (emissions, energy consumed) and price metrics (costs and

prices) to include social metrics (household and business consumer energy literacy and attitudes). While this isn't directly aligned to market governance, increased investment in data collection, sharing and analysis could aid the market bodies in increasing the efficiency and effectiveness of their work. For example:

- Transport planners need visibility of network capacity for charging infrastructure
- Energy planners need better forecasts of EV adoption and charging patterns
- Industrial development plans should inform energy infrastructure planning
- Local governments need tools to coordinate neighbourhood-level transitions

DNSPs should be a particular focus of governance reform

The transformation of Australia's energy system and the emergence of households as energy infrastructure is being driven by compelling household economics, but its success, cost and efficiency will be determined by our electricity distribution networks - the poles, wires and substations that connect our homes and businesses.

Originally these distribution networks were designed and incentivised to ensure power flowed from large generators to homes with enough wires to carry the power in one direction at whatever peak requirement was needed.

However, this foundational assumption is outdated in an era where over 3 million Australian households already generate their own power and where distributed energy resources (DER) can provide many traditional network services at lower cost.

The current economic regulation of distribution networks is not fit for purpose in this rapidly evolving landscape:

1. The existing "building block" revenue model creates bias toward capital expenditure in poles and wires rather than optimising use of customer-owned DER for network services. Distribution networks are proposing 20-22% increases in capital expenditure for 2025-30 despite flat or declining network utilisation and accelerating DER adoption¹.
2. While DER can provide network services like congestion management and voltage control more cheaply than traditional infrastructure upgrades, the regulatory framework provides minimal incentives for networks to procure these services from customers. International experience, particularly in Great Britain, shows that properly incentivised networks can procure significant "flexibility services" from DER at lower cost than infrastructure solutions, with UK Power

¹ Gabrielle Kuiper (2024), "Reforming the economic regulation of Australian electricity distribution networks", Institute for Energy Economics and Financial Analysis.

Networks alone estimating £60m in savings in 2023 through flexibility procurement.

3. The economic regulation has not been updated to reflect new requirements for emissions reduction or system resilience. Networks lack incentives to accelerate decarbonization or optimise for a high-DER, highly electrified future. IEEFA's report on DNSP regulation notes that, while emissions reduction was added to the National Electricity Objective in September 2023, no corresponding changes have been made to economic regulation.
4. The regulatory process itself is overly complex and slow-moving, with revenue determinations taking over three years and producing thousands of pages of documentation - inappropriate for the pace of technological change.

Reform is urgently needed to unlock the full potential of distributed energy resources while ensuring efficient investment in essential network infrastructure. Based on conservative estimates, Baringa has estimated that \$10 billion in distribution network investment could be avoided by 2040 through efficient DER integration². Key priorities could include:

- Creating a level playing field between traditional network investments and DER-provided network services
- Introducing performance incentives tied to decarbonisation and DER integration, following international examples
- Streamlining regulatory processes while maintaining rigorous oversight
- Ensuring consumers can capture value from their energy investments while network costs are minimised
- Supporting coordinated planning for electrification to minimise system costs

Electrified households are inevitable in the longer run because they align with household economic interests. The challenge is ensuring our regulatory frameworks accelerate rather than impede this transition while maintaining reliability and minimising costs for all consumers. Following the lead of international examples, such as Great Britain's RIIO framework, Australia needs fundamental reform of distribution network regulation to optimise for a decarbonized, democratised energy future.

The end of residential gas networks: planning to avoid the inequitable death spiral

Australia's gas distribution networks face an inevitable decline as households electrify for economic reasons. The falling costs of efficient electric appliances, rooftop solar, and

² *ibid.*

batteries mean all-electric homes are becoming cheaper to run than dual-fuel homes. This creates a death spiral for gas networks - as more consumers leave the network, the fixed costs must be spread across fewer remaining customers, accelerating the transition by making gas even less competitive.

The critical policy challenge is not whether this transition will happen, but how to manage it to protect consumers while ensuring an orderly wind-down of gas infrastructure. Current regulatory frameworks prioritise asset owners' ability to recover their investments, creating a risk that remaining gas customers - often those least able to afford or access electrification - will face spiralling costs as the customer base shrinks.

Key principles for managing this transition should include:

1. Explicit recognition that gas networks are not forever assets: Regulation should acknowledge these are now time-limited infrastructure with a clear end date, not perpetual monopolies.
2. Active transition planning: Distribution networks should be required to develop geographic phase-out plans that coordinate consumer electrification with network retirement, avoiding stranded assets while ensuring no consumers are left behind.
3. Equitable cost allocation. The costs of early network retirement should not fall disproportionately on remaining customers. Options could include:
 - Government support for low-income household electrification
 - Writedown of gas network regulated asset bases to reflect their limited future
 - Creation of transition funds from current gas charges while customer numbers are still high
 - Geographic retirement of network segments as customer numbers decline
4. Consumer protection. Clear obligations on networks to:
 - Provide transparent information about transition plans and timelines
 - Support coordinated neighbourhood electrification programs
 - Maintain safety and reliability through the transition
 - Ensure vulnerable customers are identified and supported
5. Investment signals. Reform investment incentives to encourage:
 - Strategic asset retirement rather than replacement
 - Support for electrification rather than customer retention
 - Innovation in transition planning and execution

The goal should be an orderly transition that minimises total system costs and preserves incentives for electrification while ensuring energy remains affordable and

reliable for all consumers. This requires fundamentally rethinking gas network regulation to prioritise consumer interests over asset owner returns in managing what is now clearly a time-limited infrastructure service.

Conclusion

The transformation of Australia's energy landscape presents both an unprecedented challenge and an extraordinary opportunity. The current market structure, designed for a different era, is increasingly misaligned with the increasingly decentralised nature of our energy system. While the scale of reform required is significant, the cost of inaction would be far greater – both in economic and environmental terms.

The evidence presented demonstrates that reimagining our energy markets to enable rapid electrification would yield substantial benefits: reduced energy costs for consumers, enhanced grid reliability, and stronger macroeconomic outcomes for Australia. However, these benefits can only be realised through decisive action led by energy Ministers who can drive comprehensive reform with the urgency it demands.

The next steps are clear: the Government must initiate a thorough review of market design and governance structures, with a specific focus on enabling electrification and renewable integration. This review should be swift but comprehensive, ensuring that Australia's energy markets are rebuilt to serve not just today's needs, but tomorrow's. The time for incremental changes has passed. What is required now is bold, visionary reform that will position Australia as a leader in the global energy transition while delivering lasting benefits to all Australians.