Delivering Australia's Energy Transition Affordably

A discussion paper examining the challenges that lie ahead in the delivery phase of the transition based on a survey of energy sector CEOs

AUSTRALIAN ENERGY COUNCIL

SECNewgate Australia

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Foreword

The Australian Energy Council's members - the generators, retailers and investors in our energy system - continue to be at the forefront of Australia's energy transition. They are delivering the electricity needs of households and businesses and are actively involved in the building of the replacement plant and technology for a low emissions grid.

The Chief Executive Officers that lead our membership are intimately involved in an industry undergoing unprecedented levels of change. This report not just captures their views on how they see the energy transition progressing, along with the issues and the opportunities, but is also an attempt to encourage a broad discussion about the momentous changes underway. A more transparent conversation about the challenges and what we are tackling is vital to informing and, most importantly, ensuring community support. Without this support the re-engineering of our power system will become even more challenging, and potentially unachievable in the timeframes we have set.

AEC members understand the urgency of climate change and the role of the energy industry in meeting our emission ambitions. We also know that there is no going back from or halting the energy transition.

The AEC supports the transition to net zero emissions by 2050 on the premise that the least cost, lowest impact pathway is an energy system dominated by renewables (wind and solar, including rooftop solar) and firmed with battery storage, gas and pumped hydro. There is generally broad alignment across industry about this energy mix – effectively the 'what' of the energy transition. But transitioning to an energy system dominated by renewables represents a fundamental shift in how energy is generated, transmitted and supplied to consumers.

Consequently, there is constant debate around the "how" – how we can achieve the desired mix of lowest cost energy sources while delivering against the sacred energy trilemma of reliable, affordable and sustainable energy supply.

All parts of this trilemma are important. What is needed to achieve them emerges from this report - reliability and particularly the role of gas, how best to encourage and maintain the pace and scale of investments, the best market design, and how to apply a consumer lens to the transition and make the consumer central to it all.

But within the context of the trilemma, one overarching theme does emerge in this report and that is the central importance of energy affordability. We need to ensure that clean, affordable energy remains accessible to everyone during the transition.

Replacing ageing, emissions-intensive generation with predominantly renewable energy is not costless. Yes, renewable energy once it is built and operational is one of the lowest-cost sources of energy, but we still need to account for the costs of constructing new supply and adapting our existing energy system to accommodate and firm up low-emissions intermittent sources. In the long run, this approach will still be cheaper than continuing to invest in existing or new coal fired power generation. We need to ensure the transition is orderly. Ultimately it can only go as fast as the industry and consumers can bear. As one CEO remarks "the energy transition is right now delicately poised and at quite an important point". It simply will not succeed without public confidence that it will not just deliver a sustainable and reliable system but one that provides affordable energy for households and businesses.

The report includes recommendations and concludes with some guiding principles on how governments and industry can work together to successfully deliver a reliable, low emissions and affordable energy system. We hope it contributes to a meaningful discussion.

Louisa Kinnear

Chief Executive Officer,
Australian Energy Council

Introduction

Australia has reached a crucial turning point in its energy transition, a once in a generation reform, which is now entering the delivery phase. The Australian Energy Council (AEC's) membership understands the scale and complexity of the challenges ahead and wants to work closely with Federal and State Governments to ensure this phase of the transition is navigated successfully. The AEC is the peak industry body for energy generators and retailers. They generate and sell energy to 10 million homes and businesses and are major investors in renewable energy generation.

The purpose of this paper conducted by SEC Newgate through a survey of the AEC's Chief Executive Officers is to support a more open and honest dialogue about the challenges of the energy transition to ensure we take the community with us. It's also about how best to partner with government and overcome the challenges that lie ahead in the energy transition. The AEC's members confront these challenges every day delivering energy to commercial and residential energy consumers. Their input and experience should be invaluable and important.

The AEC's members want to work collaboratively with Government and understand the extraordinary political challenges of managing the transition, a once in a generation reform. They are seeking policy reform focused on the trilemma of energy security, affordability and emissions reductions. There are many challenges ahead, yet AEC members have a preference to take a glass half full, rather than a glass half empty approach to the energy transition. They believe the policy lens needs to be focused on the efficient delivery of the major investments required to deliver new supply and should not be distracted by short-term political interventions.

The Federal Government has elected to set new and tougher emission reductions targets for 2035, while the industry is already strongly challenged by the existing 2030 targets, putting more pressure on parts of the energy sector to lift its game.

The paper presents findings from interviews with 16 CEOs of AEC member organisations. It identifies issues of greatest concern and puts a spotlight on possible policy solutions.

The most important finding is that members understand that energy affordability is paramount to customers and, in turn, the energy transition cannot succeed without public confidence that it will deliver a sustainable and reliable system that provides affordable energy for consumers. They believe the customer lens should be the guiding principle of managing the energy transition.

It's also important we don't lose Australia's comparative advantage in cheap energy. Australian industry will not survive without access to affordable energy.

The current policy focus is on the major deployment of renewables; however, coal and gas will also continue to play an important role in the Australian economy.

AEC members particularly point to the fact that Australia still has the potential to access plentiful reserves of gas – an essential component of the transition.

What AEC members stress in this survey is the need for policy certainty and stability as we enter the difficult delivery phase of the energy transition, and a focus on ensuring we have the optimum policy framework that incentivises investment and delivers against the trilemma of affordability, reliability and emissions reductions.

Recommendations to address affordability

Australia's leading CEOs in the energy sector in considering the urgency around energy affordability have made a series of key recommendations.

These are actions that could be taken by both government and the energy sector through a stronger partnership and better allocation of risks in delivering the energy transition.

CEOs want a more open and honest dialogue about the challenges of the energy transition to ensure that we take the community with us.

Role of the Energy Industry

CEOs believe the industry can help by:

- **Maximising the advantages of the stronger take-up of Consumer Energy Resources (CER), particularly solar and batteries in people's homes through well-thought-out policies that benefit consumers**
- **Building trust with consumers to ensure greater take-up of Virtual Power Plants (VPPs)**, that would ease pricing pressures across the energy system
- **Educating consumers on time shifting tariffs and other demand-side management initiatives** that will help households and businesses cut costs
- **Improving efficiency and productivity to keep costs down using distributed energy and microgrids** to reduce transmission costs and leveraging existing assets to avoid unnecessary new builds
- **Supporting vulnerable customers through hardship programs and better targeted, tailored solutions**
- **Innovating and helping pioneer new products,** services and technologies that assist consumers
- **Advocating for market reforms that incentivise timely, long-term investment** in clean energy technologies and flexible generation that deliver stable prices

Role of Government

CEOs widely agree that government has a key role in supporting affordability. Suggested initiatives include:

- **Boosting investor confidence** through policy certainty and stability
- **Stronger market settings** and mechanisms that better reflect the current energy market landscape and the challenges of investing in projects that deliver returns
- **Approaching the energy transition through a stronger affordability lens and test,** ensuring that policies take into account impacts on business and household costs and other trade-offs
- Ensuring that the pace of the energy transition adheres to the Federal Government policies that ***"no one is left behind"***
- **Ensuring that government assistance on household electricity bills is targeted on the vulnerable** and that universal concessions may not be the answer
- **Ensuring that network spending is timely and efficient,** reducing or avoiding network spending where possible to take pressure off power bills
- **Carving years off environmental approvals for new projects,** to allow both renewables and new gas firming to come to market much sooner
- **Avoiding new layers of regulatory complexity** that threaten competition in retail markets
- **Co-ordinating national planning to avoid duplication and inefficiency** that only adds to consumer costs, and increase harmonisation across state borders to facilitate more investment

Why affordability is the top challenge in the transition

We asked the Australian Energy Council's CEOs what was keeping them up at night about the energy transition. Key among their concerns were the pace of the transition, the pressures on prices, the rising costs of infrastructure, the risks to system security, and the unintended consequences of leaving vulnerable people behind.

Above all else, members feel that policymakers need to keep their focus on affordability, the 'Achilles Heel' of the energy transition. AEC members are strongly committed to energy affordability, and feel our political leaders need to share this commitment.

AEC members have become increasingly concerned about the rising pressures on affordability and feel there needs to be a more honest and transparent public narrative about the cost of the transition. Most CEOs expect energy prices to rise in the coming years as investment spending on new generation and infrastructure increases sharply and feel energy affordability is at risk due to a combination of cost pressures.

There are costs throughout the supply chain, particularly new transmission and network costs, the associated rising costs of construction.

There is then the issue of concern about how these costs are shared fairly between taxpayer and consumers.

While government is tackling affordability through the provision of subsidised household solar and batteries, there is still the issue of how to fairly spread these costs across all consumers.

AEC members believe a better plan is needed, and that untargeted retail bill supplements are only a band-aid over much more serious policy issues. Together, we must be honest, open and transparent with the Australian public on the way ahead and the costs involved.

"Most urgent issue, I think, is addressing affordability."

Gentailer CEO

"The biggest risk to this whole transition is that the general public haven't really cottoned on to the fact that there's a cost to the transition, and power bills will go up for a while before they go down. Governments have made promises about bill reduction, but it is not coming anytime soon."

Retail CEO

"The one thing I'm encouraged about today, relative to a couple of years ago, is that the awareness from both governments and industry on what the issues are and appreciation in the public about what we're trying to navigate and what needs to be resolved, feels like that is better understood and appreciated."

Gentailer CEO

"Look, I think for me, it's about making sure that we get the right assets on the ground in time for coal closure, in a nutshell."

Gentailer CEO

"The transition right now is delicately poised and at quite an important point. There have been these bumps along the way, it is taking longer to deliver the new generation and transmission projects, transmission is obviously a critical path."

Gentailer CEO

"There are social license issues, there's approval issues, there's a number of things that go to that timing, but also the dollars involved and the risks involved are big, so the scale of what's got to be executed is big, the cost of construction is high."

Gentailer CEO

"There is opportunity to start mitigating some of those higher costs with solar and batteries and the government incentives that are there help, but not everyone can play in that space because of the sheer cost of it."

Gentailer CEO

The issues underpinning the affordability challenge

Prices have never been under more pressure: Members highlight growing concern that Australia's transition to cleaner energy will come with sustained upward pressure on household and business electricity prices.

CEOs acknowledge that the large-scale capital investment required to replace and decarbonise generation assets has the potential to drive bills higher, at or above the rate of inflation, for years to come. They also point out that the underlying costs of constructing new generation, including gas and renewables, particularly wind have risen in a post-Covid environment, and that higher costs are likely to be reflected in future wholesale prices.

> *"My feel is that bills will increase for at least the next decade, given the scale of capital being deployed in the industry."*
>
> ***Gentailer CEO***

> *"The infrastructure required to do the renewable transition is all far more expensive than anyone expected. The build-out is way behind schedule on lots of critical matters. The cost of this hasn't been openly discussed as well as the associated impacts on Australia's economy".*
>
> ***Generator CEO***

> *"I think it's the calm before the storm, and I think the storm is coming around cost and competitiveness and international competitiveness, and industrialisation."*
>
> ***Gentailer CEO***

> *"We're trying to solve the triumvirate of price, security of supply, and making it more carbon friendly. The thing that keeps us awake is that we are going to potentially risk security of supply or system stability with the transition that's slowly unrolling."*
>
> ***Generator CEO***

Long delays in renewable energy projects must be urgently tackled: The integration of renewables, batteries, and other new technologies is both an opportunity and a challenge, particularly for energy system security and stability. Building and connecting renewables and complementary technologies (particularly wind and gas) on time is critical to ensuring energy remains affordable and that coal can exit in a timely fashion.

Members are concerned about long delays in wind and transmission approvals. To meet targets there will need to be a quadrupling of construction over the next 5 to 10 years. Members question whether there is sufficient coordination to ensure the integration of hundreds of new generation sites, in addition to millions of future home solar installations.

They raise the possibility of whether to establish a National Co-ordinator-General. A National Co-ordinator General would have a role to play in co-ordinating major projects, across State boundaries, focusing on the transition roll-out and the challenges of getting distributed energy resources to market. CEOs note that while renewables are essential for decarbonisation, their intermittency creates reliability issues that require matching the right levels of dispatchable energy and firming, therefore increasing the importance of co-ordination.

"The public conversation is more just about deployment of renewables, but the deployment rates are locking in higher prices, and so I think there's going to be a focus on delivery and execution, but then at some point, it's just going to be a massive debate about cost."

Gentailer CEO

"Renewables aren't coming on fast enough and it's pretty challenging to get all the permits through, to get the network connections through, to get to a position where you've got a project that you can take to Final Investment Decision for an onshore wind farm. There are a lot of hurdles to go through."

Generator CEO

"It's a fair assessment to make that the pace of the transition is going slower than people would have expected and would like, and so that's of concern. And I would also say that against that same backdrop the heightened degree of political intervention in the market adds also to the uncertainty and instability in so far as the whole market function and transition is concerned."

Gentailer CEO

Timing will be crucial to avoid a disorderly transition from coal to renewables: Having the right strategy for the retirement of coal-fired power is a fundamental challenge to avoid price shocks.

Members were almost unanimous in their views that **Australia needs to retain flexibility in its approach to the retirement of coal-fired power stations. Any early forced retirements risk supply and price shocks.** At the same time, maintenance of existing coal-fired generation assets which are nearing end-of-life, are becoming increasingly costly, particularly if their operating lives are to be maintained.

This is also a question of social licence. **If coal plants are retired too quickly and the result is power disruptions or sharp increases in household bills, the public will not blame poor planning or market design, they will blame renewables and the transition itself.** A disorderly exit risks undermining confidence in the entire decarbonisation agenda, eroding the political and community support needed to sustain long-term investment in clean energy.

"To safely operate an aged coal-fired power station you need significant capital investment. You can see public records of Eraring and Yallourn, what they're having to pay to keep those online."

Generator CEO

"In a perfect world we would immediately have the additional megawatts and capacity available to step in as coal retires."

Retail CEO

The dangers of a price and supply shock are real: The risk of a price and supply shock – keeping the lights on – is one of the key issues keeping AEC members up at night There will be more closures of coal-fired power stations by the late 2020s that will test current policy settings. Members are also concerned about the impacts on vulnerable customers.

"...the cost of this transition is really going to affect the people who can afford it the least, so the people that are already struggling to pay their power bills are going to get slammed with more cost from more of the transmission and distribution costs that are yet to come, and the higher cost of electricity with storage that's got to be factored in."

Retail CEO

"I think the closure program of thermal generation being out of whack with the augmentation of the infrastructure to facilitate alternate generation into the market to replace it is the major worry."

Gentailer CEO

Government policies must recognise affordability challenges: There is a strong view among members that while accelerating the rollout of renewable energy is essential, government should not be blind to the impacts these will have. It's important government policy must also keep affordability and reliability in clear focus. The transition will falter if policy settings are driven solely by deployment targets without a practical plan for how to manage costs, ensure reliability of supply and maintain community support through inevitable setbacks.

"United and joined-up policy from state and federal government, given the rules construct we have to work in, is probably the biggest issue...and providing some certainty over the long term for investors is absolutely critical to Australia's ability to succeed through the transition."

Generator CEO

"So bottom line is, we're going to make a large segment of the population more vulnerable again with electricity."

Retail CEO

"It's one of the biggest things Australia is trying to do in such a short space of time, and having no thought-through, detailed plan on how to achieve it, the cost of doing it, and your backup plan when things don't go your way, as they invariably don't, is probably going to halt the transition at some point in time over the next three to four years when the populace go hell no, can't afford it."

Generator CEO

Growing regulatory approval and compliance costs: Complexity of regulation and the overlapping functions of some regulators is becoming overly cumbersome and is undermining investor confidence. AEC members welcome the establishment of Renewable Energy Zones (REZs) that seek to better co-ordinate new infrastructure; and moves by the Federal Government to streamline and fast-track environmental permitting. However, without greater co-ordination and more timely approvals new emission reduction targets will grow further out of reach.

"One of the big problems is the complexity of the regulatory environment, with both the AER and the AEMC at times doing the same things; it is hugely complicated and adds a lot of cost to the business."

Gentailer CEO

Australia can't afford a disorderly transition

AEC members understand the urgency of climate change and the crucial role the energy industry must play to support Australia's net zero ambitions. **Australia's energy transition is irreversible; there is no turning back.** However, a disorderly transition would be disastrous and would lead to a supply and price shock that would undermine public confidence in both the energy transition and Government policy.

There are legitimate concerns about the pace of the transition that cannot be ignored. To meet the current 2030 target, let alone the new 62-70% emissions reduction target for 2035, governments must provide clear, coordinated policy pathways that show how these ambitions will be delivered in practice. This means aligning national and state policies, streamlining project approvals, and accelerating investment in transmission, firming and storage capacity.

Members stress that setting ambitious targets without the enabling policy, regulatory and planning frameworks risks undermining credibility and deterring investment. They point to the growing logjam in approvals, where major renewable projects can take five to six years or even longer in some cases to reach market, as a critical barrier. Unless these bottlenecks are addressed and policy certainty is improved, Australia will struggle to meet even its existing goals, and public confidence in the transition will erode.

Keeping the lights on is the priority

The greatest risk identified by the AEC's members is that Australia will not have sufficient renewable capacity in place when the scheduled coal-fired capacity is due to be retired. The transition from coal to renewables needs to be carefully navigated and a number of challenges must be addressed.

Our existing fleet of coal-fired power stations are a mix of relatively modern and ageing facilities facing a mixture of reliability challenges. This makes it increasingly expensive to maintain reliability. However, power shortages may develop which would put pressure on ageing facilities.

Some CEOs believe it is becoming increasingly inevitable that coal closures may need to be delayed if new capacity is not ready and caution these assets cannot be extended forever.

We need to get investment conditions for replacement supply right

Ensuring the right investment conditions for replacement supply is critical. Australia needs market settings that send clear, credible signals to investors to build new generation and firming capacity as coal retires. Members questioned whether current market mechanisms are achieving this. While investment is flowing into household solar and batteries, much of it depends on the future development of long duration storage, raising questions about whether a modern economy can rely on this alone.

There are widening delays on dispatchable energy. There is acknowledgement that more bulk wind supply is needed, however even with the Capacity Investment Scheme (CIS) which has attracted projects that could deliver up to 40GWs, projects are still a long way off reaching FID stages, particularly due to ongoing permitting delays, and rising constructions costs.

At the same time, overall demand on the grid is likely to rise sharply. Rapid growth in artificial intelligence, data centres and green manufacturing could see energy demand triple in coming decades, even as households take up more rooftop solar and home batteries. Planning for this future requires not just more supply, but the right mix of dispatchable and renewable generation backed by clear, stable investment signals.

What needs to be done

Without policy certainty, investment will not follow

Members have expressed frustration with at times excessive political intervention and over-regulation that act as a disincentive for investment and can produce counterproductive outcomes for consumers. There is still frustration about the mixture of Federal and State energy policies, climate targets and community benefit frameworks that need greater co-ordination and harmonisation. Members also welcome proposed EPBC Act reforms that will streamline environmental permitting. However, they say the roll-out of the energy transition would be greatly assisted by a more nationally co-ordinated plan to provide greater certainty.

> *"We need harmony between states; we need products that enable us to trade across boundaries to turn it into a true National Electricity Market."*
>
> ***Gentailer CEO***

> *"...the annoying thing for those in the industry is where the states are starting to step out and do their own deals."*
>
> ***Generator CEO***

Re-building the energy system needs a strong, comprehensive plan that attracts new investment

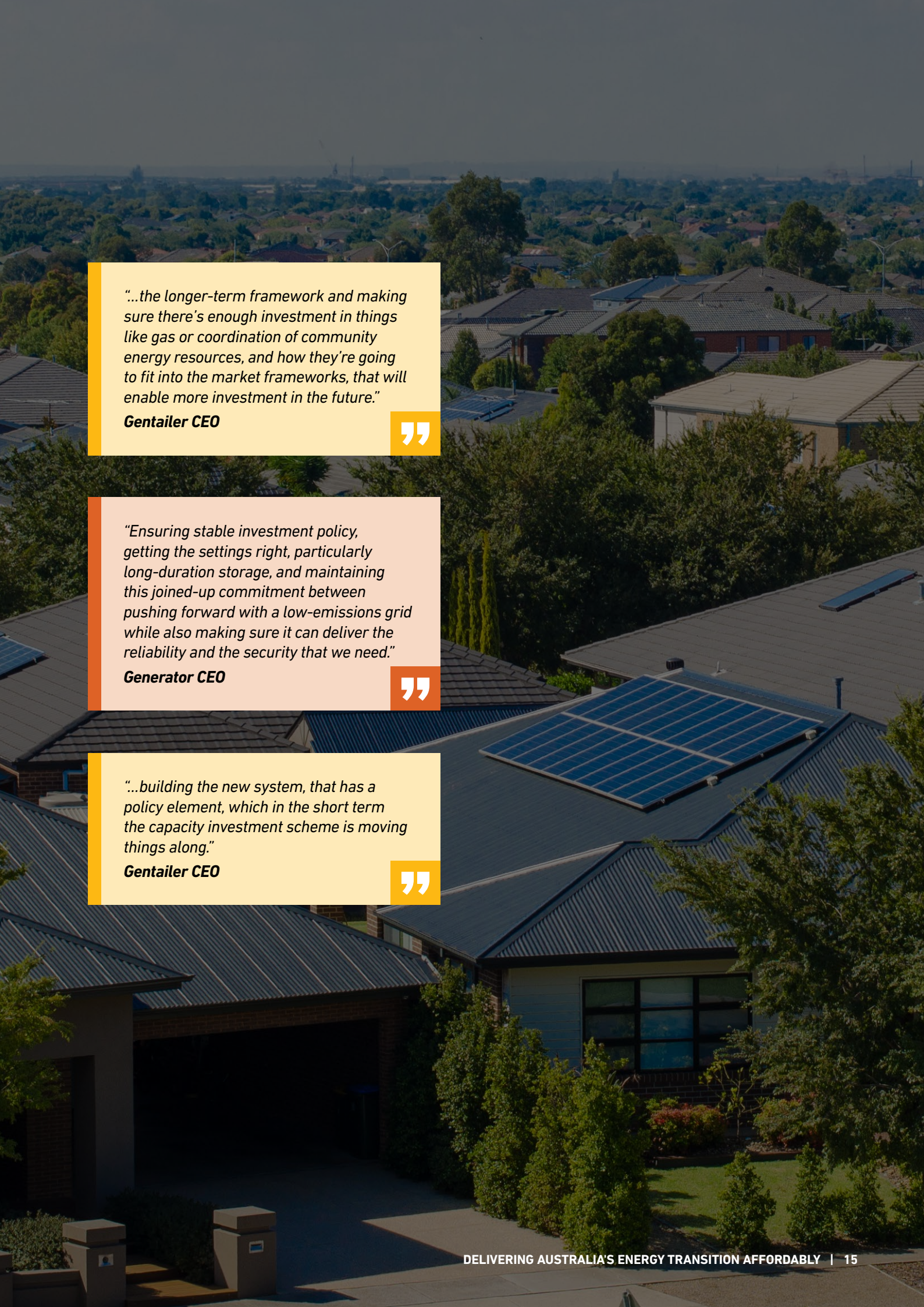
The energy transition will require a rebuild of Australia's energy system that shifts from a centrally planned coal-fired power system to a distributed energy system that will feature thousands of new generation points.

Members note that the steep challenges of virtually re-building the current energy system under constant time pressures is a massive risk management project that should not be underestimated. A comprehensive plan to bring forward the right investment in projects that need timely go ahead is required.

While there is support for the Capacity Investment Scheme (CIS), members recognise that the CIS is just one step in the journey for many projects that span many years of planning and approvals and there were no guarantees how many projects under the CIS would actually be delivered.

Due to these uncertainties, there is growing concern that alternative renewable energy supplies will not be available to meet scheduled closures of coal-fired generation outlined by the Australian Energy Market Operator (AEMO) in its Integrated System Plan (ISP), that would see 90% of coal-fired power retired by 2035. If this were to occur it would prolonging the operational life of particularly older stations where there are concerns about reliability and health and safety.

Members believe stronger investment market mechanisms may be required to get sufficient levels of renewable levels into place to cover coal power closures. As noted, more streamlined environmental and planning reforms may also help with large scale wind and new domestic gas supply.



"...the longer-term framework and making sure there's enough investment in things like gas or coordination of community energy resources, and how they're going to fit into the market frameworks, that will enable more investment in the future."

Gentailer CEO

"Ensuring stable investment policy, getting the settings right, particularly long-duration storage, and maintaining this joined-up commitment between pushing forward with a low-emissions grid while also making sure it can deliver the reliability and the security that we need."

Generator CEO

"...building the new system, that has a policy element, which in the short term the capacity investment scheme is moving things along."

Gentailer CEO

De-risking Australia's energy market to unlock investment

CEOs noted that while there was strong capital interest in the Australian energy market, there were rising levels of risk for investors that could still seriously stall the energy transition. This was largely due to the rising difficulties with identifying projects that can deliver commercial returns, with capital flows strongly influenced by falling technology costs such as solar panels and batteries.

Wind is struggling with rising construction costs and large scale solar is competing with high levels of household solar. CEOs believed that government was in a better position to shoulder this delivery risk and there was a growing case for new action which would assist the "de-risking" of the market to unlock a new wave of capital sitting on the sidelines.

New investment is urgently required, particularly in dispatchable and firming capacity that is vital to the transition. Many believe more gas peaking plants will be required to maintain reliability, yet high gas costs and uncertain supply remain major obstacles.

A key issue is the mismatch between long investment horizons, often 15 years or more for major assets, and the short-term nature of current Power Purchase Agreements (PPAs) needed for investor confidence. This creates risk for investors and limits capital flow into firming generation for renewables. CEOs emphasised the need for market and policy reforms to de-risk long-term investment.

While the National Electricity Market (NEM) Nelson review draft report was released after this research, **members strongly supported mechanisms to de-risk markets.** They believe the proposed Electricity Services Entry Mechanism (ESEM), which would "warehouse" long-term supply contracts with AEMO is worthy of consideration. This approach could provide greater revenue certainty, reduce wholesale price volatility, and stimulate investment in firming and dispatchable assets.

Members also stressed that broader wholesale market reform post-2030 will be essential to ensure the NEM remains functional, liquid, and investible as it continues to integrate higher levels of intermittent renewable generation.

> *"I think the greatest risk to reliability is the inability to fund investment into dispatchable generation required in the future, including gas, batteries, and pumped hydro. If we don't get the settings right for that funding, and that could include strategic, out-of-market reserves, I think we will have significant reliability issues as we move through the next decade, because despite how much cash you throw at an ageing coal plant, it's not going to serve us as well as it has in the past."*
>
> ***Generator CEO***

> *"I think the lack of dispatchable generation in the grid is a real issue."*
>
> ***Generator CEO***

> *"I don't think we'll have the transmission lines build-out that's needed to support the renewables that are a long way from the load. So, we're going to have reliability problems there. We're going to have a not-smooth transition from coal, as we've seen with the Queensland Government now coming in and propping up coal for longer. So you'll have, I think, reluctance towards large investment in renewables and potentially even batteries, which will compromise the transition. Orderly exit of coal would be good, and then things to replace it, including gas. And I think the narrative around gas needs to change so that the public recognise the important role that gas can play in firming."*
>
> ***Generator CEO***

Gas vitally important to energy transition

The long-term role of gas in Australia's energy system is a major issue that needs to be settled, potentially through the impending outcomes of the Gas Market Review that will report to the Federal Government later this year. Members believe that Federal and State Governments need to be more supportive of gas; and that the energy transition won't work without gas. Many CEOs argue that gas is essential for system reliability and as a backup for renewables, especially during periods of low wind and solar output.

There are concerns about the security of gas supply, regulatory barriers to new gas development, and the lack of an investment case for new gas-fired generation that is essential for firming and peaking. CEOs feel that currently there is not strong enough market signals for gas-fired peakers; and that the issues of boosting domestic gas supply needs to be urgently addressed.

> *"We've had a very negative sentiment towards investing and exploring for gas. We need to change the dynamism and the politics around gas so that we can shore up supply, both for domestic consumption but also for power generation, because it's the most flexible form of power."*
>
> ***Generator CEO***

> *"It's important because we're not on track to achieve net zero and renewable energy targets, but we are on track with coal closures, so there's a gap emerging. I think that the role of gas will be even more important than just firming, quite frankly. Without secure, affordable gas supply we're going to come up short, and that's going to lead to a lot of instability, insecurity in the market."*
>
> ***Gentailer CEO***

> *"We've got gas pipeline infrastructure already in place that makes it very straightforward for gas to be the firming fuel going forward, and we've got plenty of gas available in Australia at a relatively low price for it to be an economic way of firming rather than relying on new capital spent on lots of batteries to firm up the solar."*
>
> ***Generator CEO***

> *"Gas is absolutely pivotal, very important to the electricity market because you're going to build a lot of wind, you're going to build a lot of solar, you're going to build a lot of batteries, but you can't retire coal and hit the transition without more gas-fired generation. And for gas-fired generation you're going to need to make sure you've got reliable gas supply. And gas is also important to any customers that can't electrify."*
>
> ***Gentailer CEO***

> *"[Gas] goes hand in hand with firming renewables. It's also correlated directly with electricity pricing. Cheaper gas generation hits the affordable button, and for me, affordable energy is the most important aspect of the trilemma of affordability, reliability, and sustainability."*
>
> ***Generator CEO***

Maximising consumer benefits from Consumer Energy Resources (CER) and avoiding energy poverty

The issue of how energy companies can work more effectively with consumers in maximising their investments in wind and solar is a front of mind issue for CEOs as they watch the sharply rising update investment by households in home solar and batteries, heralding the arrival of a major trend in the market, Consumer Energy Resources.

Since the introduction of new, generous government subsidies for batteries, more than 100,000 have been newly installed in people's homes and this is also further supercharging the rollout of batteries in Australia, now on 4 million household rooftops and growing strongly annually, the highest penetration in the Western World.

The Federal Government is now forecasting that household solar and batteries will play a much stronger part in the provision of new supply, with more than 27GW of rooftop solar added (4 million homes), and surplus energy being stored by 100,000 batteries that have installed since a new government subsidy scheme was introduced on July 1.

The issue is how best to utilise this stored energy and how to build trust and work with households to ensure they can more swiftly realise a return on their capital investment.

Retailers are encouraging the uptake of CER with new products such as Virtual Power Plants, solar and battery deals with financing offers, time/load shifting tariffs that offer the potential for free or discounted off-peak charges and others that utilise Electric Vehicle recharging and storage. Government can also help enable CER through initiatives like the Cheaper Home Battery Program.

Members believe there needs to be a stronger policy framework around this as it needs better strategic engagement with customers and better education to ensure they get the strongest value from their investments, and the supply from CER fulfils its strategic value. They note that some state concessions schemes mandate the uptake of VPPs but this is not uniform across Australia.

Members were also concerned about the potential for inequality creeping into these schemes, and growing concerns that cross-subsidisation costs were being borne by more disadvantaged, vulnerable customers who did not have access to the capital required to take-up solar and battery schemes being offered. Many stressed the importance of ensuring those unable due to financial means or unwilling to engage – due to rental status or other factors – with CER are not left behind.

They also called for clear regulatory guidelines that set boundaries for the coordination of CER assets and how they interface with the grid. What role will retailers and networks each play in this? And there are risks that the involvement of regulated networks growing their asset bases with CER would see new extra costs smeared across all consumers.

"If we don't get it right now, in terms of how we integrate CER and how we bring it into the market, it's not going to have any value for the future, or very little value for the future."

Gentailer CEO

"One of the opportunities is to use customer energy resources, to minimise the amount of build that you have in the grid. But if you don't coordinate that and say, hey, I'm going to rely on those batteries in homes before building grid, then you're locking in a bunch of things in the home that could have been used to minimise network bills and could have also been used to minimise wholesale storage requirements. But if you don't do that, you're on a path to high bills."

Retail CEO

"CER is going to be so fast-growing given battery subsidies, so it has the potential to affect reliability and security. If there are, for example, so many uncontrolled batteries and they operate so unexpectedly that the unexpected swings drive up the cost of energy because you need to have a backup for all the unexpected swings."

Gentailer CEO

"It's very complex from a consumer perspective thinking should I have solar, should I have a battery, should I have an EV, should I have a fast charger, should I have smart applications or appliances. I think we should be including things like energy efficiency into the discussion around CER as well, and behaviours, like when should I be tuning my thermostat, when should I be running my washing machine or doing the dishwasher, all of that feeds into this idea of orchestration, demand side response, control or not, and we've got this huge demand increase coming from electrification, electric vehicles, we know that that's coming."

Retail CEO

"It's disproportionately going to hit the poor in this country, most people don't understand the subsidisation sharing going on. It rarely gets talked about because it's an inconvenient truth that no-one wants to talk about, but what's happening, right, if you've got 9 megawatts usage at home and no solar system you're wearing 9 megawatts of all the price increases in networks."

Retail CEO

What are the challenges ahead?

1. Maintaining public confidence in the transition as energy bills increase

Rising costs are seen as the 'Achilles Heel' of the energy transition.

Costs are expected to continue to rise above expectations. While most CEOs expect prices to rise in the short to medium term, some suggest that with the right market reforms and investment signals, prices could stabilise or even decrease in the long term. However, there is little optimism for short-term price relief.

Much of this debate settled on retail pricing, even as CEOs recognise that retail margins are only a small fraction of the total costs of the transition. Savings are scarce, particularly compared to the major factors that make up bills such as network costs, which will need to be kept in check to keep price pressures down. CEOs noted that the Federal Government's current retail price review is grappling with what is the right degree of regulation that protects consumers while ensuring they retain access to a competitive energy market. There also needs to be consideration given to network and other costs that contribute to retail bills.

> *"It's sometimes called the missing money problem or the lack of market mechanisms, and so those two things together, on the one hand we're being over-regulated from the retail side, lots of attempts by government to clamp down on pricing, but on the other side they're not helping with the market settings that are needed to create a well-functioning market. So what we're all looking into is massive volatility and that's not good, that's going to produce uneven and unpredictable outcomes and unhappy customers."*
>
> ***Generator CEO***

> *"Network cost is only going to go up and go up by increasing levels. And the Australian consumer is not even really wise to that yet because they haven't seen the worst of it."*
>
> ***Gentailer CEO***

> *"The energy market has come under an enormous amount of pressure due to over-regulation, such as on the retail side, the Default Market Offer springs to mind, and in other areas due to lack of planning and foresight around getting us ready for the transition."*
>
> ***Generator CEO***

> *"I would say household prices is the key issue or risk. Networks are going to continue to build out, transmission is happening everywhere, regional areas, high voltage, we haven't even got to the distribution networks having to augment for high rooftop solar, that's going to come and that's going to continue to be recovered. So there's upward pressure from that."*
>
> ***Gentailer CEO***

Members believe a more transparent conversation about the challenges of the energy transition will assist in managing public confidence. AEC members want to participate more fully in this debate, particularly as we enter the delivery phase of the energy transition where policy and regulation will be more important than ever. There are concerns that political rhetoric can often outpace reality, leading to fears that public confidence in the transition could quickly subside if expectations are not met that the increasing penetration of renewable energy does not result in falling energy prices.

A more open conversation would allow a greater focus on the political and policy trade-offs associated with the energy transition, particularly the rising costs of investment coupled with the costs of scarce labour and materials that are putting pressures on power bills.

In a sign that the public understands that rising power prices are coming, consumers are turning more to subsidised home solar and battery schemes, and the prospect of long-duration storage could avoid the need for a costly transmission builds that would put a lot of pressure on prices.

> *"We never had the proper debate as a country about going down a decarbonising path, and particularly then we suddenly jumped overnight to saying, let's go net zero."*
>
> ***Generator CEO***

> *"I think [the public] would be [ready for trade-offs] if they were given the facts as to the implications of jobs and industries in rural Australia, and potentially the rising costs that are going to flow through from networks and transmissions, because people don't understand electricity."*
>
> ***Retail CEO***

2. Fulfilling the policy trilemma of energy affordability, security and emission reductions

Members feel the transition is putting pressure on the delivery of all three objectives, and question whether governments are losing sight of these important objectives. The most crucial issue is the lack of incentives for investment in dispatchable generation, particularly gas peaking generation, pumped hydro, and long duration storage. The Capacity Investment Scheme (CIS) is seen as a potential circuit breaker here, although there is still a big question mark over how many CIS projects will reach Final Investment Decisions (FIDs). Unless new investment in dispatchable and firming capacity is established, it will become harder to retire coal-fired power as scheduled.

3. Cutting through growing policy and regulatory complexity across Federal and State borders

Uncertainty and complexity in government policy and regulation are seen as major barriers to investment and a smooth transition. CEOs mention frequent changes in policy, lack of coordination between federal and state governments, and increasing and sometimes inefficient regulatory burdens that add cost and risk. There are calls for more stable, long-term policy settings and better harmonisation across jurisdictions, which would increase the certainty for investment that is required to meet new emission targets. As noted earlier, there is a perceived tendency for governments to address short-term political issues, such as a retail prices, with growing levels of regulation, while ignoring bigger ticket items such as renewable projects deployment and network spending. However, members believe that Federal Government proposals to streamline environmental regulation suggest the message may be getting through.

> *"I am very concerned about the amount of reform going on. There are a lot of reviews that could be quite transformational, which is great, but it's also concerning because there's multiple going on at the same time and it is difficult to innovate, invest, build for the future, when everything from market design, vulnerable customer support, consumer pricing, to principles versus prescriptive regulation, they're all on the table at the moment. So, I very much worry around how we navigate that successfully in the coming years."*
>
> ***Retail CEO***

4. Getting a wholesale market design that works for the future

This is a big strategic issue that CEOs believe is too often overlooked due to its complexity. Wholesale market costs are a large part of retail bills and partially determine, with network costs, what retailers pay. CEOs point to the need for post 2030 market reforms to be put in place so it's fit for purpose for a market where there will be much higher levels of intermittent energy. This is a market where there are much greater levels of risks for businesses and its shareholders. There is a strong focus on the gap between investing in long-term assets over a 15 year and longer horizon in a market dominated by short-term PPAs.

Members welcome the Nelson post-2030 market review of the NEM, particularly its focus on long-term wholesale contract security that could secure new investment, although they have yet to make final submissions on these proposals.

> *"The wholesale market is where most of the energy comes from and so if you don't have that driving investment then you end up with potentially not building the new system before the [end of the] old system."*
>
> ***Gentailer CEO***

> *"The market design piece is really how do we then reward things like capacity and reserves that at the moment are not really rewarded?"*
>
> ***Retail CEO***

> *"We need to invest in a range of services that need to be priced to provide reliability and affordability and secure energy."*
>
> ***Gentailer CEO***

> *"At the end of the day, it's not the spot market that sets the prices in the DMO and the regulated pricing, it's the contract market. So having a wholesale market structural failure is what probably worries me the most."*
>
> ***Generator CEO***

> *"I think the market design, future market design, it creates a significant amount of uncertainty when it comes to investment, and so those two things are not mutually exclusive."*
>
> ***Gentailer CEO***

> *"I think wholesale market reform is required to encourage investment into the transition, and by that I mean, additional markets need to come into the wholesale market to be able to provide the reliability that we currently are providing, in a majority of players for free."*
>
> ***Generator CEO***

5. Resolving major risks to reliability

This issue largely turns on the ability to successfully modernise Australia's grid for greater integration of renewables. The question is will we have the right policy frameworks and market mechanisms to pull this off. Introducing more renewables will see more volatility and unpredictability in the market and as such is seen as a major risk to reliability.

Many mention the need for new market mechanisms to support system security, such as capacity payments or incentives for dispatchable generation. The Nelson Review proposals that tackle the issues of short-term contracts and long-term investment horizons by proposing a "derisking" or underwriting schemes have the potential to address these issues.

> *"The energy transition now is as much about system security as it is about emissions reduction, and sometimes we emphasise one at the expense of the other, and we need to actually hold them both together."*
>
> ***Retail CEO***

> *"Government needs to prioritise the system strength and reliability piece equally as they are prioritising getting more renewables into the system. They've been prioritising replacing the energy that coal-fired power stations have provided, but they now need to switch their focus as well to providing the system security."*
>
> ***Generator CEO***

6. Social license

If the renewables build-out is to meet emissions targets and run at 4 to 5 times the current pace of construction concurrently, this is likely to put extreme pressure on rural and regional communities, putting enormous pressure on social license.

Gaining and maintaining public support is critical for project delivery and the overall transition. Community opposition, planning delays, and the challenge of securing social license are frequently mentioned. CEOs note that the costs and impacts of the transition need to be communicated honestly to the public, and that losing community support could derail progress.

> *"It's the whole social license aspect as well. Social license and education are a big focus because we've got a new pipeline of projects in communities, we have to go in there, build the license, we're going to be there for 20 years, and educate. Every time, the input we get from stakeholders that you need to help us educate energy literacy, one in four Australians don't understand what's going on, why coal needs to end."*
>
> ***Gentailer CEO***

7. Workforce and skills

The sector faces challenges in attracting and retaining skilled workers needed for new projects and technologies. There are concerns about labour shortages, the need for new skills, and the ability to deliver large-scale infrastructure on time. Workforce issues are seen as a potential bottleneck for the transition.

Principles and key considerations for moving forward

Reflecting on the issues raised by AEC members in this paper, we see the following five guiding principles as fundamental to Government policy and strategic market planning. If decisions are made with these considerations in mind, the vast challenges ahead can be overcome and the transition to a sustainable, reliable and affordable renewables-based energy system can be achieved.

1. **The energy transition should progress at a just and sustainable pace.** The 2035 target will put even more pressure on the pace of transition, including far more rapid deployment of renewables – up to 4 to 5 times more than the current pace. What approach can assist in the transition roll-out: environmental and planning approval regulations streamlined, better market signals for investing; greater co-ordination, more harmonisation amongst the states.
2. **Government and industry need to work together to develop and implement energy policies** that ensure energy remains affordable for our most vulnerable customers.
3. **Government and industry need to collaborate to unlock the full value of consumer energy resources (CER)** such as rooftop solar and batteries, to ensure that customers receive the full benefit of participating in aggregated services like virtual power plants. In addition, introducing policies and initiatives that assist those customers that can't access CER to better manage energy consumption and energy bills, will be critical in addressing energy affordability.
4. **Managing the energy transition in a way that can best protect our strategic industries** and build our industrial base.
5. **Political promises are not out of step with market realities** which may undermine the credibility of the market transition.

Conclusion

Proactive and transparent public narrative

We must be honest, open and transparent with the Australian community on the way ahead. We need to take the community with us on these issues. The dialogue must be open and honest. False promises will undermine confidence. Social license is vitally important.

Government and industry need to be aligned on messaging for the general public. Both have a role to play in ensuring consumers understand the challenges and implications of delivering the transition and providing reassurance that there is a plan to achieve the goals of the transition and deliver long-term benefits to all Australians, with no one left behind.

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