

Preparing for the energy transition

How to overhaul Australia's energy market governance

Tony Wood and Alison Reeve

Overview

Reform of Australia's energy markets is overdue.

Successive governments at state and federal levels have successfully implemented policies to build up a renewable energy industry. It's now possible to imagine renewable electricity as the central and dominant source of all of Australia's energy needs, not too far in the future. This success should be celebrated.

But a system designed in the 1990s is now creaking under strain. The key assumptions that underpinned that design – generators that consume fuel, slow and predictable demand patterns, and passive consumers – have been invalidated by technology change.

Gas is no longer a bridge from using coal to using renewable energy, it will be a back-up fuel for the small number of times when renewable electricity can't do the job. Most transport in the future will be electric too.

The electricity market is in a messy period, as coal-fired generators are retired and new renewable generators and associated transmission are built. This is largely an urgent co-ordination problem, and as such, will not be solved by market reforms. Markets and governments should accept a few years yet of 'muddling through'.

Beyond the coal-exit era, there will be an era where the key driver of change will be growing demand for electricity, as industry, households, and transport are electrified to meet net-zero goals. It is this era that market reforms should serve.

Energy market governance needs to be fit for a net-zero economy. The three laws governing energy markets should be merged into one, to best serve the interests of consumers. And governments must give better policy direction so that market bodies can make better, faster decisions.

The Integrated System Plan should be extended and expanded to become a clear plan for delivering a least-cost, reliable, net-zero energy system, that has strong community support. And governments need to resolve planning bottlenecks that are holding back the infrastructure we urgently need.

Governments should begin reforms now, because market reforms take time, and the post-coal era will be here within the decade.

And finally, it is time to grasp the carbon pricing nettle. Reforming and operating the market becomes easier if participants have predictability over when, and how much, they have to pay to pollute.

Federal forays into energy policy fail when the federal minister tries to go it alone or to bully the states into line. Reform requires the federal, state, and territory governments to work together. The right vehicle to pursue our recommendations is a revised Australian Energy Market Agreement delivered through the Energy and Climate Change Ministerial Council. Cooperation between all levels of government may take a little more time and patience upfront, but it will be quicker and more effective in the long run.

Recommendations

Governance fit for a net-zero economy

1. Create a single National Energy Law that encompasses electricity, gas (and gas substitutes), retail, and consumer rights and responsibilities.
2. Provide clear policy directions, so that the market bodies can make better decisions.

Better system planning

3. Extend the role of the Integrated System Plan to have a clear, credible plan for delivering a least-cost, reliable, net-zero energy market.
4. State governments should improve the planning and permitting processes for transmission and generation projects.

Market reform starts now

5. Agree on the role of market participants, market bodies, consumers, and governments in the post-coal energy market.
6. Develop the case for, and design of, a market structure that will help ensure adequate energy resources in a post-coal, high-renewables electricity system.
7. Better integrate and orchestrate all forms of distributed energy resources, including those considered in the National Consumer Energy Resources Roadmap.
8. Signal the introduction of a clear and enduring carbon price for the electricity sector to guide investment decisions, including gas plant entries and exits.

Table of contents

Overview	2
Recommendations	3
1 Introduction	5
2 Energy markets need reform to be fit for a net-zero future	8
3 Better system planning is needed	14
4 Designing the future energy market needs to start now	17

1 Introduction

This submission is by Tony Wood and Alison Reeve of Grattan Institute, an independent think tank focused on Australian domestic public policy. Grattan aims to improve policy by engaging with decision-makers and the broader community.

On 24 September 2024, the Senate established a Select Committee to inquire into the the institutional structures, governance, regulation, functions, and operation of the Australian energy market.

Within its remit are:

- the three overarching laws governing energy markets (the National Electricity Law (NEL), National Gas Law (NGL), and National Energy Retail Law (NERL)).
- the roles and functions of the market bodies (the Australian Energy Regulator (AER), Australian Energy Market Operator (AEMO), and Australian Energy Market Commission (AEMC)); and state energy regulators.
- the role and functions of Energy Consumers Australia.
- the statutory framework which supports consideration of stakeholder views and the public interest.¹

Grattan has advocated for energy market reforms since its inception well over a decade ago. This submission draws on our previous reports where they relate to the matters above. We have also provided brief commentary on the broader need to reform the national energy market.

Constitutionally, the federal government has very little power to review or reform the energy market on its own. Reform requires a co-operative

Figure 1.1: Major milestones in energy markets governance

1994	Victoria privatises electricity system.	2009	NEMMCO becomes AEMO.
1996	<i>National Electricity (South Australia) Act</i> passed, establishing the framework for a national electricity market.	2010	NSW completes sale of first tranche of electricity assets. AER becomes an independent entity.
1998	The NEM is 'switched on'. National Electricity Code Administrator (NECA) and National Electricity Market Management Company (NEMMCO) established.	2011	<i>National Energy Retail Law (South Australia)</i> passed
1999	South Australia privatises electricity system.	2012	Federal carbon pricing begins.
2000	Renewable Energy Target (RET) begins at 2% of demand.	2013	Full retail contestability achieved, Federal carbon pricing abolished.
2002	Roll-out of full retail contestability begins.	2015	Energy Consumers Australia established.
2003	NSW imposes a carbon price on electricity sector through the <i>Greenhouse Gas Abatement Scheme</i> .	2016	South Australian blackout. Finkel review commissioned.
2005	AER established inside the ACCC. NECA becomes AEMC.	2017	Energy Security Board (ESB) formed. Hazelwood power station closes. Federal government proposes <i>National Energy Guarantee (NEG)</i> .
2006	13 state regulators hand over regulatory powers to AER. Basslink is switched on, connecting Tasmania to the NEM.	2018	Federal Government abandons <i>NEG</i> .
2008	<i>National Gas (South Australia) Act</i> passed, establishing the national gas market. Federal government increases RET target to 20% of demand by 2020.	2019	RET target achieved. ESB tasked with post-2025 market reforms.
		2020	NSW is first state to established renewable energy zones. ACT commits to phase out gas use.
		2022	ESB proposes capacity market. ESB disbanded.
		2023	Vic, ACT ban new gas connections.
		2024	Federal capacity investment scheme begins

Source: Grattan research.

1. Select Committee on Energy Planning and Regulation in Australia (2024).

approach, with states, territories, and the federal government working together. Our views in this submission apply as much to state governments as the federal government.

While the Australian Energy Market Agreement applies to all the states and territories and includes references to electricity and gas, many of the issues covered by the current inquiry are specific to the National Electricity Market (NEM) that excludes Western Australia and the Northern Territory. For example, the Integrated System Plan is NEM-specific.

1.1 A good energy system is reliable, affordable, and sustainable

A good energy system should be affordable for consumers in the long run, reliably available, and low in greenhouse gas emissions. In Australia, this is codified in the National Electricity Law,² National Gas Law, and National Energy Retail law, which explicitly include these goals in the National Electricity Objective, National Gas Objective and National Energy Retail Objective.

These three goals are often described as forming an ‘energy trilemma’. Each goal interacts with the other two, and prioritising one may involve trade-offs against the others. Meeting the overall objective means maintaining an acceptable balance between the three goals, even as what is acceptable to consumers may change.

1.2 The National Electricity Market has mostly served us well to date

The National Electricity Market (NEM) was established to achieve two parts of the energy trilemma: affordability and reliability. In the context of operating the NEM, affordability was considered to mean

delivering the lowest-cost combination of assets and operating these efficiently, to deliver the lowest possible electricity price in a given set of circumstances.³

The NEM’s wholesale spot market is the primary vehicle to deliver these outcomes. It serves two functions:

- It ensures the lowest-cost dispatch of electricity, given demand and available generation capacity.
- It provides price signals for efficient investment in electricity supply over the longer term.⁴

1.3 National energy market regulation now covers more activity in more places

Since the inception of the NEM in 1998, market governance has evolved to encompass more activity in more places, as summarised in Figure 1.1 on the preceding page. This growth has led to a more complex governance structure (Figure 1.2 on the next page).

The Australian Energy Market Agreement describes the functions and responsibilities of the various players in market governance. Energy ministers, jointly, are responsible for the national energy policy framework; policy oversight of, and future strategic directions for, the Australian energy market; governance and institutional arrangements

3. This is an imperfect definition of affordability, because while the outcome may be the lowest-cost electricity under particular circumstances, consumers’ capacity to afford it is a function of their income and other financial commitments.
4. Price signals for investment are provided by the frequency, level, and timing of high price periods in the NEM’s wholesale spot market. The expectation of high price periods in the future encourages investors to build new generators that are able to provide capacity during those periods. And once they do, the price signal to invest disappears, because the new generator has an incentive to bid into the spot market at their short-run marginal cost of generation and so becomes the marginal generator.

2. *National Electricity (South Australia) Act 1996.*

for the Australian energy market; the legislative and regulatory framework within which the market operates and natural monopolies are regulated; and longer-term, systemic and structural energy issues that affect the public interest.⁵

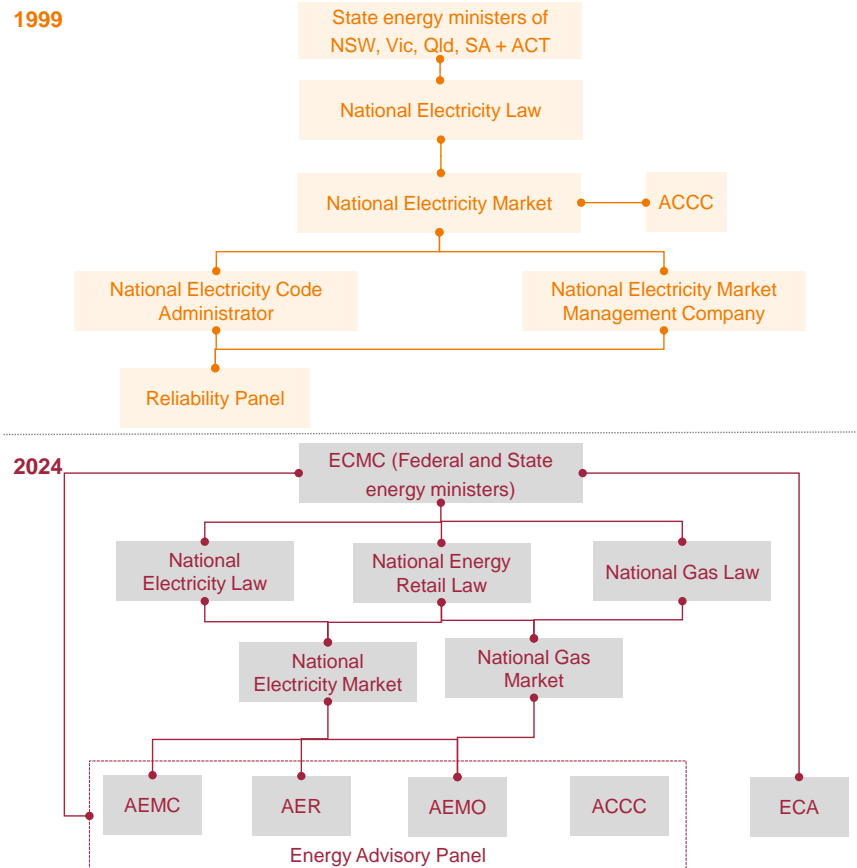
Because, under the constitution, energy is a state responsibility, national laws are made in the South Australian parliament [can SA pass national legislation or is state legislation?], and then adopted as mirror legislation by each of the other state parliaments. Rules made under the laws govern the day-to-day operation of the markets.

These laws also establish the market bodies. Broadly, the Australian Energy Market Commission (AEMC) makes rules, the Australian Energy Regulator (AER) enforces them, and the Australian Energy Market Operator (AEMO) runs the market, seeking to ensure that sufficient electricity and gas are available at all time to meet demand. AEMO is also responsible for transmission planning.

These three bodies plus the ACCC constitute the Energy Advisory Panel. It coordinates market bodies' advice to governments on issues relating to the security, reliability, and affordability of Australia's east coast energy system.

Energy Consumers Australia is not a market body. It provides a consistent national voice for household and small business consumers.

Figure 1.2: Over time, the governance and institutional structure of Australia's energy markets has become more complex



Notes: ACCC: Australian Competition and Consumer Commission. AEMC: Australian Energy Market Commission. AEMO: Australian Energy Market Operator. AER: Australian Energy Regulator. ECA: Energy Consumers Australia. ECMC: Energy and Climate Change Ministerial Council.

Sources: NEMMCO (2001) and AEMC (2024a).

5. COAG Energy Council (2013).

2 Energy markets need reform to be fit for a net-zero future

The laws governing energy markets in Australia reflect an era that has now passed. Our current supervisory framework over the electricity and gas systems was designed for the energy challenges of the 1990s, an era of micro-economic reform, privatisation, competition, and regulation of natural monopolies. The aims were to constrain inefficient capital spending, improve productivity in power stations and energy networks, provide better customer service, and free-up government balance sheets.

An underpinning principle was that governments should set policy and governance, and well-regulated markets should deliver reliable energy at lowest prices. Governments would otherwise intervene only to address market failures or remove barriers.

An underpinning assumption was that a modest rate of investment was needed to meet growing demand and replace ageing plant. A high rate of capital spending to transform the system to low-carbon energy was not envisaged.

The physical energy system is now changing in ways that were not foreseen by the reformers of the 1990s. Technology has changed, demand patterns are different, price signals come as much from outside the market as within it, and consumers are now active market participants.

These changes have come about because of an important and unavoidable reality: burning large amounts of fossil fuel to power the economy is not compatible with avoiding dangerous climate change. A plethora of national and jurisdictional policies have been introduced over the past two decades to try to reduce the contribution of the energy sector to climate change. These policies have driven the technology changes described in this chapter.

Continued failure to understand and respond to the implications of these changes will only add to public concern about the security, reliability, and cost of energy.

2.1 The NEM was created for a steady-state system

At the inception of the NEM in 1998, energy markets were in steady state. The technology mix for electricity (coal, some gas, and a couple of large hydro facilities) was known with near-certainty. Gas and coal provided industrial heat, and gas provided home heating. Almost all cars ran on petrol or diesel. Demand growth was predictable and stable, and largely a function of GDP growth. Price reductions were gained through competitive tension and by operating existing assets more efficiently. Operational and investment risks didn't vary much, and were well-understood.⁶

The three markets for energy – fuel, gas, and electricity – had very little interaction. Consumers were passive: the first grid-connected solar power system had only just been installed, and time-of-use tariffs were limited to water heaters.

In the electricity market, changing wholesale market prices were intended to reflect periodic imbalances between steadily rising demand and more lumpy investment in supply. The expectation of high price periods in the future was meant to encourage investors to build new generators that were able to provide capacity during those periods. And once they did, the price signal to invest would have achieved its objective and prices would reflect a new balance between demand and supply.

6. Ben-David (2023).

Governance of the market was designed for incrementalism. Market operations were set up to follow rules, along with a defined process for changing these rules if there was an opportunity to improve operational efficiency.

Leaving technical specialists to run the electricity market under these conditions was a win-win-win situation: consumers got lower prices, governments rid themselves of having to operate services, and ministers had convenient scapegoats in the very unlikely event that anything went wrong. Leaving the day-to-day running to the market bodies also papered over a key weakness in the governance structure: every state has the right to exempt itself from any of the NEM rules.⁷

During these years, although gas-fired generation played a significant role in the electricity market, the gas market otherwise operated separately from the electricity market, notably being underpinned by long-term contracts between retailers and producers rather than through a spot market. There was generally little substitution between electricity and gas for end uses.

2.2 The energy transition has turned all this on its head

We are now in a time where the technology mix is changing rapidly, as successive state and federal governments have designed and implemented policies to encourage greater use of renewable energy and decarbonise the electricity sector.

Electricity demand growth has been absent for a long time, but may be abrupt in the future if electrification responds concurrently to degasification, adoption of electric vehicles, and growth in energy-hungry data centres. Price reductions no longer result from

7. Referred to as 'derogation'. At the time of writing, 29 jurisdictional derogations were in place: seven for Victoria, six for Queensland, five each for NSW and South Australia, four for Tasmania, and two for the ACT: *National Electricity Rules* Chapter 9.

improving operational efficiency - they come from technology switching (which has its own associated costs in the requirement for new transmission and storage). The changes in physical characteristics of the new technologies has also brought changes in market risks, both operational and financial.

The gas market and the electricity market are now strongly linked because of the crucial role that gas-powered generation plays in backing up wind and solar generation. While electricity powers only a tiny percentage of transport, this share is trending upwards fast. Industry too is looking at how to decarbonise, either through electrification or via low-carbon hydrogen, the production of which requires renewable electricity.

Price signals for new generation have come from outside the market, through the Renewable Energy Target and other state and federal subsidies aimed at building the renewable energy industry.

About 30 per cent of Australian households now have rooftop solar. Other households use time-of-use pricing to shift their consumption around during the day to save money. And many are upgrading from gas to electricity for heating, cooking, and hot water. Home air-conditioning is becoming the norm. Some consumers are installing home batteries.

Supporting the growth in wind farms and utility-scale solar farms has consumed existing transmission capacity, leading to historically high needs for more transmission across regional Australia. Commercial battery storage is entering the market, and pumped hydro storage is under construction.

Running a rules-based system in a time of rapid change means more rule changes, more often (Figure 2.1 on the following page). And there are limits to the effectiveness of rule-changes when the market fundamentals themselves are under strain.

2.3 Three underpinning assumptions no longer hold

The rise of wind and solar generation has challenged three assumptions that underpinned the original design of the NEM. Firstly, that all generators have a **marginal cost** of production based on their fuel consumption, and that therefore the way to keep prices low is to dispatch generators in order of lowest to highest marginal cost, until demand is met. Secondly, that **demand changes** slowly and predictably during the day, allowing generators to ramp up and down gradually in response. And thirdly, that **consumers are passive** recipients of energy, not producers.

These changes have major consequences for the NEM. It now needs to:

- Plan and build new transmission at a scale and pace not seen before.
- Ensure that the market provides pricing or other financial signals for investment in dispatchable supply capacity to support a system largely built on weather-dependent wind and solar generation.
- Effectively and efficiently integrate the energy resources (solar and batteries) that consumers are installing behind the meters.

Managing these consequences is the topic of Chapters 3 and 4 of this submission.

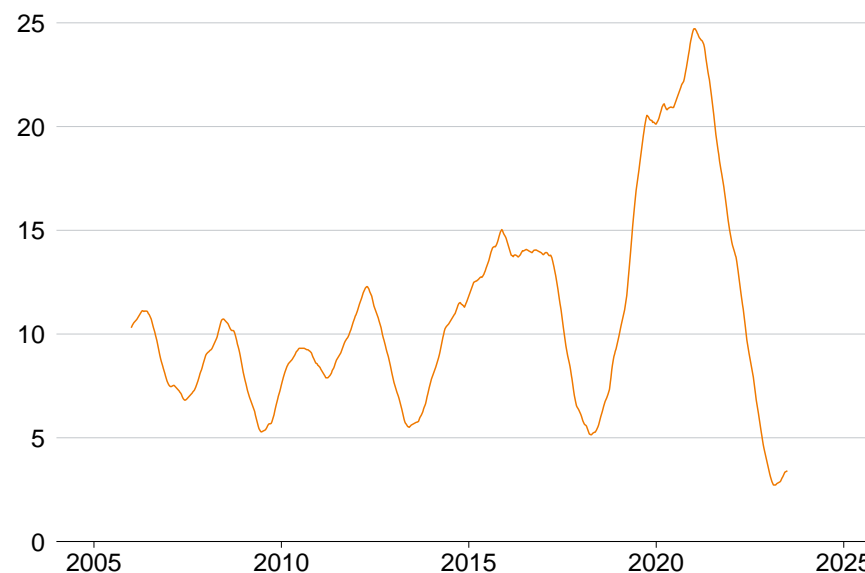
2.4 Having three separate laws no longer makes sense

There are three overarching laws governing energy markets: the National Electricity Law, the National Gas Law, and the National Energy Retail Law.

This reflects the creation circumstances of the NEM: separate electricity and gas markets, and passive consumers in need of protection. All three laws refer to ‘the best interests of consumers’.

Figure 2.1: The number of rule changes has increased dramatically since the early 2000s

Number of active rule change processes, six-month rolling average



Notes: Gas market and retail rule changes excluded. Rule changes with staged implementation dates are treated as separate rule changes, one for each implementation date.

Source: Grattan analysis of AEMC (2024b).

The National Electricity Law and the National Gas Law treat gas consumers as entirely separate to electricity consumers. But every gas consumer is also an electricity consumer, and decisions made by and about gas consumers have ramifications for electricity consumers.

For example, individual households save money by upgrading from gas to all-electric appliances – it is in their best economic interests to do so. But, as many households start upgrading, there are two overall system costs that impact on all consumers. Firstly, remaining gas consumers pay higher prices because there are fewer households to pay for the cost of the gas network. And secondly, households upgrading to electricity increase demand for electricity, which leads to network upgrades. These are paid for by all electricity consumers, not just those who switched. So remaining gas consumers also have higher electricity bills.⁸

When determining gas network access arrangements, which flow through to gas bills, the AER cannot consider the best interests of electricity consumers. And when considering electricity network pricing, it cannot take into account that the best interests of gas consumers may be served by ceasing to use gas and switching to electricity.

This artificial split between gas and electricity also leads to absurd statements such as the following in a recent draft determination of gas pipeline arrangements:

Substitutability of gas... Retailers: We consider that no substitutes are available as the nature of their business involves the supply of gas.⁹

All but two of the 44 companies listed on the AER's website as holding a retail authorisation for gas also hold retail authorisations for

8. The households that are likely to stay on gas will be those where the occupants have less capacity to change: renters, low-income families, and those without easy access to cash. This is discussed in more detail in Wood et al (2023).

9. Australian Energy Regulator (2024).

electricity.¹⁰ Presumably, because the determination is made under the National Gas Law, the AER cannot take into consideration that these companies do have a substitute for selling gas: they are licensed to sell electricity.

Similar problems exist with the National Energy Retail Law. This law governs the rights of small consumers as purchasers of energy. But many of these small consumers – households particularly — are also producers of energy, because they have rooftop solar. And the laws that govern their responsibilities and rights as producers are in the National Electricity Law.

As the electricity system becomes the central and dominant energy system underpinning the economy, it would make more sense to have a single legal framework for energy, so that the 'best interests of consumers' can be properly met.

2.5 Market bodies need clearer directions from ministers

Market bodies can only work within their respective governance frameworks. They need ministers to make policy, and for that policy to have enough clarity so that market bodies can get on with their jobs. This was an underpinning principle when the NEM was set up: governments set policy and governance; well-regulated markets deliver reliable energy at lowest prices. Since then we have introduced a further constraint - lower emissions.

Two examples illustrate where this is failing.

2.5.1 Minimising gas bills in a policy vacuum

The Australian Energy Regulator resets access arrangements for gas networks every five years. These arrangements set how much money

10. AER (2024) The two companies not holding both gas and electricity authorisations are Perpetual Energy and Solstice.

network owners can recoup from consumers to pay off the capital cost of building and maintaining networks.

Historically, it was assumed that networks would have long economic lives, and that the best interests of consumers were served by consuming more gas. However, as gas use declines towards net zero, this assumption no longer holds.

Once constructed, the cost of running the network is much the same regardless of the number of users. So as the number of users declines, the cost per user increases. There is a risk of a 'death spiral' emerging: prices increase to maintain revenue, price-sensitive users are encouraged to electrify sooner, bills rise again, and around it goes. The alternative is for the network business to see decreasing revenue with no way to recover its capital.

The AER identified this risk in 2021,¹¹ but while all governments were committed to net zero, and the Victorian and ACT governments had undertaken initial consultations on options for decarbonising gas use, there was no clear direction on timing.

In the absence of clear policy direction from governments, the AER had no choice but to make its own decision on how it would handle the issue, and allowed networks to accelerate the depreciation of their assets. But while accelerated depreciation provides a little breathing space, it doesn't solve the problems outlined above in the long term.

Furthermore, accelerated depreciation only accelerates a death spiral. And because accelerated depreciation allows gas network businesses to make more revenue sooner, it tends to protect the interest of the network businesses ahead of that of consumers.

Clear direction on timing for decarbonising gas use is still lacking. One Victorian network has already applied for its access arrangement from

11. Australian Energy Regulator (2021).

2022 to be reopened, because its network value is declining faster than expected. This will push more costs onto consumers, sooner. Unless the Victorian Government provides more definite policy signals about when it expects household gas use to end, this situation will persist and, despite the AER's best efforts, consumers will pay.

2.5.2 Designing a capacity mechanism without critical information

In 2019, the Energy Security Board was given the task of driving a NEM reform program, with a critical element being a capacity mechanism in the market to ensure that dispatchable electricity is available to maintain reliable supply.

In June 2022, the Energy Security Board published a high-level design paper on how to achieve this outcome. The controversial element of its design lay with the role of different technologies and how fossil-fuel generation might participate in the capacity procurement and payment processes.

Australia's federal, state, and territory governments were all committed to net zero emissions by 2050, and some had interim, 2030 targets and programs to support renewable generation.

Some ministers valued the right to exclude coal and/or gas generators in their jurisdictions from capacity payments on the grounds they would prolong the operating life, and associated emissions, of such plants.

One of the 14 principles that the energy ministers set down for the ESB was a focus on continued reduction of electricity sector emissions. But, they provided no clear policy framework to meet this principle.

To deliver a capacity mechanism that meets the complete set of ministers' needs, the ESB sought 'further guidance on continued

emissions reduction in the context of net zero and how the principle can be operationalised in the design.¹²

To translate from bureaucratese: please tell us what level of emissions are acceptable, so we can design the mechanism you asked for.

The ESB never got an answer from the ministers. Instead, its services were dispensed with, and policy development on an enduring capacity mechanism stopped. An initial project by the federal government to design a capacity investment scheme was applied instead to a subsidy scheme to underpin a large investment in renewable generation and storage to contribute to meeting the government's target for renewables' growth by 2030.

12. Energy Security Board (2022).

3 Better system planning is needed

To keep the energy system reliable and affordable, and to achieve emissions-reduction goals, requires a sustained, historically high, investment in generation and transmission over the next two decades. Yet, the NEM was designed for small incremental changes, mostly to meet steady, predictable increases in demand.

What the NEM designers did not foresee (perhaps, in retrospect, naively) was that many coal generation assets would reach the ends of their lives in a relatively short space of time (because they were built in a relatively short space of time). A ‘big generation rebuild’ was always going to be needed, and it is at least debatable whether the existing market and regulatory frameworks would have been sufficient to deliver it. We will never know.

The rise of renewables complicated things further: not only did new capacity have to be built to replace retiring coal, but this capacity needed to be in different places. Coal generation is generally built on, or close to, the coal asset. The underlying resources for wind and solar are much more widely distributed, requiring new transmission as well. Additional inter-regional transmission is also valuable in balancing variable generation across the NEM.

This is the construction super-cycle that the energy market finds itself in today.

3.1 A big build needs a big plan

The National Electricity Law places a requirement on AEMO to publish a National Transmission Network Development Plan: an independent, strategic assessment of an appropriate course for efficient transmission grid development in the NEM over the next 20 years.

The Finkel review found that:

Incremental planning and investment decision-making based on the next marginal investment required is unlikely to produce the best outcomes for consumers or for the system as a whole over the long-term or support a smooth transition. Proactively planning key elements of the network now in order to create the flexibility to respond to changing technologies and preferences has the potential to reduce the cost of the system over the long-term.¹³

In other words, getting transmission built in the right places requires much more than a needs assessment. Finkel recommended that AEMO develop an integrated grid plan to facilitate the efficient development and connection of renewable energy zones across the National Electricity Market, along with a list of potential priority projects in each region that governments could support if the market is unable to deliver the investment required to enable the development of renewable energy zones.¹⁴

This became the Integrated System Plan (ISP), which has evolved over several years since it emerged from the Finkel review.¹⁵ AEMO¹⁶ and energy ministers¹⁷ now describe the ISP as setting out the lowest-cost mix of generation, transmission, and storage to reliably meet consumers’ energy needs and Australia’s emissions targets. It takes into account federal, state, and territory policy frameworks but does not assess the practicalities of such policies.

13. Finkel et al (2017, p. 124).

14. Ibid (p. 24).

15. Ibid.

16. AEMO (2023).

17. Energy and Climate Change Ministerial Council (2024).

3.2 The ISP could be improved

The ISP could be a far more valuable part of planning the NEM. Following a recent review, the 2026 ISP will now include a deeper consideration of the role of gas, and will consider community acceptance when assessing transmission options.¹⁸

The plan should include a wider range of significant, potential future risks in its scenario assessments, including those that will arise from climate change, and those that arise if (as is happening) projects run behind schedule.

It could also make better use of scenarios. The current version presents several potential future pathways, and then asks energy market experts to deliberate on which they think is most likely.¹⁹ The most likely pathway often becomes the one that informs energy policy. But this is not because of any official decision; rather, it is unofficial consensus among decision-makers and investors that some sort of guidance is needed.

The ISP would be more useful if, based on advice from AEMO, ministers definitively endorsed a preferred pathway to net zero and calibrated their policies to achieving it. Further risk assessment and sensitivity analysis could then be used to stress-test ministers' preferred pathway against a range of plausible scenarios, and develop indicators that might give early warning that things are off-track.

This in turn would give ministers more information to calibrate policy, because they would have a better understanding of which risks to their preferred pathway were more material, and could design policy to mitigate those risks.

18. Ibid.

19. This is done using the Delphi process, a widely-used business forecasting process based on the principle that forecasts from a structured group of individuals are more accurate than those from unstructured groups.

3.3 Getting planning right

Despite the existence of the ISP, building new transmission and new generation to support the energy transition is running behind schedule. Issues such as cost overruns, cost-sharing arrangements, and securing social licence from regional communities are big challenges.

Planning and regulatory approvals are essential to timely building of transmission infrastructure through and beyond the coal-closure era. They are too complex and too slow.

Governments should collectively identify immediate and practical actions to address the bottlenecks and barriers. Some actions are simply good social policy, although poorly-implemented past attempts to achieve social licence have created their own barrier.²⁰ Others, such as route planning flexibility and compulsory acquisition of easements, are not simple and will need much-improved communication and very focused management.

A more comprehensive ISP would help with this, but improving the way the ISP is developed and communicated would also help. It seems that often, transmission projects will have been in successive ISPs, but there is a lag between the electricity industry and governments knowing about a project, and the local community finding out about it.

For example, the Western Renewables Link in Victoria first appears in transmission planning in 2016, and by the 2018 ISP, its route has been decided and it is expected to be needed by 2023. However, the community hosting it doesn't find out about it until 2020. Ausnet, the transmission company in Victoria, is still negotiating with landholders over the route and compensation, alongside court cases and protests.

20. Dyer (2023).

The development of the next ISP should include much more community engagement in the regions where transmission lines are planned. An economic model can choose the theoretical least-cost transmission projects, but if they can't be built because of community disquiet, they cannot deliver benefits for consumers.

4 Designing the future energy market needs to start now

The early 2000s were characterised by a stable two-to-three-year cycle of rule changes, where peaks were driven by the timing of regular reviews (such as those by the Reliability Panel) – see Figure 2.1. After 2010, this cycle was still in place, but more and more rule changes were underway at any one time, as the pace of change accelerated. This can be traced back to a fundamental problem with the process: it is designed to respond to problems, not anticipate them.²¹

The time taken to institute and change a rule has not changed materially over time (Figure 4.1, upper chart) – to the AEMC’s credit. More than 90 per cent of rule changes are decided within a year of being initiated. But it is becoming more common for implementation to be delayed (Figure 4.1, lower chart). This could be for several reasons: a natural consequence of trying to implement a large number of changes at once; market incumbents putting pressure on decision makers to delay implementation; or ministers delaying rule changes they think may be unpopular.

4.1 Ministers are no longer content to rely on a rules-based system

The rule-change process has always been dominated by those who govern the market. But two striking changes are apparent that tell us something about how much ministers trust the market reform process (Figure 4.2).

Until 2012, market rule changes were mostly instituted by the market bodies, reflecting the ‘leave it to the experts’ nature of steady-state governance. From 2013 to 2016 there was a sharp jump in the number

21. This in turn probably stems from the early market’s focus on pushing costs down. Rule changes are assumed to add to costs, so market bodies are reluctant to implement them unless a clear problem can already be seen.

of government-initiated rule changes. Leaving things to the experts seemed to be out of favour.²²

Another abrupt change took place from 2017. Governments seemed to lose interest completely in instituting rule changes, the market bodies took over, and many more rule changes were instituted.

This period coincided with governments moving to more out-of-market interventions, such as bypassing the AEMC with the Interim Reliability Measure, committing to Snowy 2.0 without a prior feasibility study, attempting to underwrite new gas generation, establishing Renewable Energy Zones, and funding big batteries. None of these interventions has led to a material improvement in resource adequacy – but they have created more uncertainty for investors.

4.2 Accept a limited period of greater government intervention

Two distinct eras lie ahead for national energy markets: the era of coal closure, and the post-coal era. The issues faced in each of these periods are different, and require different approaches. Governments should treat them as two distinct, though linked, challenges.

4.2.1 ‘Muddle through’ the coal closure era

The coal closure era will be characterised by lumpy withdrawals of electricity generation capacity, a shift from centralised to decentralised

22. It is also striking how seldom rule-change proposals come from the electricity industry or from consumer representatives. Some of this pattern may reflect that developing a rule-change proposal could be complex and time-consuming, with no guarantee of success. Market participants and consumers perhaps find it more effective to lobby ministers and market bodies for changes, rather than develop them themselves.

generation, and the emergence of demand growth after years of stagnation. Governments will need to spend considerable political capital during this time to build sufficient generation capacity, storage, and transmission to replace exiting coal.

Markets, rules, and a hands-off approach are not well-suited to dealing with the risks of the coal closure era. Government interventions are probably unavoidable, and they may bring some unpleasant trade-offs. Realising this, other governments around the world have gone down the route of greater intervention.²³

The current patchwork of policies, with some tweaks, is a partial solution. Given the time imperative, governments and industry should accept this as a period of muddling through, with as many band-aid fixes as are necessary, to keep the lights on and prices down.

4.2.2 Start work now on the post-coal system

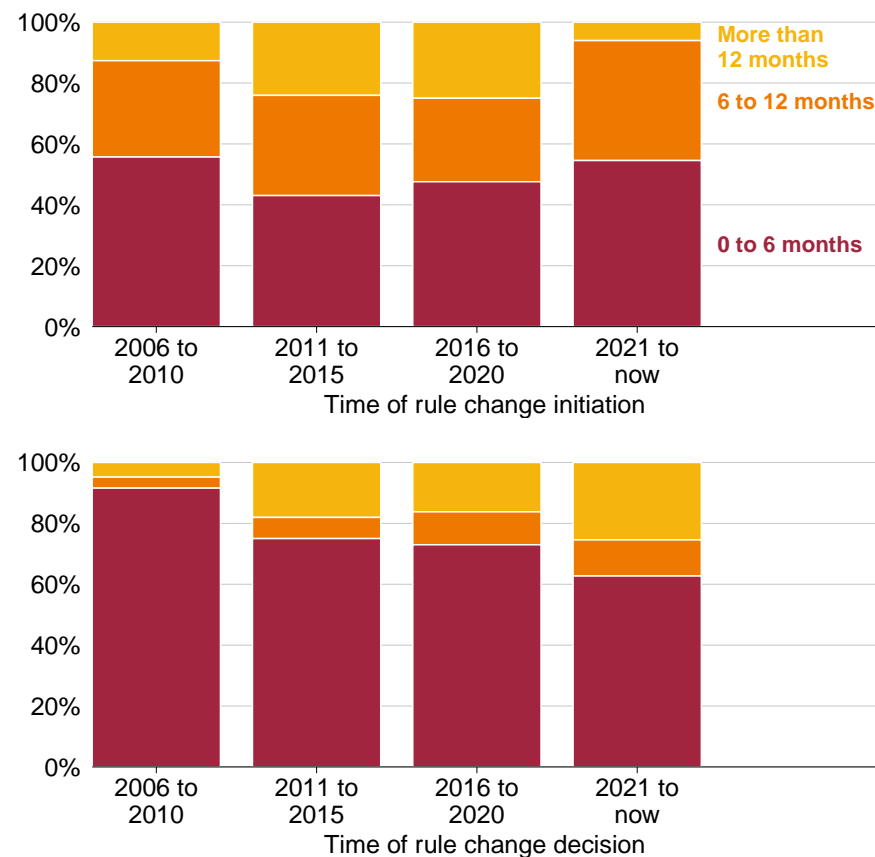
The post-coal market will look very different: different generation and storage technologies will dominate, and they will often have different financing requirements, correlated risks, and be much more dispersed. Electrification of transport, households, and light industry will be well underway, and while the amount of gas being consumed will be smaller, its importance will be higher, because of its role in backing up the electricity system.

Governments will face fewer political constraints once coal is no longer a material part of the mix. Governments may still not want to let go of the option to intervene where they believe it is necessary. But unless they want to return to the days of complete government ownership, they will need to create new rules for a more hands-off post-coal era. This

23. Ragosa et al (2024).

Figure 4.1: Rule changes are taking longer to come into effect

Share of rule changes progressing from initiation to decision (above) and decision to implementation (below), by time



Notes: Gas market and retail rule changes excluded. Rule changes with staged implementation dates are treated as separate rule changes, one for each implementation date.

Source: Grattan analysis of AEMC (2024b).

task will be easier – technically and politically – if governments assume that coal is no longer present.²⁴

The time to do this is now.

4.3 A post-coal energy market fit for a net-zero economy

In 2017, the Finkel review recommended that Australia’s energy ministers agree to a new Australian Energy Market Agreement that commits all parties to take a nationally consistent approach to energy policy.²⁵ This recommendation was not adopted at that time. In planning for the post-coal era, implementing such an agreement would be an ideal role for the National Energy Transformation Partnership struck by the federal, state, and territory ministers in 2022.²⁶

The process of developing a new Agreement should be led by governments, because it goes to matters of policy (and politics). The rumoured NEM review should form the basis of a fundamental review of the operation of the NEM, the National Gas Market, and retail laws. The states are integral to the design process, because they will be integral to the success of the new NEM.

If the review is to develop an enduring framework for a national energy market, it must avoid the pitfalls that previous attempts encountered. The review must be approached as a co-design exercise with consumers, industry, and politicians, drawing on the deep expertise of the market bodies.²⁷ It has to acknowledge and accommodate political and physical realities as well as technocratic theory.

24. Grattan explored these issues in depth in our 2024 report, *Keeping the lights on*: Wood et al (2024).

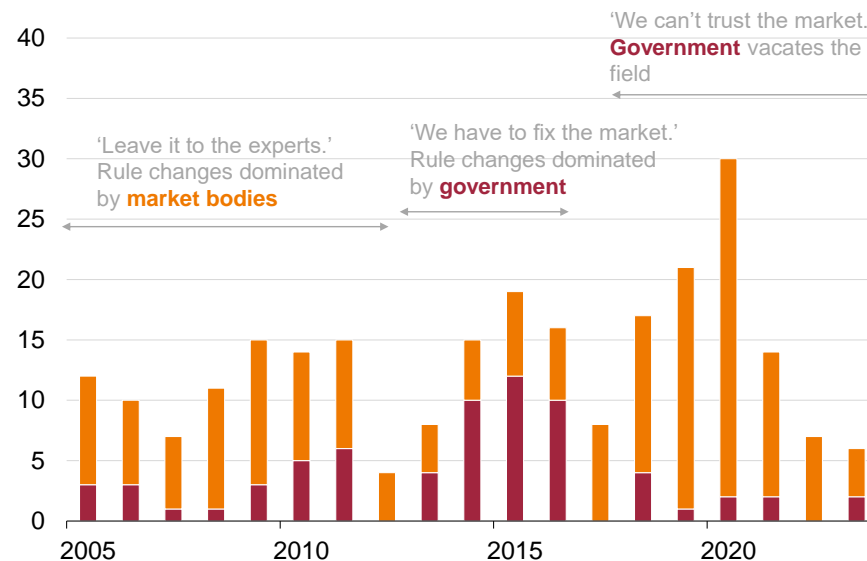
25. Finkel et al (2017).

26. Energy and Climate Change Ministerial Council (2022).

27. The market bodies should not lead the process, because part of the process may include reviewing their roles.

Figure 4.2: Governments’ trust in markets and rules has declined over time

Number of rule changes proposed, by year



Notes: Gas market and retail rule changes excluded. Rule changes with staged implementation dates are treated as separate rule changes, one for each implementation date. Rule changes proposed by retailers, gentailers, generators, NGOs, consumer groups, and other stakeholders not shown.

Source: Grattan analysis of AEMC (2024b).

This design work should begin with a cross-jurisdictional review to identify the respective roles for markets, consumers, and governments; and decide what rights and responsibilities each of these groups should have. Without this, it's difficult to go beyond making small tweaks to existing frameworks, and the stresses and strains that they labour under will continue.

Once ministers have made the high-level calls on roles and responsibilities, the technical detail of designing rules and operating procedures that reflect these can then be passed to the market bodies to develop.

The new Agreement should include three three priorities.

4.3.1 A comprehensive reliability framework

In the post-coal era, significant lapses in reliability due to lumpy exits of coal are less of an issue, and an opportunity presents to rationalise the NEM's reliability framework. The current mix of tools to maintain resource adequacy should be reviewed to ensure they remain fit for purpose.

At this point, the nature of resource adequacy risk will be different, and may require different tools to manage. While the Reliability Standard in its current form may serve the NEM well for now, it should continue to be tested to assess whether it remains fit for purpose in the future. This will require developing a better understanding of consumer preferences for reliability. Doing so is more important in the post-coal era, because reliability preferences will probably change due to increased reliance on electricity.

The Reliability Standard will not be the solution to all resource adequacy risks. High-consequence, low-probability, hard-to-avoid, unpredictable risks may be better managed via an insurance approach. Users could be compensated when such risks manifest.

Or, governments could self-insure against these risks by owning and operating assets that are only used during these events. Capacity markets and other mechanisms should also be considered.

4.3.2 Coordinating distributed energy resources

Greater coordination of distributed energy resources (DER) will contribute to resource adequacy and affordability.

The Energy Security Board failed to make tangible progress on this. That policy work should restart as soon as possible, because better coordination would allow for capturing more DER assets in the new regime and grandfathering fewer assets in the old regime.

The National Consumer Energy Resources Roadmap (the Roadmap), which is currently being implemented, appears to be a necessary but insufficient approach to address the broader issues of DER integration.

While the Roadmap will help get consumer energy resources (CER) integration on track during the coal closure era, the Energy and Climate Change Ministerial Council should ensure a more substantial framework is in place for the post-coal era. This framework should consider all DER, including larger assets not owned by individual consumers, and seek to answer the more fundamental questions around the roles, rights, and responsibilities of consumers, retailers, and distribution network service providers in DER.

4.3.3 It is time to talk about carbon prices

The single biggest challenge facing energy markets is decarbonisation. And yet, with a couple of honourable exceptions, governments are consistently shy about stating explicitly what this means and by when it should happen.

On electricity, they set renewables targets without corresponding plans for phasing out coal and gas. On gas, they provide small amounts of

funding for electrification, and make vague statements about gas being 'important', but fail to make definitive calls about where, how much, and for how long gas will be used.

The federal government's Safeguard Mechanism requires industrial users of coal and gas to reduce or pay for their emissions, but puts no such restriction on electricity generators.

The move to incorporate climate change targets into the national electricity objective, and development of a Value of Emissions Reduction (VER), should have gone some way towards changing this deficiency. It remains unclear how the VER is influencing decisions by market bodies. For example, it is not mentioned in recent AER consultations about the Default Market Offer, the value of system strength, or the value of network resilience. It does not seem to have been applied in recent draft determinations for pipelines.²⁸

The ISP is clear that the current least-cost forward pathway for the electricity sector includes a small but important role for gas power generation. But filling this role economically requires mid-merit gas power to be retired, and peaking gas plants to be built, albeit in the role of backing up wind and solar. A key piece of information for prospective investors in plants with this role is the extent to which the investors will have to pay for the their plants' emissions in the future.

Governments could remove this uncertainty with a definitive statement that, post-2030, gas power generation will face a carbon price.

The form of the price, and the amount, could be agreed through a NEM review. Alternatively, the federal government could use the Safeguard Mechanism to do it.

28. Australian Energy Regulator (2024).

Bibliography

- AEMC (2024a). *National energy governance*.
<https://www.aemc.gov.au/regulation/national-governance>.
- (2024b). *Rule change projects*. Australian Energy Market Commission.
<https://www.aemc.gov.au/our-work/changing-energy-rules/rule-changes>.
- AEMO (2023). *Draft 2024 Integrated System Plan*. Australian Energy Market Operator.
<https://aemo.com.au/consultations/current-and-closed-consultations/draft-2024-isp-consultation>.
- AER (2024). *Register of authorisations*.
<https://www.aer.gov.au/industry/registers/authorisations>.
- Australian Energy Regulator (2021). *Regulating gas pipelines under uncertainty: Information paper*.
<https://www.aer.gov.au/publications/reports/performance/regulating-gas-pipelines-under-uncertainty-information-paper>.
- (2024). *Form of Regulation Review: South West Queensland Pipeline Draft Decision*. <https://www.aer.gov.au/system/files/2024-10/AER%20-%20Draft%20Decision%20on%20SWQP%20review%20-%209%20October%202024.pdf>.
- Ben-David, R. (2023). *Rethinking markets, regulation and governance for the energy transition*. <https://www.accc.gov.au/system/files/Ben%20David%20R.%20Rethinking%20markets%20regulation%20and%20governance%20for%20the%20energy%20transition.pdf>.
- COAG Energy Council (2013). *Australian Energy Market Agreement*.
https://web.archive.org/awa/20180327132815mp_/http://coagenergycouncil.gov.au/sites/prod.energycouncil/files/publications/documents/Australian%20Energy%20Market%20Agreement%20-%20Dec%202013.pdf.
- Dyer, A. (2023). *Community Engagement Review*. Australian Energy Infrastructure Commissioner.
<https://www.dceew.gov.au/sites/default/files/documents/community-engagement-review-report-minister-climate-change-energy.pdf>.
- Energy and Climate Change Ministerial Council (2022). *National Energy Transformation Partnership*. <https://www.energy.gov.au/energy-and-climate-change-ministerial-council/national-energy-transformation-partnership>.
- (2024). *Response to the Review of the Integrated System Plan*.
<https://www.energy.gov.au/sites/default/files/2024-04/ecmc-response-to-isp-review.pdf>.
- Energy Security Board (2022). *Post 2025 Market Design – Capacity mechanism – High-level design consultation paper*.
<https://www.energy.gov.au/energy-and-climate-change-ministerial-council/working-groups/energy-transformation-enablers-working-group/post-2025-market-design/capacity-mechanism/post-2025-market-design-capacity-mechanism-high-level-design-consultation-paper-june-2022>.
- Finkel et al (2017). Finkel, A., Moses, K., Munro, C., Effenev, T., and O’Kane, M. *Independent Review into the Future Security of the National Electric Market: Blueprint for the Future*.
<https://www.dceew.gov.au/sites/default/files/documents/independent-review-future-nem-blueprint-for-the-future-2017.pdf>.
- NEMMCO (2001). *Regulatory arrangements*.
<https://webarchive.nla.gov.au/awa/20011122225620/http://www.nemmco.com.au/publications/whitebook/regulatory.htm>.
- Ragosa et al (2024). Ragosa, G., Watson, J., and Grubb, M. ‘The political economy of electricity system resource adequacy and renewable energy integration: A comparative study of Britain, Italy and California’. *Energy Research & Social Science* 107.
<https://www.sciencedirect.com/science/article/pii/S221462962300395X>.
- Select Committee on Energy Planning and Regulation in Australia (2024). *Terms of Reference*. https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Energy_Planning_and_Regulation_in_Australia/EnergyPlanning/Terms_of_Reference.
- Wood et al (2023). Wood, T., Reeve, A., and Suckling, E. *Getting off gas: why, how, and who should pay?* Report No. 2023-08. Grattan Institute.
<https://grattan.edu.au/report/getting-off-gas/>.

Wood et al (2024). Wood, T., Reeve, A., and Yan, R. *Keeping the lights on – How Australia should navigate the era of coal closures and prepare for what comes next*. Report No. 2024-03. Grattan Institute.
<https://grattan.edu.au/report/keeping-the-lights-on/>.