Strategic Priorities for the Australian Energy Sector

Response to Discussion Paper

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Energy Networks Australia

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Overview

Energy Networks Australia welcomes this opportunity to make a submission to the Australian Energy Market Commission's (AEMC's) *Strategic Priorities for the Australian Energy Sector Discussion Paper.*

Our Association represents Australia's energy grid supporting all Australian customers with over 900,000 km of electricity transmission and distribution lines and almost 90,000 km of gas distribution mains.

Energy Networks Australia was supportive of the recommendations of the *Review of Governance Arrangements for Australian Energy Markets* (the Governance Review) including the recommendation that the AEMC should prepare a major policy paper every three years containing advice on strategic direction, policy priorities and a work program.

Energy Networks Australia understands that this AEMC review will be an input into the Energy Security Board's advice to the COAG Energy Council on developing a Strategic Energy Plan.

In general, Energy Networks Australia believes it is useful for priority setting to take into account recently completed and current rule changes and reviews. However, the scope of the Terms of Reference requested that the report should cover significant current and potential challenges, risks and opportunities relating to the energy policy, regulatory or operational environment. Energy Networks Australia believes that the advice provided to the Energy Council needs to focus particularly on this forward-looking component.

That said, Energy Networks Australia supports the AEMC's identified goals and progress measures. Many of the AEMC's identified goals align with previous reviews such as the Finkel Review and the joint Energy Networks Australia/CSIRO publication: The Electricity Network Transformation Roadmap Final Report.

The Australian electricity system has experienced historic shifts in the last five years that have seen:

- A decoupling of energy consumption from economic growth.
- The rise of rooftop solar PV penetration to world leading levels.
- The loss of synchronous generation in the weakly connected system of South Australia.
- Significant increases in renewable energy capacity affecting physical and financial markets as well as the operation of incumbent generation.

In addition to market uncertainty, the policy and regulatory environments have become increasingly less predictable in the NEM. There is strong consensus among stakeholders that a lack of an agreed national approach can undermine stable and enduring policy and threatens outcomes for customers. This has been evidenced in:

- poorly integrated carbon and energy policy;

- multiple and overlapping policy reviews on similar issues;
- inconsistent State and Federal Government frameworks; and
- inaction or inconsistent implementation of agreed COAG Energy Council reforms.

Energy Network Transformation Roadmap

Australian energy networks have collaborated with the national science agency, CSIRO, in the landmark study, the Electricity Network Transformation Roadmap. The two-year analysis produced a comprehensive transition plan for the electricity grid to *keep the lights on, bills affordable and decarbonise electricity.* This Roadmap is to help guide network businesses to an efficient and timely transformation. The Roadmap focuses on improving consumer outcomes during the transition.

The Key Concepts Report for the Electricity Network Transformation Roadmap[1] identified measures, which could see 10 million participants using the grid as a platform for energy exchange, customers saving over $414 per year on average, total savings of $101 billion in system expenditure and zero net emissions for the electricity sector by 2050.

The Roadmaps analysis found that **coordinated, timely action** to changes in the energy system can deliver more choice and control for Australian energy customers, while maintaining system security and meeting international climate change commitments. In fact, CSIRO's analysis confirmed that Australia's electricity sector could exceed its share of current national carbon abatement targets, achieving 40% below 2005 levels by 2030. The analysis also suggested it is possible for the electricity sector to maintain a reliable, stable grid while achieving zero net emissions by 2050, in line with the aspiration of the Conference of the Parties (COP 21 Paris Agreement – December 2015) to the United Nations Framework Convention on Climate Change.

Realising these opportunities relies on strengthening NEM institutions and markets in which investors – whether they are utilities, new innovators or households – can make decisions without unnecessary policy risk.

Our submission focusses on the AEMC's Discussion Paper's main chapters.

The links between energy market issues

With regards to Chapter 3 on the links between energy market issues Energy Networks Australia considers that the links between energy market issues needs to be broadened to be more focussed toward the important links to whole of system security and reliability.

Energy Networks Australia suggests that the AEMC's approach shows a reliance on ***market based responses*** for energy security within the broad parameters specified in

[1] CSIRO and Energy Networks Australia 2016, Electricity Network Transformation Roadmap :Key Concepts Report (Roadmap)

Reliability Standard & Settings as opposed to a broader focus on system wide inter-relationships addressing system reliability and security.

Energy Networks Australia notes that one of the Finkel Review's key recommendations was for greater strategic planning of transmission infrastructure in Australia, including a new planning mechanism to allow for the efficient development and connection of new Renewable Energy Zones. These zones are gaining international prominence as a transmission-planning tool to enable the "scale up" of penetration of solar, wind, and other resources on the grid.

The Panel also proposed AEMO and Transmission Network Service Providers (TNSPs) develop an Integrated Grid Plan. The first plan is due to be released by mid-2018 and should "determine the optimal transmission network design to enable the connection of renewable energy resources, including through inter-regional connections."

Energy Networks Australia notes that it is important that the pursuit of financial markets outcomes properly consider the physical elements supporting the system.

Consumers

Concerning Chapter 4 on Consumers, Energy Networks Australia supports the AEMC's identified goals of:

- efficient pricing and affordability;
- accessible information;
- engagement and participation and
- protections.

With regard to the ability of consumers to choose the best plan for their circumstances, Energy Networks Australia suggests that further enhancements of the Australian Energy Regulator's (AER's) Energy Made Easy comparator website may be helpful.

Currently, customers may have difficulty understanding factors such as controlled load and peak load. New retailer offerings, such as flat subscription fees and energy passes, as well as the move from single rate to time of use metering can further complicate the comparison. Additional factors include varying solar feed-in tariffs and in the future may include payment rates for selling excess electricity to retailers or aggregators.

The multitude of options can make it very difficult for consumers to make the best choice for their circumstances. This situation is further exacerbated if the consumer does not have access to or ability to use the internet or speaks English as a second language.

For many years, consumer groups and other stakeholders have advocated a thorough and inter-jurisdictional review of energy assistance programs available in different States and Territories. Every State and Territory has its own energy assistance programs. These programs would benefit from being standardised across jurisdictions,

being appropriately means tested and being administered by the Australian Government, on behalf of the States and Territories, through the tax and transfer system. Eligibility for assistance should be automatic for those whose income qualifies them for assistance. Customers should not have to apply. The amount of assistance available should take into account factors such as household size and the number of dependents.

Energy Networks Australia supports the Finkel Review recommendation that the COAG Energy Council should engage with relevant portfolio areas including housing, and with state, territory and local governments, to identify:

- opportunities to accelerate the roll out of programs that improve access by low income households to distributed energy resources and improvements in energy efficiency; and
- options for subsidised funding mechanisms for the supply of energy efficient appliances, rooftop solar photovoltaic and battery storage systems for low-income consumers.

We note that a number of State Governments have existing funding arrangements of this nature in place for low-income households. Energy Networks Australia supports both the Finkel Review and AEMC recommendations regarding improving the accessibility of information for consumers.

Energy Networks Australia notes the Finkel Review recommendation and the COAG Energy Council tasking of the AEMC to undertake a review to recommend a mechanism that facilitates demand response in the wholesale energy market. We understand that this review will be completed by mid-2018 and include a draft rule change proposal for consideration by the COAG Energy Council. Energy Networks Australia agrees that the outcomes from this review has the potential to enable consumers to benefit from their investment in distributed energy and storage technology.

Integration of energy and emission policies

With regard to Chapter 5 on the integration of energy and emissions policies Energy Networks Australia supports the AEMC's identified goals of:

- a sustainable national emissions reduction strategy;
- a coordinated emissions reduction trajectory for the national energy market; and
- a credible long-term emissions reduction mechanism.

Energy Networks Australia advocates for the following energy and emissions policy settings:

1. ***Australia's response to climate change should be integrated with energy policy and measures should be built in to ensure implementation is 'followed through'.***

   Energy and emissions (climate) policy should not be set in isolation but be integrated with the other consultation processes underway across the Australian

economy and consider how electricity, other energy and non-energy emissions can be reduced in an economy wide response.

2. ***Technology neutrality and flexibility, rather than prescription will deliver better customer outcomes.***

   Adopting a technology neutral approach to carbon reductions provides the lowest impact to customers.

3. ***Incentives play an important part in the energy market transformation.***

   The Electricity Network Transformation Roadmap suggests a 'co-optimised' energy system could reduce average network costs by 30% below 2016 levels by 2050 and contribute to total system savings of over $100 billion by 2050.

4. ***There are multiple pathways to deep decarbonisation.***

   The Roadmap concluded a plausible projection for meeting wholesale energy requirements and achieving zero net emissions by 2050 in which there is a primary role for storage in balancing the output of intermittent variable renewable energy. While battery storage is forecast to provide the dominant new source of energy balancing, a diversity of potential solutions exist which could be employed as alternative options while still achieving zero net emissions including:

   - renewables diversity (technological and geographical)
   - pumped hydro storage
   - co- and tri-generation
   - power to gas hydrogen storage
   - concentrated solar thermal generation or gas-fired generation supported by carbon capture and storage (CCS) technology
   - firm (dispatchable) renewable capacity
   - demand management.

5. ***Gas has a significant role to play in Australia's energy system***

   The co-dependent relationship between electricity and gas systems in Australia should be recognised. In 2014/15, gas provided 18% of total electricity generation. As a flexible generation technology, gas fired power stations can provide a critical balancing service, enabling higher penetration of variable renewable energy. This requires market participants to have sufficient commercial confidence to underwrite plant availability and gas contracting.

   Domestically, industry, businesses and households also use gas and its use needs to be included in an integrated energy and emissions policy.

6. ***Transmission interconnection, battery storage and secure gas supply are vital to creating a low emissions future.***

   An increasing proportion of intermittent generation will be made possible by greater inter-regional transmission capacity. This capacity will allow for better management of intermittent generation profiles using geographic diversity, lower energy prices for consumers, and greater energy security and emissions reduction benefits from better utilisation of renewable energy resources. The transmission network will also increasingly provide ancillary services to stabilise the power system.

7. ***Support to ongoing research and development, and demonstration of low emission technologies.***

   Research and development, and innovation allow new low emission technologies to be developed, tested and introduced to the market.

System Security and Reliability

With regard to Chapter 6 and 7 on System Security and Reliability Energy Networks Australia notes that the chapters are a good summary of current arrangements and significant trends. Energy Networks Australia supports the AEMC's identified goals, initiatives and work plans.

Energy Networks Australia considers that it would be helpful for the AEMC to update the initiatives and the tabulated summary at the end of each Chapter on a two to three monthly basis. This would be a valuable resource for stakeholders.

Energy Networks Australia sees a need for policy certainty. During a period of numerous fast-moving and inter-dependent reviews, significant investment risks to an efficient energy transition will result from blurred governance, dysfunctional markets, poorly coordinated policy, and regulatory frameworks. This includes risks emanating from multiple and overlapping reviews on similar issues. These include, but are not necessarily limited to:

- Sun Metals' Five Minute settlements rule change. Based on the direction of the AEMC's draft determination, this is likely to fundamentally change the wholesale market and should be better defined and understood, before further action on this rule change;
- AEMO's Generator Technical Performance Standards 2017 rule change and its impacts on power system security;
- AGL's inertia ancillary services market rule change;
- Westpac's Secondary Trading of settlement residue distribution units rule change; and
- the AEMC's impending Frequency Control Frameworks Review.

The AEMC should be vigilant in providing on-going clarity in such an environment.

There are two rule changes that deal with minimum levels of inertia and related fault levels/system strength, including the 'do no harm' obligation on new generators, which are new and place obligations on TNSPs and other nominated parties. Where there is so much fluidity and concurrent inter-related NEM developments, it may be appropriate to allow the AEMC's newly approved arrangements for minimum levels of inertia to be operationalised and to work as envisaged for a period.

Effective Markets

With regard to Chapter 8 on effective markets, Energy Networks Australia notes that the AEMC appears inclined toward maximising market outcomes on the belief that this will deliver preferable customer outcomes without first considering a broader system view, which may deliver improved customer outcomes when compared to a solely market focussed approach.

Energy Networks Australia considers that a system-wide, consumer-outcome perspective should guide the approach to developing markets. Just as there are considerable potential benefits of a well-functioning market, there can be significant costs to consumers from dysfunctional markets, as we can see all too readily at present. In addition, some of the most competitive well-functioning markets (e.g. financial institutions) have some level of central planning and co-ordination.

Energy Networks Australia considers that the AEMC should further explore these issues as part of this Review, including consideration of relevant evidence and international experience.

We continue to recommend the Commission adopt an approach that does not prejudge particular outcomes, noting that the future investment identified may occur and be influenced by evolving market and regulatory environments to the one we have now.

The AEMC notes that networks are being required to implement more cost-reflective tariff structures. This should enable retailers and consumers to make more efficient consumption decisions.

Energy Networks Australia notes that networks have actively sought to progress tariff reform under the Rules framework implemented by the AEMC and administered by the AER.

Networks have progressed this work despite the fact that under revenue cap regulation, tariff reform is 'revenue neutral' to the network service provider. Networks have vigorously pursued revenue neutral tariff reforms on the basis that, to the extent that poorly designed market frameworks or government interventions limit timely progress on tariff reform, the risks will affect customers most directly.

Further analysis by Energeia for the Roadmap found that without action on pricing reform, customer cross-subsidies would increase significantly, disadvantaging those unable to take up new technologies. The electricity bill of a medium sized family unable to take up distributed energy resources would be over $350 per annum worse

off in 2027 and up to $600 per annum worse off in 2050 due to increasing cross subsidies, compared to the Roadmap scenario.

This compares to a 'co-optimised' energy system could reduce average network costs by 30% below 2016 levels by 2050 and contribute to avoided network expenditure of $16 billion by 2050. However, this is reliant on:

- First wave tariff reform: networks providing cost-reflective network tariffs to the universal customer base to increase efficiency and fairness; and
- Second wave incentives: networks providing incentives for grid support services 'in the right place, at the right time'. Customers would be paid to avoid the need for network investment in return for orchestrating distributed energy resources (whether distributed generation, storage, demand response, etc.).

A critical finding of the Roadmap was that the fairer system of prices could only be achieved in the requisite timeframe through changes to tariff assignment policy. Existing Australian tariff assignment policy predisposes retailers to continue to assign customers to legacy tariffs unless the customer makes a conscious decision to adopt a different retail product including a cost reflective network tariff. However, waiting for customers to opt-in to new network tariffs fails to achieve timely take up of fair and efficient network tariffs, with 70% of customers forecast to remain on legacy tariffs in 2026. Based on current take-up rates in Victoria and other States, this forecast is likely to be understated.

Despite the promotion of tariff reforms by the AEMC and acceptance by COAG Energy Council, AER and diverse stakeholders of the benefits and desirability of change, cost reflective network tariffs will not be delivered by relying on market actors in the current regulatory context. Many electricity distribution businesses have had some form of cost-reflective tariff available for small customers - some over a long period. However, take-up has been very low in most jurisdictions, as evidenced by the table below:

NEM Region	Average years alternative cost reflective tariffs available	Customers still assigned to legacy volume tariffs (%)
NSW/ACT	14	88%
QLD	5	100%
VIC	14	89%
SA	2	100%
TAS	8	100%
NEM	11	**92%**

Customer take-up has of cost reflective network tariffs has been limited due to a number of factors[2]:

- the penetration of advanced meters is a critical prerequisite. The Roadmap recommended active monitoring of market outcomes following the introduction of

[2] See Energy Networks Australia (2016) *Electricity Network Tariff Reform Handbook*,

contestable metering. It also recognised that without an active tariff assignment policy, even high levels of advanced meter penetration will remain unutilised for cost reflective tariffs.

- State government interventions to prevent assignment even where the customer retained the opportunity to 'opt out' to current tariff structures; and
- policy assumptions that retailer will actively market retail tariffs based on cost reflective network tariffs and that customers will actively engage with new offers and 'Opt In'.
- Current regulatory arrangements requiring network businesses to meet a customer impact principle in developing network tariffs where it has little control over how the network portion of the bill is carried through to the final customer.

Currently in most jurisdictions, the retailer effectively has more control than the network provider in whether the retailer receives a cost reflective network charge for small customers. As highlighted in a Victorian Government Order in Council mandating Opt In frameworks, the network must comply with the retailer assignment of the customer to a cost reflective or legacy tariff. Customer recruitment to cost reflective tariffs is beyond direct control of networks.

Energy Networks Australia suggests that the AEMC should consider recommending:

- that Governments remove barriers to cost reflective network tariffs being provided to electricity retailers, noting Tariff Structures Statements are independently approved by the AER;
- should Governments wish to retain an 'opt in' model in which end use customers must actively choose to enter into retail market offers reflecting cost-reflective network tariffs, this policy need not impact the ability of the network to provide a cost reflective network charge to the retailer; and
- greater transparency of metering churn rates and options, which would see a faster penetration of meter uptake.

Networks

With regard to Chapter 9 on networks Energy Networks Australia notes that over the coming decades, the energy market will transition from one in which most energy is sourced from large-scale transmission connected generators, to one where 50% or more of energy is provided by distribution connected resources.

Modelling in the ENA-CSIRO Roadmap found that the forecast scale of these resources is such that unanticipated orchestration and inevitable bidirectional flows of energy could breach constraints even at transmission level and put overall system security of supply at risk. Energy Networks Australia considers that a critical issue is that these resources, if not controlled appropriately, could result in widespread overload and/or invoke of technical constraints on the distribution network. Dealing with this potential issue will require:

- significant enhancement of network visibility, communications and control functionality;
- the development of advanced power system architecture;
- an improved interface with AEMO, in mapping, monitoring, and forecasting DER;
- capability in overlaying two way flows across the system and managing them in a way that ensures the greatest amount of DER can be used for the greatest amount of markets;
- accurately forecasting energy and demand – at different time scales and at different levels of the network; and
- increased data transparency (including for customer participation and planning) is also necessary to ensure fair access for all parties.

Energy Networks Australia suggests that it is important for future regulatory and market frameworks to deal appropriately with these issues.

The AEMC's focus in section 9.2 ("Networks as efficient platforms for energy services") is on its own review of the coordination of generation and transmission investment. Energy Networks Australia is concerned that it fails to discuss or prioritise other important workstreams in this area, in particular the following recommendations of the Finkel review:

- AEMO should have a stronger role in planning the future transmission network, including through the development of a NEM-wide integrated grid plan to inform future investment decisions.
- Significant investment decisions on interconnection between states should be made from a NEM-wide perspective, and in the context of a more distributed and complex energy system.
- AEMO should develop a list of potential priority projects to enable efficient development of renewable energy zones across the NEM.

These recommendations flowed from one of the "three pillars" of the Finkel review – better system planning. However, they are not addressed in the AEMC discussion paper. This suggests that, while the Finkel review recognised the importance of these measures, the AEMC's priorities discussion paper does not reflect the significance and the priority which should be attached to progressing them.

In addition, Energy Networks Australia notes that it will be vital to ensure that the design and operation of the regulatory investment test for transmission (RIT-T) is consistent with the transmission investments identified through the integrated grid plan, if the NEM is to make a successful transition towards renewable energy sources. The interaction of the RIT-T with NEM-wide system planning and the identification of strategic transmission investments should be identified as a priority workstream by the AEMC.

Gas

With regard to Chapter 10 on gas, Energy Networks Australia supports the AEMC's proposed goals of:

- access to efficiently priced gas;
- access to efficiently priced pipeline infrastructure; transparent market information; and;
- gas market reforms, including gas trading and secondary capacity trading.

Energy Networks Australia notes that most of the reforms mentioned in this chapter relate to gas supply and gas transmission. Regarding the AEMC's Review into the scope of economic regulation applied to covered pipelines Energy Networks Australia considers that the economic regulatory provisions of the National Gas Rules (NGR) have worked effectively in producing customer outcomes of efficient, safe, reliable provision and growth in network services.

Parts 8-12 of NGR contains unique, positive features and flexibilities that have broadly supported good customer outcomes – including lower cost, light-handed options recognising diverse market circumstances, and a capacity to allow for the evolution and introduction of incentives without rule changes.

Looking forward, there are a number of modest improvements that could be made to ensure the regime supports good customer outcomes in the transition to a very different future for gas networks

Governance

With regard to Chapter 11 on Governance, Energy Networks Australia supports the AEMC's proposed goals of enhanced:

- leadership and strategic direction;
- role clarity and coordination;
- responsiveness to market changes.

Energy Networks Australia supported implementation of the recommendations from the Review of Governance Arrangements for Australian Energy Markets and the relevant governance related Finkel Review recommendations. Concerning implementation of the recommendations from the Governance Review Energy Networks Australia notes that regular updates on the progress on implementation of Governance Review recommendations have not been forthcoming. Recommendations around improved arrangements to ensure effective consultation with relevant stakeholders also appear not to have been consistently implemented, with significant and complex matters at times released with 2 weeks or less consultation time.