Committee Secretary
Senate Standing Committees on Environment and Communications
PO BOX 6100
Parliament House
Canberra ACT 2600

January 2015

Re: The Performance and Management of Electricity Network Companies

Dear Committee members and secretariat

Thank you for the opportunity to provide input into the Inquiry into the performance and management of electricity network companies (the Inquiry).

The Energy Efficiency Council is the peak body for energy efficiency, energy management and cogeneration. Our members are Australia's top experts in these topics and help thousands of homes and businesses each year to save money on their energy bills.

The regulation and management of electricity networks must be guided by the National Electricity Objective, which is to *"promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity".*

In 2012 we presented to the Senate Select Committee on Electricity Prices to highlight that the way that networks were regulated and managed was not in the long-term interest of consumers. Regulatory problems had resulted in excessive investment in the network, which was the main factor driving a 70 per cent increase in electricity prices in the National Electricity Market (NEM) region in the period 2007-13. A number of recent studies found that network charges in the NEM region are now amongst the highest in the world.

Much of the excess investment could have been avoided if:

- Policy makers and industry had less of a supply-side bias, including the application of inappropriate, infrastructure-based reliability standards to networks.
- Network Service Providers (NSPs) had been properly regulated and incentivised, including incentives to balance supply-side and demand-side investments.
- Peak demand rises in the late 1990s and early 2000s (largely driven by air conditioners) had been managed by a combination of appropriate tariffs, peak-management programs and better standards for homes and air conditioners.
- Projections of electricity demand over the period 2005-2012 had been more accurate, by accounting for changes in consumer appliances and behaviour, which were well-known and predicted by a number of experts.

Since the 2012 Senate Select Committee handed down its recommendations there have been attempts to improve a number of aspects of the regulatory system, and both the Australian Energy Regulator (AER) and state governments are making attempts to rein in spending by NSPs.

However, the adequacy of these measures in addressing the issues that they target is questionable, and a number of regulatory problems still haven't been addressed. If these issues are not addressed, they will contribute to stranded assets and further unnecessary increases in electricity bills, particularly given the significant changes that are underway in the way that energy is generated and used.

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The Council notes that a number of overarching issues need to be addressed in the way that electricity networks are managed, including the adequacy of regulatory oversight of NSPs. We note that the Energy Users Association, Public Interest Advocacy Centre and Bruce Mountain have provided extensive submissions on these topics and we do not focus on them in this paper.

This submission focuses on the failure to properly tackle distortions that prevent an optimal balance between supply-side and demand-side investment. We recommend:

- Ensuring incentive structures reward NSPs for delivering quality services to consumers, rather than for expenditure on infrastructure. As part of this broad issue, NSPs should be incentivised to invest in projects that reduce peak demand where it provides capacity more cheaply than expenditure on poles and wires. This will require decoupling network revenues from the amount of energy that is consumed, a system which is commonplace in the US and other jurisdictions.
- Requiring networks to report a set of metrics on the amount of capacity that they provide using demand-side (non-network) solutions and, if necessary, setting minimum targets for non-network solutions. Network companies have a lot of experience in building infrastructure to meet demand, and very little history with peak-reduction and demand-reduction projects that can be much cheaper. On their own, incentives will take a long time to change this culture; a reporting and benchmarking system alongside the incentives should drive change more quickly.
- Establishing much clearer rules and guidance for network companies in setting tariff structures that are fair and encourage efficient investment by both consumers and energy suppliers.
- Immediately transitioning from deterministic network planning to probabilistic network planning, as this has long been approved by regulators.
- Ensure that networks engage fairly with distributed generation and non-network solution providers, through a number of measures, including appointing an individual with oversight on this issue inside one of the existing regulatory bodies. An increasing proportion of network services are no longer natural monopolies, but can be actively contested by a range of service providers. However, as regulators still regard NSPs as natural monopolies, NSPs they are able exert inappropriate market power and emerging competitors have to negotiate with NSPs to deliver their services.
- Strengthen the suite of policies that support a more cost-effective balance of supply-side and demand-side solutions, including identification of the network-wide opportunities for saving energy in areas like heating and cooling equipment, reducing energy use in government agencies and minimum standards for appliances and buildings to protect consumers.

We look forward to the opportunity to present to the Senate Committees on these matters during one of your hearings.

Yours sincerely

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1. Energy Services

The *"long-term interests of consumers"* are best served by minimising the cost to consumers of 'energy services', which means minimising total energy bills, not just electricity prices. Residential and business consumers do not consume electricity directly, but use it as an input into a number of 'energy services' such as thermally comfortable homes, warm food, computing and the production of aluminium.

Delivering energy services to homes and businesses in a cost-effective manner involves the cost of energy, the cost of transporting that energy to the building, the cost of appliances (e.g. fridges) and the efficiency at which appliances convert energy into services. For example, even if electricity prices are low, a household that owns an inefficient fridge will waste a lot of energy and have a high energy bill. If that household installed a more efficient fridge, their energy bill would go down.

It is often assumed that energy market issues should be considered separately from issues in the markets for energy-using goods and services. However, regulatory distortions in electricity markets can distort the market for energy-using goods. For example, the lack of adequate time-of-use pricing meant that electricity consumption in peak periods was subsidised, significantly reducing the incentive for households to buy smaller, more efficient air-conditioners or improve the thermal efficiency of their home. We encourage the Committee to consider where distortions in energy markets distort energy supply, energy use or allied markets.

The role of electricity networks is not to sell electricity, but to provide a number of key services that facilitate affordable energy services. In a basic sense, networks provide a service by connecting consumers and off-site energy generators, giving the former access to energy and the latter access to customers. However, they also connect together multiple consumers and generators, increasing the security and affordability of energy by balancing out changes in supply and demand. At its simplest, this allows supply to be maintained even if one generator goes offline. However, it also allows us to lower the cost of supply. Periods of high demand by some customers are offset by periods of lower demand by other customers, which means that we need to build less infrastructure to service customer needs.

This highlights that the role of NSPs is not just to build infrastructure, but to provide services that connect generators and consumers together in ways that improve the affordability and reliability of energy services.

The most affordable way to provide capacity will be a combination of supply-side (e.g. poles and wires) and demand-side services. There are good examples of networks providing demand-side services to improve the reliability and affordability of energy services. For example, Ergon offers consumers lower tariffs if they agree to allow Ergon to remotely manage the load in their air conditioner, reducing peak demand whilst keeping these homes cool. This system provides reliable service capacity at a much lower cost than expanding distribution infrastructure (e.g. poles and wires), which lowers energy bills for consumers in the Ergon region.

However, despite a number of positive examples it is widely agreed that electricity networks are vastly under-utilising the potential for demand-side strategies to reduce the cost of providing services. As a result, the costs of network services in Australia are higher than they need to be.

It is critical to note that energy consumers, retailers and other parties also directly play an important role in ensuring the most cost-effective mix of supply-side and demand-side strategies in meeting consumers' demand for energy services. For example, when consumers choose more efficient fridges it reduces the need to build both generation and network infrastructure. While NSPs may play no role in these decisions, electricity regulations, tariffs and markets should encourage the most efficient solution across the energy supply and consumption chain.

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2. Adapting to global changes in the long-term interests of consumers

It will be critical to improve the way that we regulate and manage networks in the next five years, including better use of demand-side strategies. From 1950 to the late 1990s electricity in Australia was largely generated by large, centralised coal-fired and gas-fired generators, and consumers had a relatively stable pattern of energy use. As a result, much of the regulation and management of the NEM was optimised around this technology and consumption pattern.

However, since the late 1990s there have been major changes in patterns of supply and demand. The cost and efficiency of various generation technologies have shifted, with the emergence of more diverse forms of large-scale generation and low-cost on-site generation (e.g. gas cogeneration and solar PV) and energy storage.

There have also been major changes in consumer goods and behaviour, with the rapid uptake of goods such as residential air-conditioning, more efficient fridges and re-chargeable portable devices already shifting patterns of demand. New products, such as electric cars, could have an even greater impact on our patterns of energy demand.

These supply- and demand-side technologies will fundamentally change the role of NSPs from distributors of centralised energy supply to managers of a system that connects generators, energy storage and prosumers (consumers with on-site generation). The role of NSPs may also vary by location, with the cost of networks being strongly influenced by population density and other factors. In Australia's major cities large networks may continue to have a strong role in complementing new and existing distributed generation. However, in rural, regional and remote locations the emergence of distributed generation and energy storage will increasingly allow NSPs to provide more affordable and reliable services through mini-grids and on-site generation.

We encourage the Committee to examine the trial on Tasmania's King Island that integrates multiple forms of thermal and renewable generation and energy storage to deliver energy services. This project gives an example of how NSPs could provide valuable, but radically different, services into the future.

The Energy Efficiency Council is not advocating for or against these changes in generation technologies and consumer goods. Rather, we believe that these changes are driven by global forces, and Australia can either adapt well to these changes, and reap significant benefits, or delay its adjustment and face stranded assets and higher energy costs.

Australia needs to start the process of regulatory reform immediately. While some technologies (e.g. electric cars) may not have a serious market penetration for many years, other technologies (e.g. solar PV) have already started to have a significant impact on the market, and regulatory reform takes many years.

While change is certain, we do not think that it is possible to predict precisely what the energy market will look like in 2020 and beyond, or how fast changes will occur. Rather, we believe that we must manage for uncertainty by developing a flexible market structure that can respond to changes in technology and consumer demands. CSIRO's 2013 Future Grid Report developed a number of divergent scenarios for the future of energy in Australia to help policy-makers design a system that would be suitable under any of these scenarios.

The failure to foresee and prepare for the impact of air-conditioning on the electricity market meant that we did not have an acceptable policy solution (e.g. charges for installing air-conditioners, minimum standards or time-of-use pricing) in place in the 1990s. As a result, households that installed air conditioners were subsidised by other households to the tune of thousands of dollars per household, which led to unacceptable wealth transfers, rising peak demand and higher energy bills for all energy users. We cannot afford to make this kind of mistake again.

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Finally, this failure to adapt to transitions is part of a broader issue - the lack of longer-term planning in electricity markets. The failure to balance demand-side and supply-side investment in energy markets has often come around because regulators encourage NSPs to think in 5-year horizons, particularly with regards to opex. We note that the AER recently rejected a range of proposed opex investments by NSPs to manage energy efficiency. While these proposals delivered capacity at very low costs, their payback period was around 7 years, and we understand that this may have contributed to the AER's decision to reject these proposals.

Reforming energy markets to make them suitable for the likely range of future scenarios will require:

- Ensuring that price signals (to energy users, generators, NSPs and other parties) accurately reflect the costs and benefits of different patterns of generation, consumption, distribution and other services.
- Enabling lowest-cost solutions, rather than mandating a 'one-size fits all' approach. This includes ensuring that NSPs or other parties:
    - Invest in demand-side approaches where they is cheaper than supply-side approaches
    - Support on-site generation and/or micro-grids where they are more cost-effective than expanding the national grid over the long term.
- Removing hidden biases towards or against certain types of technology or services. This does not mean that we should not have support for particular technologies to correct for market distortions (e.g. support for research and development of new technologies), but rather that any support should be proportionate and clearly and explicitly justified.
- Avoiding further investment into network infrastructure that is unlikely to deliver value under a range of realistic scenarios. Many forms of network infrastructure last multiple decades and require decades of use to pay back their cost. If this type of infrastructure is fully utilised over a long period it can deliver capacity relatively cheaply, but if it isn't fully utilised and becomes stranded it is extremely expensive.

  In the period 1950-2000 these types of asset were often cost-effective, but given the uncertainties in the energy sector there is now a high risk that these assets will become stranded. It will now often be much more economical to deliver capacity through more nimble, shorter-lived assets and programs, such as peak-management programs.

  Unfortunately, under the current regulatory structure, consumers, not NSPs, bear the risk of poor investment decisions by NSPs. There are numerous strategies that can, and should be used to avoid expanding the volume of stranded network assets:

    - Shift the incentive structure for NSPs so that they bear a much greater proportion of the risks of poor investment decisions and stranded assets. This will provide a strong incentive to avoid further inefficient investment.
    - Set up a regulatory and management environment that drives NSPs to base their building decisions to deliver best outcomes across a range of divergent but realistic scenarios for the future of energy supply and consumption patterns. Building to a single 'most likely' scenario is now extremely risky, as there is no way to determine which scenario is most likely.

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3. Tariff structures

Network tariffs provide a number of important functions, including:

- Providing price signals to encourage the optimum balance of investment by NSPs, generators and energy users in a range of infrastructure and equipment; and
- Recouping NSPs' investment in network infrastructure and services.

Tariff design is a complex issue and there is insufficient space to address it in this submission. However, the key principle is that tariffs should be designed around the long-term interests of consumers, rather than short-term goals.

At the moment we are witnessing multiple breaches of this principle. NSPs around the country, particularly in Queensland, are substantially raising fixed connection charges (i.e. the fixed charge that each user pays that does not vary with the amount of energy they use or their peak usage). NSPs favour this type of charge as it increases the simplicity and certainty of revenue raising, but it is highly inequitable, provides no price signal to consumers to reflect the cost of building or replacing infrastructure, and undermines fair market access for emerging competitors.

Moreover, these recent tariff changes have taken place in an *ad hoc* manner that undermines billions of dollars that consumers invested to optimise their equipment to previous tariff structures. Invesment certainty is critical for not just NSPs, but also for millions of energy consumers and providers of goods and services that use energy or manage energy use. While network charges do need to be reformed to provide more effective price signals, these reforms need to be delivered in a structured and consultative way that allows for transition periods and minimises disruption.

The AEMC and AER have undertaken some work around tariff reform, but they have been wary about giving NSPs direction about what types of tariff structure would be efficient and equitable. As a result, in theory each NSP will need to undertake detailed engagement with consumers to develop appropriate tariff structures, significantly increasing the cost of tariff setting. In practice, there have been few, if any, examples of fair and transparent development of network tariffs in Australia.

The Council recommends that the Australian Government engage with energy users and suppliers to develop much more explicit guidance around pricing structures in the energy market, particularly in relation to the tariffs charged by monopoly NSPs.

Given the shift in the energy market from centralised generation supplying fairly homogenous consumers to a more complex mix of large generators, embedded generators, prosumers, consumers and energy storage and management, this review will also need to look at the charges for use of the network by multiple forms of generation.

Ultimately, a well-designed system of charges will result in better investment decisions, saving all consumers money. Conversely, recent moves to increase fixed network charges have been inequitable and provide inefficient price signals that will undermine innovation and competition while increasing energy bills for all consumers.

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4. Competition from non-network solution providers

As noted, it is often cheaper overall to use non-network solutions rather than network solutions to provide grid capacity. Examples include:

- Ausgrid installing an 'embedded' generation system within a small part of their grid to avoid a much more expensive project to expand the connection between that region and existing generators.
- Ergon offering homes lower tariffs if they let Ergon 'cycle' their air conditioners to reduce demand during times of extreme peaks while minimising the impact on comfort.

NSPs are often well placed to invest in these non-network solutions. However, non-network solutions can also be delivered directly energy consumers or by third parties. In this context, they can effectively 'compete' with NSPs by providing capacity more cheaply than network infrastructure. However, NSPs are given a number of powers that either formally or informally allow them to prevent or discourage non-network solutions that compete with their services, which reduces competition and raises costs for consumers.

There are a number of key strategies required to address this issue, including:

- Requiring NSPs to providing accurate and up-to-date maps that indicate the value of load reduction in specific locations in the grid, to facilitate non-network solutions.
- Requiring NSPs to provide fair and transparent payments for network support services, such as the deferral of network augmentation.
- Requiring NSPs to augment the grid to facilitate the connection of distributed generation where it is cost-effective to do so, from a consumer perspective.
- Requiring NSPs to facilitate timely connection to the grid, in line with the AEMC's recent determination on this matter.
- Appointing a commissioner to focus on oversight of how NSPs operate with respect to the rules above and other issues with to non-network solution providers. This commissioner could be based in the AEMC, AER or another body.

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