

By email: NEMSecurityReview@environment.gov.au

Dear Panel members

Spark Infrastructure's response to the Future Security of the National Electricity Market Preliminary Report

Spark Infrastructure welcomes this opportunity to submit a response to the Independent Review into the Future Security of the National Electricity Market Preliminary Report.

Spark Infrastructure is an Australian listed investment vehicle, with a market capitalisation of around \$4 billion. As an owner of regulated electricity transmission and distribution networks in New South Wales, South Australia and Victoria, Spark Infrastructure has a keen interest in the outcomes of this review.

This submission recognises that new technology is driving extensive changes in how network service providers engage with customers. This applies to every part of the electricity supply chain and is empowering consumers with greater choice, creating demand for new products and services, and thus creating new business opportunities for incumbents and new entrants to the market.

Rapid changes in technology has resulted in government policy and regulation struggling to keep pace. The current electricity system was designed primarily with one-way flows of synchronous electricity in mind and did not envisage the current shift towards large-scale variable renewable generation that is replacing the old synchronous variety with its innate supply of system inertia. The rise of renewable energy brings with it the challenges of intermittency and instability in the system.

These changes are underscoring the importance of ancillary services and creating niche areas of customer demand which network businesses are ideally placed to provide in the most cost effective manner. At the same time, regulatory structures are seeking to preclude network providers from offering services in a range of areas out of fear that market power, whether real or perceived, may be abused. When in fact, their participation can increase competition and offer the most economically rational and lowest cost solutions to pressing energy supply problems.

In addition, it currently appears that generators are increasingly unable to deliver their full generation capacity when it is needed most. We have seen this with the failures of Snowy Hydro's Colongra and Energy Australia's Tallawarra plants on 10 February 2017 just as energy demand reached its highest levels that day, forcing important industrial users such as the Tomago smelter to cut its usage. More recently, we have seen fires put Adelaide's Torrens Island power station operated by AGL out of action for weeks. We would recommend that the Review Panel take a closer look at the maintenance practices and market pricing decisions of energy generators.

The key points made by this submission are as follows:

- 1. The future dominance of renewable energy is inevitable and irreversible**
 - Government policy needs to align with and support the transition to renewable energy
 - Energy prices will be minimised by adopting policies today that reflect the coming 'green grid'
 - Transparent pricing of emissions through an EIS is likely to lead to the lowest cost solutions

- 2. Any assessment of potential solutions must take into account all costs and benefits along the length of the supply chain and over the life of an asset**
 - Wholesale prices and retail margins are higher than necessary
 - Transmission and Distribution costs are falling, providing substantial reductions in cost to consumers
 - Retail margins are high and growing, displaying a substantial information asymmetry
 - Current regulations create inappropriate market incentives for generators

- 3. Increased network interconnection will increase reliability in a cost-effective manner**
 - Extensive interconnection reduces the cost of renewable generation across the NEM
 - Regulation protects the consumer from over-investment in network infrastructure
 - Wholesale generation prices will be minimized by removing restrictions on ownership
 - Network providers are the logical and lowest cost providers of a range of ancillary services and distributed energy resources

- 4. Regulation needs to catch up to technology and address systemic failures and biases**
 - Ensuring energy security in a 'green grid' requires integrated planning and regulatory reform
 - The role of the market operator needs to take on a more regional focus and AEMO's governance structure should be amended to eliminate the possibility of any real or perceived conflicts of interest
 - Regulation must promote increased transparency in customer billing and facilitate switching to put downward pressure on retail margins – UK's Ofgem provides a guiding example
 - Renewable generation connection costs will be cheaper without ring fencing

Spark Infrastructure recognises that there is unlikely to be a single solution to the energy trilemma. It can reasonably be expected that a basket of complementary responses will be required. However, we believe that increased network interconnection is a key part of the overall solution to ensuring a reliable and cost effective energy supply that helps lower carbon emissions.

We have prepared this submission because we feel compelled to emphasise the important context and considerations that investors in network infrastructure bring to this review and would be delighted to meet with the secretariat to discuss this submission further.

Please contact Mario Falchoni, General Manager of Investor Relations and Corporate Affairs, on 02 9086 3607 if you have any questions or for any further information on this submission.

Yours faithfully,







Rick Francis
Managing Director & CEO
Spark Infrastructure

1. Spark Infrastructure

1.1 Spark Infrastructure is a significant long term investor in Australia’s energy infrastructure

Spark Infrastructure makes long-term investments in leading Australian energy networks. It has been an ASX listed investment vehicle since 2005, with a market capitalisation of around \$4 billion. Spark Infrastructure’s investment portfolio includes 49% interests in SA Power Networks (South Australia), CitiPower and Powercor (Victoria), and 15% interest in TransGrid (NSW). It is approximately 80% owned by Australian superannuation and retail investors. Through its investment portfolio, Spark Infrastructure supports well over 5 million customers across the NEM.

Spark Infrastructure has a sound investment and asset management record, with proven operational expertise and an ability to collaborate with key stakeholders. The businesses in its investment portfolio rank amongst the top performing electricity distribution networks in Australia, maintain constructive labour relations (including investment in employees and apprentices), and achieve best in class safety and reliability.

	<p>49% Interest</p>	<p>CitiPower operates the distribution network that supplies electricity to around 328,000 customers in Melbourne’s CBD and inner suburbs.</p>
	<p>49% Interest</p>	<p>Powercor is the largest distributor of electricity in Victoria, operating a network that serves around 780,000 customers in central and western Victoria and the western suburbs of Melbourne.</p>
	<p>49% Interest</p>	<p>SAPN is the sole operator of South Australia’s electricity distribution network, supplying around 856,000 residential and commercial customers in all regions and the major population centres.</p>
	<p>15% Interest</p>	<p>TransGrid is the largest high-voltage electricity transmission network in the National Electricity Market (NEM) by electricity transmitted. It connects generators, distributors and major end users in NSW and the ACT and forms the backbone of the NEM connecting QLD, NSW, VIC and the ACT.</p>

1.2 Spark Infrastructure’s investments improve outcomes for their customers

Spark Infrastructure supports the Review’s emphasis on the “energy trilemma” of delivering reliable energy that lowers emissions in a cost effective manner.

Under Spark Infrastructure’s ownership, strong efficiency performance has enabled SA Power Networks, CitiPower and Powercor Australia customers to benefit from some of the lowest network charges in the NEM. Independent research conducted by energy sector experts Oakley Greenwood¹ concluded that CitiPower and Powercor Australia customers’ distribution-related costs (excluding government policy-related smart meter charges and feed in tariffs) comprised less than 25% of the average household

¹ Oakley Greenwood, *Value of grid connection to distributed generation customers*, Dec 2014

electricity bill. For SA Power Networks the figure is around 33% according to a more recent AEMC study. Both businesses compare very favourably to a range of 45–50% in other states and territories.

On 30 November 2016, the Australian Energy Regulator released its most recent performance reports for the electricity transmission and distribution networks under its jurisdiction. CitiPower, Powercor and SAPN were all ranked in the top five distribution networks (out of 13) for the AER's primary efficiency measure, Multilateral Total Factor Productivity.

Since TransGrid's privatisation in December 2015, Spark Infrastructure and our co-owners have been working with TransGrid to improve TransGrid's performance through active management and the application of the same principles and strategies, which have proven successful in SAPN and VPN.

2. The investors' perspective

2.1 Privatisation of transmission and distribution has improved customer outcomes

Private capital presently invested directly as equity or as debt financing for Australia's energy networks totals tens of billions of dollars. Private investment is critical to the continued provision of secure, reliable and efficient network services and to ensure timely and efficient management of energy infrastructure to meet changing customer expectations.

The Harper National Competition Policy Review² observed that the outcomes achieved under private investment in Australia's energy infrastructure are more consistent with supporting the long-term interests of consumers than outcomes being achieved by state-owned energy infrastructure:

*"The increased role of the private sector in infrastructure has brought considerable public benefit... Privatisation has also delivered more efficient management of assets and investments have been more responsive to changes in market demand... Well-considered contracting out or privatising remaining infrastructure assets is likely to drive further consumer benefits through comparatively lower prices flowing from greater discipline on privatised entities."*³

The privatisation of the remaining state owned assets would continue to increase the importance of private investment and investor confidence to the sector's performance. Capital for such private investment is sourced globally, and local infrastructure investments must compete for capital both across the globe and with other infrastructure sectors.

2.2 Infrastructure investors see sustainable returns in renewable energy rather than fossil fuels

As an ASX listed vehicle that invests directly into electricity network infrastructure, Spark Infrastructure is an investment vehicle for a range of professional, sophisticated and retail investors.

Spark Infrastructure's security holder register is heavily weighted towards long-term investors such as superannuation funds and the professional investors whom they mandate to manage funds for them. It is a widely held view amongst such investors, both locally and globally, that progress towards a low emissions economy in Australia is both desirable and inevitable.

In Australia, superannuation funds are the dominant investors in the infrastructure and energy sectors. Organisations such as the Australian Council of Superannuation Investors (ACSI), and global organisations such as the Investors Group on Climate Change (IGCC), have given prominence to carbon emissions as a

² The Australian Government Competition Policy Review, March 2015, section 11.1.

³ Ibid, Section 11

key risk to the sustainability of investment. They are demanding not only improved disclosure on these matters, but genuine recognition of them in the development of business strategy.

“There is now a widespread recognition that these ESG risks and opportunities are financially material to companies and their shareholders, especially over the timeframes that are relevant to the investment objectives and liabilities of fiduciary investors and their beneficiaries... Against these trends, of course, those companies that fail to meaningfully address their long-term sustainability risks and opportunities – or that merely pay lip service to these issues through a minimalist compliance stance – will be increasingly exposed.”⁴

Specifically within the energy sector, one risk for investors in generation is the future price of carbon. While current government policy in Australia is for no carbon price, there is a substantial risk that a future government would impose or facilitate a significant price on carbon (or that international trade partners would impose a tariff on the carbon-cost of imports) well within the 50-year useful life of a new coal or gas-fired power station.

It would be far preferable to implement a well-considered, widely consulted upon and generally agreed Emissions Intensity Scheme now rather than risk policy reversals in the future.

Hence, as noted in the Preliminary Report, owner-investors are exiting emissions intensive power stations as they reach the end of their design lives (and, in a number of cases, earlier than this), and despite recent statements from the Federal Government, it is difficult to find any investors who are contemplating investing in new ones. Future investments in coal-fired generation seem very unlikely.

At the same time, the political and environmental concerns surrounding natural gas extraction and investment uncertainties may result in little or no investment in new or replacement gas-fired generation. This is a live debate and is subject to the usual tensions of federation, with different states adopting contrasting renewable energy targets and some states, such as Victoria, prohibiting the extraction of coal seam gas via the use of fracking.

2.3 Transparent pricing of emissions is likely to lead to the lowest cost solutions

Accurate pricing signals are the foundation of good investment decisions. The key contributors to improving the efficiency of the NEM and therefore ensuring that prices are no higher than necessary are as follows:

- 1) Technology – efficient development and adoption of improved technology in the supply and demand for energy
- 2) Planning – effective whole of system planning to give effect to energy and emissions policy
- 3) Investment – ensuring an efficient level and allocation of investment to developing supporting technology and supplying energy

Critically, each of these elements requires efficient prices to ensure that decisions about technology, planning and investment are properly considered. Decision-makers must accurately value the costs and benefits of various options and risks. Structures must be established that enable consumers to make efficient choices about how and when they use energy as well as the source of energy.

Efficient prices also support integrated energy and emissions policies that do not create distortions in markets or prices because of picking the solution rather than facilitating market outcomes. The most logical path to ensuring sound investment decisions that benefit consumers over the long term is to create the preconditions for efficient and transparent pricing and to allow the market to work out the lowest cost solutions.

⁴ ACSI submission to Senate Economic Legislation Committee’s Inquiry into carbon risk disclosure, April 2016

In this context, an Emissions Intensity Scheme should be one of the options considered by the Review process. It is unfortunate that this has to date been ruled out by government to this point, however, this should not preclude a considered assessment of its merits and an elaboration of how it might work as part of the basket of solutions proposed by the Review Panel.

3. Facilitating the transformation to a renewable energy sector

3.1 The future dominance of renewable energy is inevitable and irreversible

It is also clear that there is broad community support for the continued growth of renewable energy generation. In a survey conducted by The Australia Institute, 67% of respondents stated that they would support any political party committed to investing in large-scale solar and wind generation, with 63% of respondents supporting a policy of transition to 100% renewable energy by 2030⁵. Indeed, it is such public sentiment that is driving the initiatives of various governments to adopt increasingly ambitious renewable energy targets.

The trend towards further growth in renewable energy generation is evident in most industrialised economies and has been given impetus by government initiatives such as renewable energy targets. It is also being driven by developments in technology, which have rendered solar generation and batteries increasingly more cost effective.

As noted earlier, the major investors in coal-fired generation have indicated that they do not plan to extend the life of their existing power stations or replace them. Similarly, various lenders have expressed a reluctance to stand behind these types of projects in the future.

As a result, Spark Infrastructure believes that over a relatively short period, generation in the NEM will become dominated by renewable generation as the existing coal fired plants are retired. This will require significant changes to the operation and management of the grid.

3.2 Government policy needs to align with and support the transition to renewable energy

Investors value predictability above all else, and will consistently invest in response to credible price signals. In the current environment, investors are demonstrating by their actions that government policies and regulations only provide credible predictability and price signals where they are consistent with a long-term shift to low-carbon generation. While this could include some efficient gas generation if alignment existed between federal and state government policies, it is unlikely to include any future coal-fired generation.

In a fragmented and volatile policy environment, any large and long-term investment assumes a heightened degree of risk. While various energy market participants will have differing views on what is the most effective solution, all would agree that policy certainty across all levels of government and over time is desirable – and that this policy must address both generation and network stability.

Government policy must deliver integrated energy and emissions policy that does not create distortions in markets or prices as a result of picking the solution rather than facilitating outcomes.

3.3 Ensuring energy security in a ‘green grid’ requires integrated planning and regulatory reform

The current electricity system was designed with electricity generated by coal and gas-fired power stations that inherently provided frequency and voltage control (due to their spinning inertia) and were reliably dispatchable. The current system and regulations did not envisage substantial generation by distributed renewable sources that have no spinning inertia and are intermittent.

⁵ The Australia Institute, *Securing Renewables – How batteries solve the problem of clean electricity*, May 2016

The rise of renewable energy brings with it the challenges of intermittency and instability in the system. This leads to both the risk of rapid changes in system frequency or an inability to meet energy demand – both of which create potential disruptions that can affect the entire NEM.

Recent experience in South Australia, involving a statewide blackout and two load shedding events dating from September 2016 through to January 2017 have illustrated the vulnerability of the system to disruption. While this cannot, in large part, be attributed to renewable generation, it has highlighted the need for a greater emphasis on grid security and on the need for investment in the grid and ancillary services to ensure supply reliability and system stability.

Ensuring energy security in a green grid requires an integrated approach, including:

- a) **Many new renewable generation facilities**, to both meet increasing peak energy demand and replace retiring coal-fired power stations. Given the smaller size of typical renewable generators when compared to the existing coal-fired power stations, it is likely that the total number of generation facilities will substantially increase.
- b) **A wide diversification of renewable generation**, with both extensive geographic spread and a range of energy sources, to provide a more stable level of renewable generation than could be provided in any individual region.
- c) **Transmission/distribution connections** for all of the new renewable (and potentially gas) generators, and for any new customer developments.
- d) **Sufficient transmission capacity**, including extensive interconnectivity and sufficient redundancy, to prevent islanding.
- e) **Frequency control services**, which will need to be geographically spread across the NEM and which are most cost effectively provided by network businesses.
- f) **Voltage control services**, which could be provided from any location on the NEM (provided there is sufficient transmission capacity); voltage stability will require an appropriate geographic distribution.
- g) **Sufficient dispatchable/peaking capacity** to meet energy demand at times when intermittent renewable generation is low. This is likely to be from a combination of gas, dispatchable renewables (e.g. water and biomass) and storage.

Transmission and distribution networks will be crucial to connect the renewable generation to the National Electricity Market and to provide the capacity to transport energy from one end of the NEM to the other.

For example, we should provide extensive interconnection so that there is sufficient transmission capacity to meet the entire energy demand of South Australia from Queensland, NSW and Victoria in the event of a loss of wind. Similarly, South Australia's connection to the NEM should not be substantially vulnerable to disruptions on one transmission corridor from Adelaide to Melbourne.

Extensive interconnection is world's best practice for regions with high levels of renewable generation. For example the United Kingdom, which is facing a similar set of circumstances to Australia, is currently developing an additional seven interconnectors to supplement the existing four interconnectors. Research by National Grid Interconnectors in the United Kingdom estimates that if Great Britain's interconnector

capacity were to be doubled by 2020, then the wholesale electricity price could be reduced by around £1 billion per year.⁶

Other countries in Europe are also pursuing increased interconnectivity, including Germany and Denmark. Overall, the European Union has set itself a target to increase interconnectivity by 25% by 2020.

4. The perceived high cost of electricity – where does responsibility lie?

4.1 Wholesale prices and retail margins are higher than necessary

Any consideration of possible solutions to the energy trilemma must incorporate an accurate view of the markets dynamics at play and the roles, which various market participants have played in reaching the status quo. The total electricity price to consumers is comprised of a number of elements along the supply chain as follows:

- **The wholesale electricity price** that reflects the balance between generator capacity and consumer demand. Generators have the potential to benefit from any market imperfections that result in price increases. This may include a lack of adequate inertia that creates scarcity rents for providers of inertia; or a lack of sufficient Transmission and Distribution (T&D) capacity to connect isolated regions that creates the opportunity to impose scarcity rents when surplus power in one region is unable to be transported to areas with inadequate power.
- **T&D network costs** that reflect regulated investment levels and are subject to the Australian Energy Regulator's view of efficient operating and capital costs. The current regulatory system has demonstrated it can successfully reduce operating costs over time, and includes detailed scrutiny of the proposed investment programs.
- **Retail margins** that reflect billing and marketing costs and profit margins. Independent research and broker analyst reports based on public disclosures from ASX listed market participants suggest that very low levels of customer switching have allowed market costs and profit margins for tier 1 providers to reach very high levels compared to global peers.

4.2 T&D costs are falling, providing substantial reductions in cost to consumers

As identified in the Preliminary Report, the largest contributor to consumer prices over the period from 2008-2014 was investment by T&D businesses. However, it is important to note that the main driver for this investment was replacement of assets that required renewal after natural life cycles of 50-60 years. The delivery of T&D services requires large, expensive and long-lived assets and for this reason, investment is, by necessity, lumpy in nature. The increased costs of T&D do not represent a sustainable trend but rather reflect a foreseeable and temporary capital expenditure "hump" which comes around only every 50-60 years.

In addition, the relatively high cost of T&D in the recent past also reflected unusually high levels of investment in response to state government policies designed to deliver substantial improvements in resilience and security of supply. Network businesses must comply with reliability standards as a condition of their license to operate.

Most importantly, the recent increases in T&D costs are now in reverse with most networks providing substantial year on year reductions in cost to consumers. A series of AER Regulatory Determinations for T&D businesses from 2014 onwards have generally resulted in significant real price reductions, reflecting

⁶ Analysis produced by Barings/Redpoint for National Grid Interconnector Holdings Ltd, 2016

both lower investment levels and lower assessed capital costs. The current regulatory cycle will therefore reverse some of the price increases observed in 2008-14.

Electricity Network Transformation Roadmap⁷

As noted by the Review Panel's preliminary report, in 2016 Australia's national science agency, CSIRO, and the peak national body representing gas distribution and electricity transmission and distribution businesses in Australia, Energy Networks Australia have partnered to develop an Electricity Network Transformation Roadmap (the Roadmap).

This important piece of work identifies integrated measures that can achieve a positive energy future for Australian energy customers enabling choice, lower emissions, lower costs and high security and reliability, directly addressing the Review Panel's energy trilemma.

The Roadmap was developed through a two-year work program involving hundreds of stakeholders, an evidence base of 19 expert reports and unprecedented analysis of energy system outcomes to 2050. It advocates:

- A customer centred view with increased customer choice and autonomy supported by a growing range of market actors customised electricity solutions;
- The enabling of electricity networks to support and expand a diverse range of energy solutions at both the customer and transmission and distribution levels;
- Incentive based policy options capable of enabling least cost carbon abatement, with an Emissions Intensity Scheme, baseline and Credit Scheme at its heart;
- A fairer system through active implementation of tariff reform and modernised regulation and competition frameworks; and,
- An expanding range of new energy technologies and services supported by market based systems that reward customers with distributed energy resources and for providing network support services.

The Roadmap outlines the central role for electricity distributions and transmission networks in an integrated grid to deliver reliable and cost effective energy while at the same time facilitating the transition to a low carbon economy. Spark Infrastructure supports the Review Panels detailed consideration of the Roadmap in its deliberations.

4.3 Retail margins are high and growing, displaying a substantial information asymmetry

In light of the substantial real reductions in the cost to consumers of the T&D component of the electricity bill, we must ask the question: why is this not reflected in corresponding reductions to consumer's bills?

Spark Infrastructure believes the answer lies in the failure of market forces to deliver price reductions in the retailing of electricity.

There has also been a parallel failure of regulators and the market operator to recognise the threat posed by focusing on network costs and under-prioritising the reliability benefits of targeted network investment. The net effect of the latter point has been to increase both the quantum and the volatility of the wholesale price of electricity. This again serves to increase the profitability of energy retailers, while providing a negative outcome for consumers of electricity.

⁷ ENA and CSIRO, *Electricity Network Transformation Roadmap* – Dec 2016

Modelling undertaken by SKM-MMA for the Essential Service Commission of Victoria in 2013⁸, found that the increase in retailer's gross margins in 2006-07 to 2011-12 accounted for 20%-30% of the price increases observed in market and standing offers, respectively. That particular analysis found that retail margins remained higher in Victoria following deregulation compared to other states.

Further evidence of this is provided by the report prepared by Alviss Consulting for the St Vincent de Paul Society and funded by Energy Consumers Australia that was completed last year. That paper undertook a comparison of state-based analysis undertaken as part of St Vincent de Paul's Tariff-Tracking Project, which has been tracking changes to residential energy tariffs and reporting on household impacts since 2010. It also took into account contemporary public debate on energy market developments and reasons for price increases over 2016.

That report concluded, amongst other things, that retailers need an incentive to innovate around where they load up the cost to consumers. It asserted that, to date, retailers have had an incentive to hide behind the network businesses' service to property charge in order to significantly inflate their own fixed charges.

"What customers are not told, is that only a small part of the fixed charge goes to the network businesses, which is the same for everyone within the network, and the rest goes to retailers even though they may already charge you extra for posting a bill, processing your payment and any other 'additional service' they provide to keep your account open".⁹

A logical conclusion is that competition in energy retailing has failed to deliver the price reduction benefits proffered by theory. In fact, the one area where retailers have complete freedom to innovate, the way in which they structure their bills, has seen no innovation at all. This conclusion is supported by analysis conducted by the Australian Energy Markets Commission in its 2015 report¹⁰ on residential electricity price trends which appears to indicate that the drivers of retail bill increases are moving away from network related costs towards costs associated with the generation and retailing of electricity.

Consumers should be provided with greater transparency in relation to the various components of their bill. It is a precondition of good policy-making as well as sound commercial decision-making that high quality information is available. An understanding of where the costs are generated will inevitably lead to better decisions by consumers and policy-makers; and by encouraging innovation amongst energy retailers will hold out the hope that competition in this sector may yet deliver the benefits it has promised for so long.

The UK regulator, the Office of Gas and Electricity Markets (Ofgem) provides an example of what is being done overseas. It is requiring suppliers to take part in trials to find out the best ways of helping disengaged customers get a better deal. The trials are one of the remedies put forward by the Competition and Markets Authority (CMA) following its energy market investigation. The CMA found that two-thirds of customers who are on standard variable tariffs are paying far more than they need to.

The CMA recommended that Ofgem lead a programme of trials to identify more effective prompts and information to help customers get more out of the market. Ofgem is able to require suppliers to undertake the trials, which will start in mid-2017. They will cover such matters as:

- Suppliers telling customers what the cheapest deals are across the whole market
- Changing the name of standard tariffs, for example, to 'out of contract' tariffs
- Different ways of presenting information in domestic bills

⁸ SKM-MMA, *Analysis of Electricity Retail Margins – 2012*, May 2015

⁹ Alviss Consulting, *The NEM - A hazy retail maze*, December 2016

¹⁰ AEMC, *Residential Electricity Price Trends 2015*, 2015

- Changes to information customers receive once they come to the end of a fixed deal.

4.4 Current regulations create inappropriate incentives for generators

A report commissioned by GetUp! and undertaken by consultants CME (Carbon + Energy Markets) showed that the generation capacity that was available in the market still far exceeded the demand. However, besides those owned by Origin, all other fossil fuel generators continued to operate far below their capacity, only offering electricity to the market for a very high cost. The report further claimed that Snowy Hydro, Engie, AGL and Energy Australia were exploiting their market power to push up prices.¹¹

This view was echoed in the research paper authored by Dylan McConnell of the Melbourne Energy Institute that claimed that the huge spikes in wholesale electricity prices in South Australia during 2016 were the result of energy companies “gaming” the system and exploiting their unusual market power to charge “monopoly rents”.¹²

An alternative to greater interconnection, which has gained some prominence of late, is an increase in localised gas fired generation combined with capacity pricing. Such an outcome would be a retrograde step completely at odds with the prevailing national policy approach that has for some time sought to promote transparent and competitive market dynamics.

It would also seem to make no sense to create additional generation capacity on a localised basis when it appears that there is already sufficient generation capacity in the market. Paying capacity charges to gas fired generators to create further excess capacity is not only a far costlier exercise for consumers than investment in enhanced network interconnection, it would also appear to create a perverse market incentive for those participants whom under current regulations may have contributed to the problem.

As recent experience in South Australia has demonstrated, the lack of interconnectivity into that part of the country provides the potential opportunity for generators, particularly gas fired operators, to legally exploit any supply imbalances that may arise by constricting supply and inflating prices. This represents an example of significant market failure and entails a material cost to consumers of energy.

5. Minimising the cost of electricity in a green grid

The most cost-efficient provision of energy security will be achieved by ensuring each of the elements of the integrated electricity system are provided as cost-effectively as possible.

5.1 Energy prices will be minimised by adopting policies today that reflect the coming ‘green grid’

Wholesale energy prices will be lower if there is an efficient level of surplus generating capacity to meet demand at all except the busiest peak periods. If, on the other hand, there is insufficient generating capacity, prices will frequently spike during periods of relatively high demand, and the market will be open to manipulation by generators withdrawing capacity.

The extensive investment necessary to achieve the appropriate level of generating capacity (and ancillary services) requires credible and stable policy and regulatory regimes, to provide investors and lenders with risks that can be understood, managed and priced. To be credible and stable, policy and regulation needs to be designed for the energy market that is coming – a market dominated by renewable generation.

¹¹ CME GetUp!, *Australia's retail electricity markets: who is serving whom?* 2016

¹² Melbourne Energy Institute, *Winds of change :An analysis of recent changes in the South Australian electricity market,2016*

5.2 Extensive interconnection reduces the cost of renewable generation across the NEM

The different energy generating technologies and their respective geographic locations are complementary to the extent their energy outputs are imperfectly correlated across the day or are exposed to different weather conditions. At the same time, they each have different costs per kWh under differing circumstances.

The optimal mix of sites is likely to be widely spread from Northern Queensland to Tasmania and South Australia, with significant installations along both the east coast (particularly for the morning peak and high winds) and inland (with high solar reliability and well-timed for the evening peak).

We will best achieve the optimal mix of technologies and sites if pricing signals are not distorted by differences in incentives. It is therefore important that any incentives should be technology and location-neutral (e.g. without distortions by different state regimes).

The geographic diversification of generation will require extensive interconnection. However, the cost of this interconnection (estimated by AEMO¹³ to be ~4% of the investment in generation over the next 20 years) is low when compared to the additional cost of generation that would be required if each geographic region was required to be self-sufficient.

Nevertheless, despite the low cost of interconnection relative to the alternative of additional generation, interconnection is subject to a level of regulatory approval not required for generation. This RIT-T process distorts outcomes, and needs to be both accelerated and amended in its approach.

RIT-T

The RIT-T is generally acknowledged as an impediment to timely investment. ACIL Allen Consulting's report¹⁴ into the solutions for South Australia, written for the Australian Energy Council (representing the generators and retailers), identified a SA-NSW interconnector as the only proposal that met all ten technical criteria they identified, and would also have resulted in a reduction in SA retail prices. The reason that the report does not recommend the SA-NSW interconnector is the forecast time to implement, with significant time required for the RIT-T process.

While the existing RIT-T process is comprehensive and is likely to examine exhaustively all plausible alternatives, there is a considerable cost in time. There ought to be flexibility for the relevant state or national ministers to reduce timeframes, waive some of the stages and/or remove the need for the RIT-T in circumstances where the cost of delay is material and the plausible alternatives are few or well understood.

The current RIT-T is assessed entirely from the perspective of total cost rather than considering benefits for energy customers or the broader community. In doing so, it disregards:

- Consumer benefits arising from increased competition between participants in the wholesale energy markets. For example, while the capital cost (and direct increase in consumer prices) of a SA-NSW interconnector is considered, the reduction in scarcity rents earned by generators when SA has high demand relative to supply (and hence the indirect reduction in consumer prices) is not considered.
- Environmental benefits arising from transmission investments are not considered.

As a result of these exclusions, the RIT-T process may reject investments that would be of greater overall benefit to consumers and the community. The RIT-T process should be amended to ensure the broader considerations of the community and consumers are included.

¹³ AEMO, National Transmission Network Development Plan, December 2016

¹⁴ Acil Allen, *Integration of renewables in South Australia*, Sep 2016

The review undertaken by the COAG Energy Council, which reported in February 2017, found that the RIT-T in its current form remains the appropriate mechanism to ensure that new transmission infrastructure in the National Electricity Market (NEM) is built in the long term interests of consumers and remains an appropriate mechanism for the assessment of interconnection investments.

While the review made recommendations to improve existing arrangements, both the proposed changes and the reasoning behind them continue to fall short in our view. For example, the review made the point that the process for consideration of interconnector projects was not, and shouldn't be any different to other transmission projects and further that it was not appropriate to open the assessment to wider economic benefits because the customers paying for the projects to network tariffs should only pay for benefits to them.

While in principle this appears correct, it continues to consider only benefits to consumers accruing from the regulated network and ignores the positive impact on the total cost arising from the entire electricity supply chain. It excludes from consideration the broader tangible benefits that customers paying for the infrastructure would receive directly. These include downward pressure on the wholesale price of electricity and the avoidance of unnecessary costs associated with investment in excess generation capacity. These costs can be reasonably estimated and should be regarded as quantifiable.

5.3 Voltage control services can be most cheaply provided by T&D operators

Voltage control requires sufficient reactive power in each region of the NEM. Currently, some voltage control is provided as an inherent feature of thermal energy production.

As the share of thermal generation decreases, there will be increasing need for ancillary voltage control services. Because it is inherently localised, the demand for ancillary voltage control services in each individual region is likely to be too small to enable dynamic market competition (e.g. similar to the wholesale energy market). Instead, these services are likely to be best provided through contractual arrangements.

As demonstrated in southern NSW, T&D providers can provide cost savings through the provision of these services, with the customer benefiting from synergies with the remainder of the T&D business.

These potential cost benefits could be undermined by the new ring-fencing guidelines (which currently apply only to distributors), which will artificially remove some of the synergy benefits and are ambiguous as to whether distributors are permitted to provide all ancillary services.

To minimize energy costs, the ring-fencing guidelines should:

- Not be extended to Transmission Network Service Providers (TNSPs)
- Be amended for Distribution Network Service Providers (DNSPs) to require only clear cost-allocations, and remove the need for the separation of staff and branding that impose new costs on the distributors (and consequently on consumers) and reduce the service quality that can be offered
- Expressly permit T&D businesses to provide all ancillary services (including through energy storage).

The AEMC is also currently considering changes to its service contestability rules. This involves an attempt by some policy makers, retailers, and generators to exclude DNSPs from investing in Distributed Energy Resources (DER) as inputs to their monopoly service.

If these rule changes were to succeed, they would significantly constrain the ability of DNSPs to manage the challenges of new technologies such as DER and intermittent renewable generation. T&D businesses should be allowed to invest in ancillary services such as energy storage to allow these businesses to most efficiently deliver their monopoly services of providing a transmission / distribution network.

The fact that such a fundamental and inconsistent change to the regulatory framework is even being considered makes for an uncertain investment environment for DNSPs who are looking to proactively manage new challenges for customers using their networks.

5.4 Frequency control services can be most cheaply provided through open competition

To the extent additional frequency control services are required across the NEM (after voltage control is provided across each of the regions), it could in theory be provided from anywhere connected to the NEM as long as extensive interconnection was available. Currently such services are best provided locally, where there is a credible risk of islanding. In any case, the cost of frequency services is likely to be minimized through a competitive market, provided that:

- In regions at risk of being islanded (e.g. South Australia, Tasmania and Northern Queensland), the local issues discussed for voltage control apply and frequency control should be provided contractually. The experiences in South Australia in September 2016 demonstrate the potential for market failure once islanding has taken place.
- There is not excessive concentration of market power in frequency control. As the thermal generators are progressively retired, the concentration of market power in frequency control will tend to increase for the owners of the remaining thermal generators. It is therefore important that new entrants to the market, potentially including T&D operators or owners, also provide frequency control.

As noted in section 5.3, this would be facilitated by appropriate changes to the ring-fencing guidelines.

5.5 Wholesale generation prices will be minimized by removing restrictions on ownership

The price paid by consumers for generation will reflect the prices bid into the wholesale market. The bid prices will depend on the level of demand, the marginal costs of generation, and any surplus able to be captured by the generators by restricting supply. It is critical that there is enough competition between different owners of generation capacity at all times to avoid the risk of individual owners being able to benefit by restricting supply.

It is therefore important that there be as many different owners of generators as possible. Consequently, prices will be most competitive if there is (in addition to the incumbents) substantial investment by new entrants to the generation market, which could include transmission or distribution operators or investors.

The original justification for strict separation between generation and T&D was valid in the past energy market with T&D monopolies over new connections and a high concentration of generation. The separation is now unnecessary and anti-competitive due to both:

- Full contestability for new network connections (so that a T&D operator cannot restrict supply by preventing connection)
- The improbability that any T&D owner or other new entrant could achieve significant market power in generation without buying existing traditional generation facilities (which would be subject to ACCC approval, and could be specifically prohibited).

In addition to generation, peaking capacity can be provided by bulk energy storage, which can reduce peak wholesale prices. Bulk energy storage can provide voltage and frequency control services in addition to peaking capacity. T&D operators have clear advantages in providing bulk energy storage, including through the optimisation of the broader network development inclusive of energy storage, reducing overall costs.

5.6 Renewable generation connection costs will be cheaper without ring fencing

The new generators, whether renewable or otherwise, will require connections to the grid. From 2018, these connections may be able to be provided by anyone with the appropriate technical competence. This competition should be able to ensure that the connections are provided as cheaply as possible.

However, the recent ring-fencing guidelines applying to distributors may have the effect of increasing the cost of these connections, by reducing the synergies between new connections and the regulated network. Rather than seeking to maximize the benefits from synergies arising from connections, which could reduce both the cost of connections and reduce the costs attributable to the regulated network, the guidelines impose strict separation between the regulated and non-regulated businesses. This may, for example, require duplication of staff in remote locations – both increasing costs (ultimately passed on to customers) and reducing service levels (for example, by reducing response times).

While the intent of the ring-fencing guidelines is pro-competitive, it achieves this at the expense of the customers by increasing the costs and reducing the service quality that can be provided by any operator with potential synergies.

As noted in section 5.3, the renewable generators will receive a better service at lower cost if the ring-fencing guidelines are replaced with a simple requirement for clear cost allocations.

5.7 The role of the market operator should be given a greater regional focus

Increased complexity in the system will require more regional operational control, as opposed to the centralised system that currently operates under AEMO. The growth in Distributed Energy Resources is likely to require a move away from a single centralised market with few generation participants to multiple regional markets with many participants. This is a fundamental shift that effectively renders redundant the single, centralised approach to generation dispatch that is currently in operation.

At the same time, AEMO is coming under increasing scrutiny in relation to its role and effectiveness in the recent supply outages in South Australia and near misses elsewhere. The transparency of its operations has attracted public attention, as has its governance structure. AEMO is a company mandated to operate the market rather than an independent regulator and it is 40% owned by industry. It is inevitable that this structure will lead to real or perceived conflicts of interest. This is particularly so given that AEMO typically acts as a regulator would and as a policy advocate, areas which strictly speaking are outside its explicit role as the market operator.

There is scope to alter the composition of the Board of AEMO to better reflect both its own industry membership and the full range of market participants who are increasingly important players in the evolving National Electricity Market.

Notwithstanding the outcomes of the 2015 Vertigan Review into energy market governance arrangements, the Review Panel should consider the effectiveness of AEMO in its current form and what potential reforms may be implemented to increase transparency and increase market and consumer confidence in its operations.

6. Policy and regulatory enhancements

1. Adopt policies and regulations today that reflect the coming ‘green grid’

Private sector investment is critical to ensuring a future secure energy supply. Further, private investment in network infrastructure has resulted in lower prices and improved performance.

The extensive investment necessary to achieve the appropriate level of generating capacity (and ancillary services) requires credible policy and regulation today that is designed for the future energy market that will be dominated by renewable generation. Only by designing policy and regulation for the long-term will sufficient investment certainty be provided.

A central component of ensuring the implementation of lowest cost solutions is the provision of efficient pricing signals to market participants and to consumers. The introduction of an Emissions Intensity Scheme should be squarely within the frame of reference of the Review Panel.

2. Facilitate extensive interconnection by reforming the RIT-T process

The current RIT-T process is sufficiently exhaustive that the process is cited as a reason to undertake non-transmission alternatives that are acknowledged to be otherwise inferior. It also excludes from consideration some of the major benefits of connectivity.

There ought to be flexibility for the relevant state or national ministers to reduce timeframes, waive some of the stages and/or remove the need for the RIT-T in circumstances where the cost of delay is material and the plausible alternatives are few or well understood.

The RIT-T process should be amended to ensure the pro-competitive benefits of greater interconnection and environmental benefits are included.

3. Remove the artificial cost imposed by the ring-fencing guidelines

To minimize consumer costs arising from generator connections, energy storage and ancillary services, the ring-fencing guidelines should:

- Not be extended to transmitters
- Be amended for distributors to require only clear cost-allocations, and remove the need for the separation of staff and branding that impose new costs on the distributors (and consequently on consumers) and reduce the service quality that can be offered.

4. Remove the anti-competitive restrictions on market participation

To reduce market concentration, and the potential for market manipulation at times of high demand: expressly permit T&D businesses to provide all ancillary services, energy storage, and investment in new renewable generation.

5. Provide consumers with greater transparency in customer billing and facilitate switching

To promote better decision-making by consumers and policy-makers; and to encourage innovation by energy retailers: consumers should be provided with greater transparency in relation to the cost of various components of the electricity supply chain through clearly itemised billing and proactive communication with disengaged customers to assist them to reduce their tariffs.