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Submission to the independent review into the future security of the national electricity market

3 March 2017

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Chamber of Commerce
and Industry

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Australian Chamber of Commerce and Industry

Summary of recommendations

The Australian Chamber of Commerce and Industry objective is for affordable, reliable and secure energy for business and households. Our ambition is to reduce the real cost of energy in the long-term.

The Australian Chamber of Commerce and Industry speaks on behalf of Australian business at home and abroad. Our membership comprises all state and territory chambers of commerce and dozens of national industry associations. We represent more than 300,000 businesses of all sizes who employ over four million people, across all industries and all parts of the country, making us Australia's largest and most representative business organisation

Recommendation 1: state and territory gas moratoria should be lifted

The Australian Chamber recommends state and territory governments should maintain robust regulatory regimes to assess and manage any scientifically based environmental risk associated with gas exploration and development, and assess proposals on a case-by-case basis. There is no place for broad moratoria or bans.

Recommendation 2: state renewable targets should be abolished

States should not unilaterally act faster or further on emissions reduction targets than a national target that is consistent with the Australian Government's commitments under international agreements. Existing state renewable targets should be abolished.

Recommendation 3: the externality of insecurity needs to be appropriately captured

The Australian Chamber recommends the Review details how adoption of renewable generation affects the security and stability of the NEM and what the system cost of this is. Changes can be made through market rule or governance changes and obligations on renewable projects, and requires consideration of ways to facilitate a growth in ancillary services markets

Recommendation 4: rethinking the structure of the NEM

The Australian Chamber recommends long-term consideration of how the NEM can be re-structured to meet optimal affordability and security outcomes.

Recommendation 5: interconnectors to be approached with caution

Proposals for new interconnectors need to be met with a thorough cost-benefit analysis and understanding of the prospect of it becoming a stranded asset

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Recommendation 6: reforms need to be adopted as a package

Recommended reforms should be adopted as a package to ensure it strikes an appropriate balance between affordability, security and low emissions objectives. If recommendations to improve security has a cost to consumers, it should be coupled with a measure to relieve costs elsewhere in the energy supply chain.

Recommendation 7: **emissions reductions need to be sought with caveats**

Strong coordinated and cohesive federal leadership is needed to meet Australia's 2030 emissions reduction targets. Emissions reductions policies need to be stable, predictable, provide investment certainty, be lowest cost, and protect Australia's international competitiveness

Recommendation 8: reforms need to be technology-neutral

The Review should consider technology neutral policy and reform, which includes consideration of technologies such as battery storage, clean coal carbon and capture, nuclear, as well as existing forms of renewable energy. Government spending is best focused on research and development and early feasibility.

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Australian Chamber of Commerce and Industry

1 Policy drivers and rationale

The Australian Chamber of Commerce and Industry (Australian Chamber) welcomes the opportunity to provide input to the independent review into the future security of the National Electricity Market (the Review).

Australia needs an integrated energy and climate policy that balances energy security, affordability, and lower emissions. Achieving this balance is not easy, but this Review offers a once-in-a-generation opportunity to create a blueprint for the National Electricity Market (NEM) to meet these objectives. Energy policy should be technology-neutral, take a risk-based approach to developing natural resources, and balance lowering emissions with the need for system security. Critically, a blue print should also look at the policies that hinder balancing this energy trilemma without any material benefit to any objective therein.

1.1 Australia's international competitiveness is declining

It is essential that all businesses, no matter the size or sector, have access to affordable, reliable, and secure energy. In line with effective and efficient international action – that does not harm Australia's competitiveness – we also recognise the importance of addressing risks associated with climate change. To do so is in the long-term interest of Australian businesses.

Australia is unfortunately an increasingly uncompetitive place to do business. Australia's competitors are embracing policies that make their economies more competitive, and Australia is falling behind. Over the past decade, Australia has fallen from 10th to 22nd on the Global Competitiveness Index.

Case study: price hikes are hurting domestic and international competitiveness

JT Johnson is a regional South Australian business that exports hay pellets to Asia and the Middle East. In mid-2016, and after just having completed a major upgrade of its power infrastructure, JT Johnson's total energy bill increased from $800,000 to $1.6 million after its wholesale energy peak price trebled from 6.4 cents to 19.3 cents/kWh.

A JT Johnson spokesperson has said - "We were shocked to receive prices detailed on our new supply contract with increases in power charges by up to 300 per cent. We have invested $17 million dollars to improve efficiency and increase capacity however with cost increases representing an additional $15 per metric tonne, it will be difficult to achieve any growth. These costs are not shared in other states and therefore our market competitiveness is completely eroded. Our industry is volume based with very thin margins. Cost increases such as this cannot just be passed on to the end user as they will be able to source the product from either Victoria or Western Australia at cheaper prices…The pursuit of clean energy targets is putting the whole state at a

disadvantage. There must be action taken to reduce the cost to business or risk losing more manufacturing interstate."

"Our main concern is the high costs to do business and the impact that has on our ability to remain competitive in the domestic markets and international markets that we compete in. We are already budgeting an additional $1.2 to $1.4 million in electricity costs for 2017 compared to 2016."

Australian businesses have historically had a competitive advantage through access to affordable and secure energy. Rising costs from network investments, fuel cost rises, and the closure of traditionally affordable baseload power generation are among some of the reasons challenging this competitive advantage. Australia's electricity prices have risen 10 percent annually in the five years to 2013, and prices have risen by even higher annual rates in the past two years. Rising prices and predicted supply shortfalls, exacerbated by the imminent closure of the Hazlewood coal fired power station, will place increasing pressures on Australian business competitiveness, risking jobs and future investment.

1.2 The Energy Trilemma – affordability is being squeezed

As identified by the Review, solutions are required to the "energy trilemma" – which balance reliability and security, affordability, and lowering greenhouse gas emissions in the electricity sector. The Australian Chamber notes that the COAG has given priority to the Review considering reliability and security concerns, with affordability and emission reduction also at front of mind.

The Australian Chamber is encouraged by the report's view that solutions at minimal cost to consumers should be provided. It is indeed a delicate balancing act, and business is sensitive to proposals to improve the reliability and security of the system that inevitably increases pressure on prices. Meeting proposed changes with a thorough cost-benefit analysis, and preferably implemented through market mechanisms, will help to ensure lowest cost options. Action via regulation and intervention into markets should be approached more cautiously.

More can be done to incentivise consumers shifting demand

Changing energy use patterns and using energy more cleverly has a role to play in lessening business' vulnerability to high electricity and gas prices. Businesses are open to looking at these options where possible, with time-of-use tariffs offering such an option to incentivise changes to peak loading. However, this incentive is not always clear or present.

A member of the NSW Chamber [preferred to remain anonymous] is a minerals processor that employs over 100 staff in plants and warehouses located in regional and metropolitan Australia. The business has encountered significant issues when procuring both electricity and gas for its two sites in NSW and one site in Victoria. The business views minimising energy costs as business as usual, both during procurement as well as through process optimisation. It

regularly seeks to reduce its peak demand (and corresponding demand charge), including through shifting its electricity use to off-peak where possible. The business believes there is inadequate incentives built into the electricity market to minimise its peak demand – the retailers have little incentive or scope to offer contracts to do this, and the networks don't discuss options and opportunities to reduce the peak demand of customers. Despite efforts, in 2017 this business is facing a 25-30% increase in its electricity bill compared with the previous year's bill. The business noted that the wholesale energy price component quoted in contracts for 2017 doubled between early 2016 and late 2016, from around $40/MWh to around $80/MWh.

The Australian Chamber notes the importance of each priority of the "energy trilemma", but increasingly pressure on the affordability component is coming from the other two sides of the triangle. Just as improved security mechanisms could have upward pressure on prices, there is likewise a cost to pursuing lower emissions technology, at least in the short-to-medium term. The Review should consider options that do not put undue price increases on consumers, particularly actions that have no tangible benefit in improving security, or delivering emissions reductions in line with responsible national targets.

If recommended security and reliability solutions increase the price of electricity without other measures being adopted that would have downward pressure on prices, then they are not adequate solutions.

1.3 Re-thinking solutions – toward an integrated energy and climate policy

The Review acknowledges much public discussion about Australia needing a better-integrated energy and climate policy. However, there is very little detail or discussion about what this actually means in practice, and the difficult choices and compromises required. The answer should not mean that we pursue security or climate policies that cause unsustainably high levels of electricity prices that places a disproportionate cost on business. Nor should we accept insecure networks causing millions of dollars of cost through damaged equipment and lost trading hours. It is therefore vital to implement an entire package of recommendations. The risk that affordability, security or low emissions outcomes are disproportionally impacted increases if recommendations are cherry picked. In adopting reforms as a package, the Australian Chamber recommends a thorough decision-tree analysis to understand the ramification of policy choices.

The Review Panel acknowledges that further penetration of intermittent and non-synchronous technologies will affect the security of the energy system. The Australian Chamber proposes the Review consider how to strike an appropriate balance between the benefits intermittent renewables deliver in lower emissions, and the challenges it creates for the security of the grid. An integrated climate and energy policy should consider whether the speed of the introduction of renewable technology is such that it creates a disproportionate cost through undermining the security of the network.

The Australian Chamber recognises the question of security is not necessarily about technology. A poorly managed power generator or mis-steps by a market operator can seriously damage network

security, regardless of the generating technology in question. However, it remains true that as more intermittent technology enters the market and more baseload generation exits, increased strain will be placed on system security through reduced inertia and pressure to respond more quickly to an increased rate of frequency change. This phenomenon is exacerbated under existing climate policies, with the Large Renewable Energy Target (LRET) facilitating investment in renewable capacity irrespective of electricity demand, or the security characteristics of sections of the NEM.

Just as a market mechanism on emissions would impose an additional cost on fossil fuel generators to account for the environmental cost of greenhouse gas emissions, analysis should consider how projects that undermine the security of the system should cover that cost. This would cause proponents to consider the local security implications of installing further non-synchronous generation, which would have the effect of diverting investment to more secure areas (i.e. parts of the NEM that has less renewable penetration).

Ultimately, this investigation treats energy and climate policy as interlinked, and properly considers the consequences of choices across energy and climate policies.

2 Abandon Policies that do not address the energy trilemma

Striking the balance between policies within the energy trilemma is an incredibly difficult task, made all the more difficult when policies that have no marginal benefit place upward pressure on prices. Policies that increase costs and reduce security should be abolished.

2.1 Lift inhibitors to gas exploration and supply

Natural gas is an important part of Australia's energy mix and has a critical role as a secure and low emissions option in the electricity sector. It is also a fundamental and often unique feedstock for manufacturing, making affordable and reliable supply critical for ongoing business operations. Businesses across the east coast are finding it increasingly difficult to obtain affordable contracts, and as the below case study demonstrates, it is difficult to even obtain supply offers. There is no silver-bullet to increasing supply and making gas more affordable, and issues on the upstream, mid-stream, and downstream ends need to be addressed to increase supply and help make gas more affordable.

Gas users have clearly expressed concern that pipeline operators exercise their market power during access negotiations, which ultimately leads to higher prices. Reform to address this concern is underway through the COAG Energy Council, primarily through the implementation of the Gas Market Reform package coordinated by Dr Michael Vertigan. The *Examination of the current tests for the regulation of gas pipelines* report released in December 2016 finds that existing regulatory arrangements of pipelines require modification so to reduce costs for gas users and improve the liquidity of the gas market. The Australian Chamber welcomes plans to implement reform packages by 1 May 2017 that will improve the transparency of pipeline service pricing and provide an option for commercial arbitration. These reforms will assist gas shippers to negotiate a more affordable

outcome, many of whom currently operate without any reference to what terms and tariffs are reasonable. Reducing the market power of pipelines may also increase the ex-plant gas price for producers, thereby encouraging supply of currently stranded natural gas.

Regulatory decisions from a number of jurisdictions further prevent the opportunity for new gas resources to come to market, thereby closing avenues of new supply. Victoria, New South Wales[1], Tasmania, and the Northern Territory have all adopted policies preventing or hindering the exploration and development of gas resources.

Gas shortage is an existential threat to business

Victoria Wool Processors (VWP) is Australia's largest domestic wool processor. Established in 1990, it employs 40 staff and operates a state of the art wool carbonising and scouring plant that runs 24 hours per day 7 days per week.

VWP is one of only three early stage wool processors in Australia, all of which use natural gas to clean and process wool for domestic and international customers.

VWP require 110,000 gigajoules of gas annually to treat the 12,000 tonnes of greasy wool the company processes every year.

When the company sought to replace a gas supply contract with its existing retailer expiring at the end of 2016, it found that three out of four retailers could not even make a supply offer.

VWP went for a period of around three weeks where there were no gas offers on the table. In the event that it could not secure a gas contract for 2017, the business would have been forced to close.

VWP was eventually able to secure a contract with a new retailer worth $1.5 million annually – double the value of the former contract.

While being a significant gas user, the business is not large enough to buy gas on the wholesale market.

This will force VWP to pass on some of this cost to customers; however, there is a risk that increased prices will affect sales volumes placing the company in a dilemma because much of the contract is on a take-or-pay basis, meaning it has to pay for gas even if it is not used.

The increase in gas costs has also resulted in a $500,000 effluent treatment upgrade being put on hold.

VWP is now relying on an improvement in gas prices in 2018, to ensure its continued operation.

[1] NSW has now identified areas available for gas exploration and has one significant gas project undertaking an Environmental Impact Study. However, there does remain a lack of investor confidence in the NSW gas industry.

In April 2016, the Australian Competition & Consumer Commission (ACCC) released a report detailing its inquiry into the east coast gas market. The report found a complex and markedly changed set of conditions that did not exist a few years earlier, prompted by new dynamics from the development of three export LNG facilities in Gladstone. The ACCC recognised that there are sufficient domestic reserves to meet demand, but that being able to get the reserves to market was uncertain in the near term.

This in part is due to the constraints to exploration across a number of jurisdictions. Without investment in undeveloped reserves, there will likely be a supply shortfall on the eastern seaboard where the bulk of Australia's economic activity and population are located. As stated by the ACCC, a greater diversity of supply near demand centers will lead to a more competitive market, hence creating the forces for price relief and the ability to obtain longer contracts.

The Australian Chamber recommends state and territory governments should maintain robust regulatory regimes to assess and manage any scientifically based environmental risk associated with gas exploration and development, and assess proposals on a case-by-case basis. There is no place for broad moratoria or bans.

Gas reservation is not the answer

Some parties advocate for the introduction of gas reservation policies to guarantee domestic access to reserves. This is not a position the Australian Chamber supports because it leads to further uncertainty and higher prices in the long term. A domestic gas reservation policy currently exists in Western Australia, requiring LNG proponents to reserve 15% of LNG production (or equivalent) for the local market. The Western Australia Economic Regulatory Authority has found that "the costs that this policy imposes on the Western Australian economy far outweigh any benefits that it is believed to have".[2]

The introduction of a reservation policy might offer price relief in the short-term, but over the long term, this policy has the effect of deferring investment into new developments, particularly affecting companies geared to domestic gas supply. Artificially low prices might make resource development less attractive, meaning not pursuing investment in new developments. Therefore, in the long term, consumers will suffer from less supply in the market, resulting higher prices.

Rather than adding another layer of regulation, the option should instead be to reverse policies such as gas moratoria, allowing market forces the opportunity to operate.

2.2 Abolish state-based renewable energy targets

Climate change is a global problem for which Australia's response requires a nationally co-ordinated solution. The Australian Chamber recognises the need for strong coordinated and cohesive leadership in meeting internationally agreed emissions reductions targets by 2030. However, the answer to a perceived lack of federal policy settings does not lie in states pursuing

[2] ERA, *Inquiry into Microeconomic Reform in Western Australia: Final Report*, p.355

their own individual schemes. Whilst the federal LRET scheme offers the principal financial incentive for investment decisions in renewable projects, state renewable energy targets can, drive-up costs and compromise energy security. Targets announced include:

- ACT target of 100% by 2020
- Victorian target of 40% by 2025
- South Australian target of 50% by 2025
- Queensland target of 50% by 2030

The mechanisms introduced to meet these targets will increase costs, and the cost will ultimately be borne by the end user or taxpayer. For example, additional incentive of payroll deductions[3] facilitated initial wind farm investment in South Australia, while the Victorian scheme will seek to add a further 3,900MW of capacity in addition to the Commonwealth LRET from 2020. Forward estimates of demand for electricity is low – therefore subsidising further generation capacity into an already oversupplied market will hasten the closure of existing baseload generation.

Making the decision to implement state-targets appears to have been without considered analysis of security implications, or more cost-effective and secure policies to reduce emissions outside of the electricity sector. The Federal Department of Environment and Energy has estimated that the additional output of renewable energy required to meet Victorian targets is 13 terawatt hours of electricity and Queensland is 24 terawatt hours of electricity, amounting to a capital cost of $41 billion. Given this output is sought irrespective of final electricity demand, additional concerns are raised for the speed of closure of baseload generation, and the impact this would have on system security.[4] Conversely, the motivation appears largely political – without a storage solution, solar will not literally be powering Melbourne trams on a dull morning and in the black of night. The ACT might claim 100% renewables by 2020, but this is the result of funding projects in other states. Via the ACT government, its taxpayers are purchasing large-scale generation certificates, but the capacity will be installed in other states, including energy insecure South Australia.

Businesses across the Australian Chamber network – represented in each jurisdiction of the NEM and in Western Australia – expect the implementation of emissions reductions policies will be in line with Australia's international commitments, introduced without unnecessary additional cost, and respect the importance of energy security. Whilst States are acting in part from a perceived federal policy vacuum, acting outside a national approach is not in the best interest for the development of a cohesive climate and energy policy.

3 Balancing security and low-emissions – toward an integrated climate and energy policy

Most interested parties to this Review will agree with the premise that Australia requires an integrated energy and climate policy, but scant policy options or commentary reflects how affordability, security and reliability, and low emissions can be appropriately balanced. The need to

[3] Grattan Institute

[4] Energy security pressures are considered in more detail later in the submission

balance these priorities implies appropriate compromise between each objective to meet each outcome.

Recent concern has emerged about how characteristics of renewable energy come at a cost to system security. The levelised cost of electricity from renewable projects does not factor in external costs, and hence investment decisions continue without regard to the impact on system security. In the same way that there would be a mechanism to cover the environmental cost of greenhouse gas emissions, there should likewise be a mechanism to account for the cost of ensuring grid security.

The two most significant costs to business of an insecure electricity system include lost production or operating time, and damaged equipment. There is also a significant sovereign risk question. This may not result from one outage, but a series of outages together can influence a decision whether to invest further capital in a jurisdiction, or to shift operations to a more reliable jurisdiction. Indeed, we are seeing this take place amongst Australian Chamber members.

Without change, business will shift operations and defer investment

Cool Off Pty Ltd is a producer of pet food raw meats headquartered in NSW and employs 250 employees and contractors. Cool Off sources from over 30 abattoirs across Australia, processing over 130 tonnes of raw material per day and supplying both Australian pet food manufacturers and the growing export market.

The business is currently conducting a major ($12 million) expansion of its freezing and drying capacity, largely to service its export business. However, Cool Off is facing a significant increase in both electricity and gas costs, which will add a total of $536,000 to their bottom line in one year alone.

These higher costs have the potential to affect jobs, future investment decisions and businesses along the supply chain. As an exporter, projected sustained energy cost increases compel the business to look outside Australia for international co-manufacturing opportunities to service their markets from offshore production.

The business is currently considering further expansion of export pet food operations as well as establishing manufacturing facilities for fabricating its patented chilling and freezing equipment for international export. The business has indicated that future energy costs will be a major consideration for this project.

The business has investigated solar power but the costs are currently prohibitive. The business is also considering options for co-generation, but concerns about future gas prices may also make this financially unviable.

Midfield Meats is a Victorian based multi-faceted agri-business employing over 1,500 people and is currently building stage one of a new milk processing plant in Penola, South Australia. The company's $80+ million investment to build a dairy processing plant in Penola is the single biggest dairy processing investment in South Australia in nearly 40 Years. The processing plant will make a significant impact within the dairy sector as it has the capacity to process over half of all milk produced in the state.

Since the development of their business plan and the commencement of the plant's construction, electricity costs have doubled twice. This unexpected cost has the capacity to see the business trade at a deficit in marginal years.

Recent South Australian security-of-supply issues have caused great concern for the business. Milk is a perishable product and has a very short shelf-life without refrigeration. The company is continuing stage one investment with trepidation, but their $100m investment to develop stage two has been deferred.

Although the company remains optimistic for their stage one success, stage two will not progress without evidence of change in South Australia's electricity market.

As defined by the preliminary report, "a secure power system is one that is able to continue operating within defined technical limits, even in the event of the disconnection of a major power system element…"[5]

Power supply and demand is matched instantaneously in real time for Australia's electricity system to operate. If this balance changes, the frequency of the system will likewise change. Deviations outside technical limits (49-51 Hertz) can cause significant disconnections and blackouts. Managing this deviation is provided by inertia in the system, which has typically been provided by existing baseload generation. However, with baseload generation closing, and new intermittent technologies not having the same characteristics, there is increasing challenges to resist changes to frequency moving outside technical limits and maintain security in the NEM. A shift from synchronize to non-synchronize generation (i.e. wind turbines) reduces the level of system inertia, increasing the rate of change of frequency (RoCoF) following changes in the supply/demand balance. This puts pressure on frequency control ancillary services (FCAS) to respond in a quick enough fashion to avoid the system operating outside of frequency parameters – or in other words, cause a blackout.

[5] Preliminary Report, p. 10

September Blackout Cost South Australia $367 Million[6]

Following the South Australian state-wide blackout in September 2016, Business SA conducted a survey to understand how much it cost business. Of stark note is how severe the event was, with an estimated 83% of businesses across South Australia ceasing operation. The overall financial impact on the State was a loss of $367 million – had the event occurred earlier in the trading day, the financial impact would have been much worse.

Outcomes of the survey were arrived at by a survey which asked a broad range of questions about various cost impacts, including lost production and wages, damaged equipment, costs of running a back-up generator, and insurance coverage.

In addition to the cost impacts across all sectors of the economy, the survey uncovered a number of business practices that will require change if insecurity continues – adding further to the cost burden on business. Only 37% of businesses surveyed had business interruption insurances, of which only 46% of this group were covered for any costs associated with the blackout, and only 12% were fully covered. Additionally, only 12% of businesses had back-up generators to support continued operations in the event of a blackout.

Australia is a developed country operating an advanced economy, and Australian businesses should be able to rely on a secure energy network. If lower confidence in security is expected to continue and business is required to take out further insurance or implement redundancy measures, this will create a further cost burden on proponents already suffering from rising electricity prices. In most circumstances, this is simply not a viable option.

The Australian Chamber recommends that the Review detail how adoption of renewable generation is affecting the security and stability of the NEM, what the system cost of this is, and what solutions are available. Whilst intermittent renewable technologies offer a low emissions solution, an integrated climate and energy policy approach should not preclude realistic consideration of the challenges created for grid security, and factor in this externality. Implementing such measures could occur in a number of ways, from updated governance arrangements and market rules through to rigorously developing an ancillary services market.

Options include:

- Methods of placing obligations on renewable projects for providing system security, either by bearing a proportional cost of the procurement of FCAS on the market, providing their own synthetic inertia services, or providing the necessary storage solution for the grid. This may have the beneficial outcome of deferring projects to more secure areas of the grid where the costs of maintaining system security are lower.
- Updating planning frameworks under the LRET to recognise the technical security implications of building the project at a particular location.

[6] Includes estimated $115 million impact on major South Australian businesses including Arrium, Nyrstar, Oz Minerals and BHP. Furthermore,

- Update governance arrangements for AEMO's judgment of a credible event, and wind turbine connection agreements to the NEM.

It would also be prudent for the Review to consider security implications in the context of investigating broader emission reductions policies for the electricity sector, and whether the LRET operating without an overarching emissions reduction policy is appropriate beyond 2020. The LRET is technology specific and subsidises generation capacity irrespective of demand. This arguably accelerates instability in the NEM by displacing baseload generation at a quicker pace than would otherwise be the case.

An alternative approach that is technology neutral and sensitive to demand would operate to support investment in other lower emissions options, smoothing the transition as more renewables enter the grid over time. This would assist system security, whilst likewise helping meet Australia's international emissions targets.

Caution required for recommending capital intensive interconnectors

The Australian Chamber urges caution in proposals to build further interconnectors linking jurisdictions. Interconnectors would provide additional ability for a state such as South Australia to import and export electricity, but options are very expensive and are dependent on capacity of a neighbouring region to trade electricity.[7] With a consumer trend to invest in roof top solar and the promise of batteries as a long-term storage solution, this cost will increasingly become the burden of a smaller population. Moreover, with Victoria predicted to be increasingly reliant on NSW for electricity following the closure of local baseload power, there is a serious question around Victoria's capacity to provide South Australia with requisite electricity. A thorough cost-benefit analysis and understanding of how electricity prices would rise on an increasingly smaller base must be undertaken before any interconnector solution is recommended.

4 Structure of the NEM

The history of the NEM has evolved from state-based wholesale electricity markets, beginning with Victoria's market joining New South Wales in 1997[8], moving towards a national model which has maintained many features of state control, including state based pricing jurisdictions.

The February South Australian brownout

The load-shedding event that occurred in South Australia in February demonstrated a failure in the system's ability to respond to changing circumstances. This is despite the fact that supply

[7] ACIL Allen 2016, Integration of Renewables in South Australia, p. 54
[8] National Electricity Market – A case study in successful microeconomic reform, KPMG 2013

shortfalls were forecast and Australian Chamber members provided a number of warnings of such an event occurring.

This was the second load-shedding event in three months, and the third in the past 18 months in South Australia. Before then, there were three load-shedding events over a 15-year period.

The Review needs to consider whether there are adequate safeguards built into the current system for when there are looming supply shortages. For example, the Review can consider whether adequate time is provided to generators to increase supply, and the prospect of over-forecasting demand to help prevent similar events.

This needs to be done through a process that draws together relevant ministers, the market operator, network operator, and generators to ensure alignment.

If the Review is aiming to take Australia towards a truly 'national electricity market', it must consider the fact that with state-based pricing jurisdictions, there is limited capacity for businesses within individual regions to contract via generators in other jurisdictions. This is effectively a limit on competition, which is contrary to Australia's current reform process in the area of competition law.

The Australian Chamber notes the Review will consider options to improve security and affordability outcomes over the short, medium, and long-term. In addressing long-term solutions, the Australian Chamber encourages the Review to consider how, with technological advances and changes to governance, changing the structure of the NEM could lead to more affordable and secure electricity. Consideration should include;

- How nodal pricing could improve the affordability and security of the NEM
- Whether current jurisdictional boundaries of the NEM along state borders provide optimal affordability and reliability outcomes
- What advancements in technology would be required to allow for hedging contracts across jurisdictions or hedging from intermittent technology (e.g. Large scale storage), and what governance or policy actions could be taken in the short term to support this
- Whether a capacity market provides a cost-effective and efficient solution. The Review would be wise to discuss this option with Western Australia stakeholders – there is enough history in the Western Australia market for the Review to make a meaningful assessment of whether the implementation of a capacity market would be a sound approach.

While some form of regional or nodal pricing may be required in the future if physical or climatic characteristics dictate, there must be a solid underlying basis for where any boundaries are drawn. Boundaries must also work to protect the long term interests of all consumers, particularly energy intensive businesses.

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5. The global emissions abatement challenge

Mitigating risks associated with climate change is in the interest of Australian business because of the need to address the risk of major long-term economic and social costs for Australia. Viewed on its own, reducing emissions in Australia will have little impact on global atmospheric greenhouse gas concentrations. Therefore, Australia needs to support economic growth and assist regional partners to develop in a way that limits environmental impact, and continue climate change action through multilateral institutions.

Several developing nations in the region are expecting significant economic change, accompanied by industrialisation, urbanisation and increased food and energy requirements. To underline this, approximately 1.2 billion people – 17% of the global population – do not have access to electricity. We cannot expect these people to reject aspiration of the minimum standard of living to which we are accustomed.

Australia should work with our neighbours to develop in ways that are energy efficient and environmentally responsible. Australian business and its skilled workforce can play a major role in this objective while also generating national income. Australia's economic, social and academic advantages should be deployed in the global effort to mitigate adverse climate change.

Australia is right to recognise the importance of energy security and affordability in global climate change action

In continuing international engagement to address climate change, the Government should frame and pursue responsible action in the context of ensuring national energy security and affordability.

The Paris Agreement is a historic achievement and constitutes a strong signal about the future direction of global climate policy, with governments agreeing to limit global temperature rise to well below 2°C and pursue efforts to limit temperature rises at 1.5 °C.

The Australia Chamber welcomed Australia's ratification of the Paris Agreement on Climate Change and the Doha Amendment to the Kyoto Protocol in November 2016. As one of 175 original signatories to the Paris Agreement, Australia has set an Intended Nationally Determined Contribution (INDC) target of 26 percent to 28 percent below 2005 levels by 2030.

Importantly, ratification was actioned in the context that "Australia's policy is to meet… international commitments on emission reduction while at the same time maintaining energy security and affordability."[9]

Given the fundamental importance of energy security and affordability to businesses across Australia, the Australian Chamber welcomes this as a consideration in meeting internationally agreed emissions reductions targets. An integrated climate and energy policy will help Australia to meet its international obligations, maintain its global competitiveness, and give businesses access to reliable, affordable and secure energy.

[9] Ratification of the Paris Agreement on Climate Change and the Doha Amendment to the Kyoto Protocol, joint Media Release, 10 November 2016, accessed 6 February http://www.environment.gov.au/minister/frydenberg/media-releases/mr20161205.html

Guiding principles for any recommended climate policies

A number of key principles should further underpin climate change action:

- Policy measures should be stable, predictable and provide long-term certainty for business
- Policy measures should achieve lowest-cost emissions abatement by:
    - Being market based;
    - Being broad based;
    - Minimising complexity;
    - Being implemented at the national level; and
    - Permitting access to credible international offsets.
- Policy measures should address international competitiveness impacts and the potential for carbon leakage.

Protection of Emissions Intensive Trade Exposed Industries (EITEI) and Preventing Carbon Leakage

Any further policies covering Australian businesses with a view to reducing greenhouse gas emissions needs to protect EITEI with a view to preventing carbon leakage. An EITE organisation refers to businesses that incurs a relatively large cost from an emissions reduction policy relative to the value of its product, and cannot recoup costs from the consumer because its international competitors do not have the same restrictions on industrial activity.

This raises serious policy questions for Government. Industry may close or relocate to another country if protection is not provided, meaning loss of jobs and changes to the social fabric of communities. If the industry does relocate to another country that does not have a stringent climate policy, then the activity may continue at higher emissions, and therefore increase global emissions. Known as carbon leakage, this is an outcome where emissions increase and which is detrimental to Australia's economy.

Over time, local or regional carbon pricing instruments should ideally converge to create a global level playing field with comparable reduction requirements. Until this is the case, it is important that domestic carbon-pricing instruments do not lead to shifting of emissions between regions. As this would come at the expense of Australian industry, appropriate safeguards to protect against carbon leakage must be put in place.

6. Technology and ideologically neutral

Business does not have time for ideological positions to play out when affordability and security of energy supply is at risk. The Australian Chamber is in favour of efforts that support a broad technology mix that can meet these objectives, including large-scale battery and other forms of storage, nuclear energy, clean coal technology, solar, wind, wave, hydro and gas. Technologies should have equal footing in being able to demonstrate that they can be cost-competitive and deliver against integrated climate and energy objectives.

Market participants are best placed to enable the commercialisation of emerging technologies, and therefore government focus and spending should be in the areas of research and development and early feasibility.

Battery and other forms of storage like pumped hydro is very likely to have a key role in Australia's energy system in the future. Storage offers a solution to the intermittent nature of renewable energy, therefore complementing higher renewable penetration in the NEM. As with other areas of emerging technology, battery storage costs are declining with corresponding improvements in performance. Addressing policy levers and market rule changes now can help to avoid the current situation where retrospective alterations are required in the future.

Given Australia's endowment of coal and the current make-up of Australia's energy mix, coal will maintain a strong presence in the years ahead. Indeed, if there was one country that had a self-interest in demonstrating further development in ultra-supercritical combustion and carbon capture and storage technologies it is Australia. However, tempering this self-interest is the fact that market realities demonstrate trepidation for investing in new coal-fired generators. Even with development of clean coal technologies, questions remain over its long-term cost-competitiveness with other sources of electricity generation. Coal generation would deliver secure and reliable baseload power – however, as outlined in Section 3, there are alternative ways to deliver secure electricity, which may be more cost-effective.

One area that carries a great deal of ideological baggage is nuclear energy. Despite our world-class quality and quantity of uranium, Australia does not have a nuclear industry to speak of beyond a research reactor at Lucas Heights and a brief flirtation with the notion of a nuclear power plant at Jervis Bay decades ago. Indeed, the Review's preliminary findings did not mention nuclear power. If Australia is to take a technology and ideological neutral approach, then nuclear should be in the mix of future options and be considered in the Review's blueprint. At the very least, recommendations can be considered that would remove regulatory inhibitors across Australian jurisdictions that prevents any resemblance of discussion of nuclear in the energy mix. As long as Australian legislation prohibits enrichment, fuel fabrication, power plants and re-processing facilities, there will be no scope for even preliminary consideration. The Australian Chamber recommends assessing the utility and viability of revisiting the nuclear question and the findings of the *Uranium Mining, Processing and Nuclear Energy – Opportunities for Australia?* report concluded by the Department of Prime Minister and Cabinet in 2006.

The Australian Chamber ultimately supports the Review blueprint analysing the future prospect of all low-emissions technologies. In regards to emerging technologies, recommendations should be underpinned by an understanding of the costs required at the research & development and early feasibility stages, and the likelihood for such investment to lead to commercialisation.

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