

# NETWORK VISION

Summary of feedback

6 September 2016

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## 1. Introduction

ElectraNet has taken a collaborative approach to developing the Network Vision, seeking to understand and involve stakeholders to ensure the outcome is built on a set of shared directions and priorities.

The following provides a summary of the detailed outcomes of the consultation on the Network Vision and manner in which the feedback has been addressed, based on the written responses received.

## 2. Summary of feedback

Customers and stakeholders were generally supportive of the direction of the Network Vision and there was a general agreement with the directions and priorities presented in the discussion paper. The key issues raised in consultation were:

- Support for the ongoing role for transmission
- Increased desire for customer engagement and choice of renewable technology
- Concerns about overall price, capital expenditure and operating expenditure
- The potential impact of electric vehicles
- Impact of alternative technologies such as battery storage and solar PV
- Support for increased interconnection to export renewable and import cheaper power
- Transmission has to be cost competitive to remain viable and relevant
- Transmission extensions for big spot loads may be required
- Transmission may shrink in regional or remote areas where off grid/storage alternatives are more economic

Based on this feedback, the Network Vision statement was updated to explicitly recognise the need for outcomes to be sustainable into the future, as follows:

“ElectraNet’s vision for South Australia’s transmission network is that it will deliver affordable and reliable power supplies that support customer choices for a sustainable future.”

The following section provides a detailed summary of the issues raised and the manner in which ElectraNet has responded to these issues in finalising the Network Vision and the directions and priorities for the transmission network. A total of 8 written responses to Network Vision discussion paper were received, 7 of which are attached with respondent consent. All issues raised have been taken into account in developing the final Network Vision.

### 3. Detailed feedback and responses

The following feedback and responses address the key themes raised in the Network Vision Discussion Paper.

#### 3.1 Customer values and expectations

What we heard	Our response
Affordability - must be the dominant theme for all energy businesses	<ul style="list-style-type: none"> <li>Create a sustainable network for the long term by seeking to deliver the most cost effective solutions for customers</li> <li>Show leadership in favourably influencing the delivered price of energy</li> <li>Explore more efficient and transparent pricing arrangements to promote clarity and stability</li> </ul>
Reliability and choice - electricity network businesses need to be able to enable consumers to choose to use new and emerging technologies; to value renewable energy and demand management opportunities; and to consider the cost and reliability impacts of renewable and emerging technologies; secure operation of the grid will become more challenging	<ul style="list-style-type: none"> <li>Actively monitor and respond to trends, developments and expectations to ensure the grid is ready to meet the needs of customers as distributed energy technology is adopted</li> <li>Plan for emerging technologies in order to maintain safe, reliable and secure supply under reasonably foreseeable demand and supply conditions</li> <li>Develop efficient solutions to maintain a secure and reliable network with less conventional generation</li> </ul>
Trust across the industry can be improved by: <ul style="list-style-type: none"> <li>Greater transparency</li> <li>Ensure that the business is managed efficiently and effectively so that customers are paying no more than they need to for transmission charges</li> <li>Clear, timely and accurate access to information</li> <li>Active and ongoing relationships with customers</li> </ul>	<ul style="list-style-type: none"> <li>Build trust by undertaking ongoing, genuine engagement with customers, consumer representatives and other stakeholders</li> <li>Promote effective early engagement with ElectraNet's customers and stakeholders, develop shared understanding, and give customers and stakeholders an opportunity to provide feedback through the release of a Preliminary Revenue Proposal</li> <li>Create a sustainable network for the long term by seeking to deliver the most cost effective solutions for customers</li> <li>Explore more efficient and transparent pricing arrangements to promote clarity and stability</li> </ul>
Environmental and sustainability practices should exceed applicable standards	<ul style="list-style-type: none"> <li>Modify the Network Vision to specifically recognise the need for a sustainable future</li> <li>Maintain a certified environmental management system appropriate for ElectraNet's activities, supported by staff training and documented contractor requirements</li> </ul>

### 3.2 Change drivers

What we heard	Our response
Gas assumptions – implications and scenario inputs should be further considered	<ul style="list-style-type: none"> <li>Continue to monitor emerging industry trends and developments and undertake scenario based planning to inform our ongoing decision making, based on the directions and priorities in this Network Vision</li> </ul>
Spot loads – important to be able to respond effectively to economic signals and spot loads such as mining (for example Eyre Peninsula)	<ul style="list-style-type: none"> <li>Manage any major uncertain network developments (e.g. mining loads) as contingent projects within the regulatory framework</li> </ul>
Economic growth – importance of jobs growth, particularly the growth of full time employment	<ul style="list-style-type: none"> <li>Create a sustainable network for the long term by seeking to deliver the most cost effective solutions for customers</li> <li>Show leadership in favourably influencing the delivered price of energy</li> </ul>
Population Growth – through strategic expansion of the transmission network ElectraNet can help to create the necessary infrastructure for economic and employment growth	<ul style="list-style-type: none"> <li>Investigate further interconnector opportunities which enhance benefits to customers by customer facilitating market competition and supporting competitive, secure and stable power supplies and renewable generation exports</li> <li>Manage any major uncertain network developments (e.g. mining loads) as contingent projects within the regulatory framework</li> </ul>
Energy prices – there is uncertainty over future energy prices; appear higher than any other state; customers are exploring ways to reduce dependence of the grid during peak usage	<ul style="list-style-type: none"> <li>Create a sustainable network for the long term by seeking to deliver the most cost effective solutions for customers</li> <li>Show leadership in favourably influencing the delivered price of energy</li> <li>Investigate further interconnector opportunities which enhance benefits to customers by customer facilitating market competition and supporting competitive, secure and stable power supplies and renewable generation exports</li> </ul>
Technological development – for example batteries, small scale generation and electric vehicle uptake, is a significant change driver and difficult to predict; ongoing stakeholder engagement will be important; network management will need to be considered	<ul style="list-style-type: none"> <li>Undertake ongoing, genuine engagement with customers, consumer representatives and other stakeholders</li> <li>Actively monitor and respond to trends, developments and expectations to ensure the grid is ready to meet the needs of customers as distributed energy technology is adopted</li> <li>Plan for emerging technologies in order to maintain safe, reliable and secure supply under reasonably foreseeable demand and supply conditions</li> <li>Continue to investigate application of grid scale energy storage and seek to gain experience in the deployment and operation of this emerging technology</li> <li>Actively pursue cost effective demand side solutions and innovations in the deployment of non-network solutions and new technology</li> </ul>

What we heard	Our response
Consumer attitudes – to renewable technologies, energy storage and off-grid solutions will continue to evolve over time	<ul style="list-style-type: none"> <li>• Create a sustainable network for the long term by seeking to deliver the most cost effective solutions for customers</li> <li>• Actively monitor and respond to trends, developments and expectations to ensure the grid is ready to meet the needs of customers as distributed energy technology is adopted</li> </ul>
Renewable Energy – uptake will continue at customer and large scale levels, with implications for network management; the cost of renewable energy may become more appealing/accessible for both business and residential customers	<ul style="list-style-type: none"> <li>• Develop efficient solutions to maintain a secure and reliable network with less conventional generation</li> <li>• Create a sustainable network for the long term by seeking to deliver the most cost effective solutions for customers</li> </ul>
Interconnection – possibility of additional interconnection to improve security; system security challenges during low demand periods; importance of interconnection for system security; separation risk and implications; the value of system security; case for further interconnection	<ul style="list-style-type: none"> <li>• Investigate further interconnector opportunities which enhance benefits to customers by facilitating market competition and supporting competitive, secure and stable power supplies and renewable generation exports</li> </ul>

### 3.3 Future scenarios and implications

What we heard	Our response
Scenarios – generally cover an appropriate range of possibilities; strong alignment with AEMO's 2015 National Transmission Network Development Plan (NTNDP); closer alignment of terminology with CSIRO modelling would assist stakeholders; scenario with no climate change policy is plausible going forward	<ul style="list-style-type: none"> <li>Continue to monitor emerging industry trends and developments and undertake scenario based planning to inform ongoing decision making, based on the directions and priorities in the Network Vision</li> </ul>
Central planning scenario – general agreement to adoption of Conventional Wisdom scenario for planning purposes; differing views on environmental policy, technological development rates and customer engagement levels	<ul style="list-style-type: none"> <li>Continue to base short to medium term network planning on Conventional Wisdom scenario, and report annually in the Transmission Annual Planning Report</li> <li>Continue to monitor emerging industry trends and developments and undertake scenario based planning to inform ongoing decision making, based on the directions and priorities in the Network Vision</li> </ul>
Future scenario outcomes – general agreement with range of outcomes presented; electric vehicle uptake rate may be underestimated; energy storage uptake depends on many factors including cost	<ul style="list-style-type: none"> <li>Continue to monitor emerging industry trends and developments and undertake scenario based planning to inform ongoing decision making, based on the directions and priorities in the Network Vision</li> </ul>
Scenario implications for transmission network – general agreement to an ongoing role for transmission into the future; need to be competitive to remain viable particularly in regional and remote areas which may see shrinkage; ongoing role to provide network backup services; should explore pricing structures and incentives for battery storage and electric transport; need for ongoing dialogue with stakeholders	<ul style="list-style-type: none"> <li>Create a sustainable network for the long term by seeking to deliver the most cost effective solutions for customers</li> <li>Show leadership in favourably influencing the delivered price of energy</li> <li>Plan for emerging technologies in order to maintain safe, reliable and secure supply under reasonably foreseeable demand and supply conditions</li> <li>Undertake ongoing, genuine engagement with customers, representatives and other stakeholders</li> </ul>

### 3.4 Network Vision directions and priorities

What we heard	Our response
Network Vision – general agreement to the proposed vision for the network; the network must remain cost competitive; a greater role for energy storage should be considered; customer choice may dictate how the network operates; economic growth, low carbon emissions and ongoing stakeholder engagement are key elements; sustainability should also be recognised	<ul style="list-style-type: none"> <li>Modify the Network Vision to specifically recognise the need for a sustainable future, with a focus on genuine engagement, network development, operations and maintenance, new connections and people and organisation</li> <li>Continue to investigate application of grid scale energy storage and seek to gain experience in the deployment and operation of this emerging technology</li> </ul>
Expenditure plans – capex, opex and WACC levels appear high	<ul style="list-style-type: none"> <li>Reduction of 46% is proposed in the indicative capex forecast contained in the Preliminary Revenue Proposal, while maintaining network reliability based on driving the network harder and longer</li> <li>Reduction of 10% is proposed in the indicative opex forecast contained in the Preliminary Revenue Proposal, which is challenging given the maintenance cost pressures of an ageing network</li> <li>Applying the standard AER approach to WACC in the Preliminary Revenue Proposal results in an indicative reduction 7.5% to 5.75% based on current market data</li> </ul>
Interconnection – can the existing interconnector be expanded; an additional interconnector could provide greater security and stability; major market changes such as changing generation mix warrant further investigation	<ul style="list-style-type: none"> <li>Investigate further interconnector opportunities which enhance benefits to customers by customer facilitating market competition and supporting competitive, secure and stable power supplies and renewable generation exports</li> </ul>
Low carbon future – near zero carbon future should be recognised given Government policy commitments	<ul style="list-style-type: none"> <li>Take Government renewable energy targets into account through our plans and priorities for the transmission network to help the nation meet renewable energy targets</li> <li>Develop efficient solutions to maintain a secure and reliable network with less conventional generation</li> <li>Investigate further interconnector opportunities which enhance benefits to customers by customer facilitating market competition and supporting competitive, secure and stable power supplies and renewable generation exports</li> </ul>
Competitiveness – electricity sector needs to remain competitive; stand-alone solutions are becoming more cost effective	<ul style="list-style-type: none"> <li>Create a sustainable network for the long term by seeking to deliver the most cost effective solutions for customers</li> </ul>
Ongoing engagement – monitor changing expectations of customers; engage to resolve issues across the electricity supply chain; seen as missing priority; strategic benefits to working collaboratively	<ul style="list-style-type: none"> <li>Commit to building trust by undertaking ongoing, genuine engagement with customers, representatives and other stakeholders</li> <li>Actively monitor and respond to trends, developments and expectations to ensure the grid is ready to meet the needs of</li> </ul>

What we heard	Our response
	customers
Extending asset life – seen as a high priority	<ul style="list-style-type: none"> <li>Focus on efficiently prolonging asset life wherever possible and deferring major replacement while maintaining reliability</li> </ul>
Asset retirement – seen as a low priority by some given the potential cost burden; others keen to explore opportunities to downgrade or retire assets	<ul style="list-style-type: none"> <li>Retire assets unlikely to be needed in the future only where economic to do so</li> </ul>
Accelerated depreciation – seen as a low priority given intergenerational equity	<ul style="list-style-type: none"> <li>Apply accelerated depreciation on a targeted basis where a clear case exists (e.g. assets no longer required due to generation closures)</li> </ul>
Changing generation mix – integration of renewable energy technologies into the grid is a high priority given South Australia is world leading in this regard	<ul style="list-style-type: none"> <li>Develop efficient solutions to maintain a secure and reliable network with less conventional generation</li> <li>Investigate further interconnector opportunities which enhance benefits to customers by customer facilitating market competition and supporting competitive, secure and stable power supplies and renewable generation exports</li> </ul>
Alternative supply solutions – grid scale storage is seen as high priority to pursue; demand side innovations should be actively pursued; explore cost-effective alternatives for like-for-like asset replacement	<ul style="list-style-type: none"> <li>Continue to investigate application of grid scale energy storage and seek to gain experience in the deployment and operation of this emerging technology</li> <li>Actively pursue cost effective demand side solutions and innovations in the deployment of non-network solutions and new technology</li> </ul>
Big data – importance of sophisticated data analytics to inform network decision making	<ul style="list-style-type: none"> <li>Adopt best practice data analytics to improve decision making in asset management and network operation</li> </ul>

## **4. Responses**

18 May 2016

Simon Appleby  
Senior Manager Regulation and Land Development  
ElectraNet  
PO Box 7096 Hutt Street Post Office, Adelaide, SA, 5000

Level 22  
530 Collins Street  
Melbourne VIC 3000

**Postal Address:** GPO Box 2008  
Melbourne VIC 3001

T 1300 858724  
F 03 9609 8080

Dear Mr Appleby,

**Response to ElectraNet's *Network Vision* discussion paper**

AEMO welcomes the opportunity to comment on ElectraNet's *Network Vision* discussion paper. As the national transmission planner, we are actively involved in the energy transition taking place in South Australia, with focus on operational, planning and regulatory implications for the region, as well as the wider strategic implications across the National Electricity Market (NEM).<sup>1</sup>

This submission considers a number of issues raised in the discussion paper, namely:

- **The value of power system security:** implications of the evolving generation mix and the system security services that may be required in future.
- **Transmission network asset utilisation:** opportunities to connect new load and generation to less utilised transmission corridors.
- **Competition and technological neutrality:** balanced treatment of network and non-network approaches to address system limitations and contestability in the delivery of network upgrades.
- **Preparing for the future:** better understanding the impact of new technologies and importance of sophisticated data analytics to inform network decision making.

South Australian end users and the state economy benefit from forward-thinking transmission network planning, aimed at maintaining safe and reliable electricity supply at an efficient price. ElectraNet's discussion paper, and stakeholder interaction around it, provide strategic context as it develops its capital and operating expenditure proposal for its next regulatory control period (2018–19 to 2022–23).

AEMO considers there are strategic benefits to working collaboratively to understand these challenges and determine how they might be addressed. The South Australian experience will provide guidance for the other regions as they manage their own energy transitions. If you would like to discuss any of the issues raised in this submission, please do not hesitate to contact Laura Walsh on 02 8884 5618 or [Laura.Walsh@aemo.com.au](mailto:Laura.Walsh@aemo.com.au).

Yours sincerely

  
Nicola Falcon

**Group Manager, Planning**

CC: Marino Bolzon, Manager, Energy Markets and Programs Division, Department of State Development

<sup>1</sup> Section 49(2) of the National Electricity Law (NEL).  
SUBMISSION TO ELECTRANET NETWORK VISION DISCUSSION PAPER

### ***AEMO submission in response to ElectraNet's Network Vision discussion paper***

AEMO is providing this submission under our role as the national transmission planner,<sup>2</sup> providing strategic oversight for long term transmission development across the National Electricity Market (NEM).

ElectraNet is to be congratulated on producing the Network Vision discussion paper, providing an opportunity for stakeholders to participate in planning the transmission network of the future.

The role of the transmission grid is evolving, from the secure transportation of bulk power generation, to include the secure integration of renewable generation and emerging technologies. This reflects a changing paradigm characterised by declining electricity consumption from the grid, an increasing focus on renewable and embedded generation, and withdrawal of thermal synchronous generation (such as coal and gas-fired generation).

As wind and photovoltaics (PV) generation increases (possibly combined with battery storage), and withdrawal of thermal synchronous generation continues, secure operation of the grid will become more challenging, particularly when demand is low and output from renewable generation is high. While South Australia may be the first NEM region to face these emerging challenges (and opportunities), many will not be unique to the region.

In this changing environment, finding the balance between price and sustainability, while maintaining system security and reliability, will be critical if we are to provide energy security to all Australian's in the future. Only through collaboration, knowledge sharing, and stakeholder consultation, can innovative and cost-effective opportunities be identified holistically, addressing multiple system security and reliability objectives. These opportunities may span both the distribution and transmission networks, and cross regional boundaries.

Addressing the 'big data' issue is also a priority, with the emergence of more behind-the-meter devices such as battery storage and rooftop PV. As consumers are becoming more engaged, robust analytical methods will be required to support this integration, understand the trends and improve forecasting capability.

The remainder of this submission highlights areas where collaboration between AEMO and ElectraNet would be particularly beneficial in planning South Australia's future transmission network.

#### **1. Approach to scenarios**

Given the extent of uncertainty in plausible futures, strategic planning of the long-term development needs of the transmission system requires a scenarios approach. As ElectraNet emphasises in the discussion paper, plausible stationary energy futures can be influenced by a wide range of economic, technological and policy drivers with direct implications for the future operation of the power system, including:

- The sudden closure of major load and generation and resulting step changes to supply and demand.
- The development trajectory of new technology in terms of cost and capability.

<sup>2</sup> Section 49(2) of the NEL sets out AEMO's functions in its role as National Transmission Planner including to keep the national transmission grid under review and provide advice on potential development of grid and projects that could affect the grid and to provide a national strategic perspective to transmission planning and coordination.

- Changing energy usage patterns as a result of how consumers might respond to new products and services.
- Policy development and the impact of energy market reform

Scenarios consideration will vary depending on the context of the investigation, balancing both the uncertainty and materiality of change drivers to examine key implications. ElectraNet's discussion paper considers a range of scenarios that might conceivably impact their local network investment requirements.

AEMO's annual National Transmission Network Development Plan (NTNDP) examines credible scenarios to produce a strategic development plan across the NEM. The focus is on credible scenarios most likely to materially stress the transmission system.

Despite having different purposes, the key scenario drivers are reasonably well aligned between the Network Vision and AEMO's 2015 NTNDP. Key uncertain assumptions prescribed by ElectraNet's scenarios include South Australian maximum demand projections, and uptake of rooftop PV, residential storage and electric vehicles. ElectraNet's projections of these variables are generally within the range assumed by AEMO in its 2015 NTNDP, although:

- ElectraNet's upper bound on operational maximum demand growth over the next twenty years is about 300 MW higher than AEMO's, and
- AEMO assumes more rooftop PV uptake (2.6–3.2 GW installed capacity by 2035 compared to 1.0–2.6 GW).

One other point of difference is in relation to climate policy assumptions. Following guidance from the Council of Australian Governments (COAG) Energy Council, the 2016 NTNDP scenarios will take account of Australia's economy-wide COP21 commitment to reduce greenhouse gas emissions by 26 to 28% from 2005 levels by 2030. In light of this Australian emission reduction commitment, ElectraNet may wish to consider whether a scenario with no climate change policy is plausible going forward.

## **2. Operational challenges and potential for further interconnection**

The Heywood Interconnector is becoming increasingly utilised on both import and export. In 2014–15 combined interconnector total imports increased by 4% compared to 2013–14, total exports increased by 49%, and combined net interconnector imports decreased by 5%. Further information on historical interconnector flow patterns is available in AEMO's 2015 South Australian Historical Market Information Report.<sup>3</sup>

As the generation mix continues to evolve, the South Australian region will become increasingly reliant on synchronous generation and frequency control ancillary services (FCAS) from Victoria. Any unexpected outage of the interconnector represents a system security risk for South Australia.

<sup>3</sup> AEMO, 2015 *South Australian Historical Market Information Report*. Available: <http://www.aemo.com.au/Electricity/Planning/South-Australian-Advisory-Functions/South-Australian-Historical-Market-Information-Report> Viewed: 12 May 2016.

## **2.1. System security challenges during low demand periods**

In 2014–15, South Australia recorded an operational demand of 790 MW at 1:30 pm on 26 December 2014, South Australia's lowest operational demand since NEM commencement and lower than any evening demand in South Australia.<sup>4</sup> At this time, rooftop PV output was 445 MW. Based on the continued uptake of rooftop PV and its contribution to supply, by 2023–24 rooftop PV may, on one-in-ten year minimum demand days, offset 100% of demand generated from the grid during midday periods.<sup>5</sup> Low demand periods will present system security challenges relating to how the system behaves after a potential disturbance<sup>6</sup> and the extent to which generation can be dispatched in order to match supply and demand. The 2015 NTNDP<sup>7</sup> considered these challenges, and the 2016 NTNDP intends to examine the security implications of minimum demand in more detail.

## **2.2. Importance of interconnection for system security**

AEMO and ElectraNet's joint investigation<sup>8</sup> on the integration of renewables into the South Australian generation mix indicated power system security can be managed, provided the region remains connected to the remainder of the NEM via the Heywood Interconnector, or there is sufficient synchronous generation connected in the South Australian power system.

AEMO has procedures in place to maintain the power system in South Australia in a secure operating state<sup>9</sup> when loss of the interconnector is considered to be a credible contingency event.<sup>10</sup> These procedures have recently been updated to provide for the purchase of additional regulation Frequency Control Ancillary Service (FCAS) during these periods. In the case of outages that occur when South Australian regional separation is not considered credible, automatic under frequency load shedding is enacted.

## **2.3. Separation risk and implications**

In South Australia, there have been nine separation events since the market started in 1998. These events have been of relatively short duration (typically less than one hour) and on each occasion there was sufficient synchronous generation on line for the islanded South Australian power system to be successfully operated as an island until the interconnector was restored. Four of these past separations were the result of non-credible contingencies.

Regional separation at time of low synchronous generation in South Australia can be more severe, and is considered a "high impact, low probability" (HILP) event. While the probability may be low, the potential consequence is a state-wide power outage with severe economic and possible health and safety impacts. The existing automatic under frequency load

<sup>4</sup> Minimum South Australian operational demand for the 2015–16 summer was 876 MW, at 1:30 pm on 25 March 2016.

<sup>5</sup> AEMO. 2015. *South Australian Demand Forecasts*. Available: <http://www.aemo.com.au/Electricity/Planning/South-Australian-Advisory-Functions/Demand-Forecasts> Viewed: 2 May 2016

<sup>6</sup> A disturbance is a supply-demand imbalance, which can be caused by the trip of a generator, load or a transmission line.

<sup>7</sup> Refer to Chapter 4 and 5 for further information. AEMO. 2015. *2015 National Transmission Network Development Plan*. Available: <http://www.aemo.com.au/Electricity/Planning/National-Transmission-Network-Development-Plan> Viewed: 2 May

<sup>8</sup> AEMO and ElectraNet. 2016. *Update to Renewable Energy Integration in South Australia*. Available: <http://www.aemo.com.au/Electricity/Market-Operations/Power-system-security> Viewed: 2 May 2016

<sup>9</sup> AEMO. 2016. *System Operating Procedures* Available: <http://www.aemo.com.au/Electricity/Policies-and-Procedures/System-Operating-Procedures> Viewed at 4 May 2016.

<sup>10</sup> At times of a known threat to the interconnector or during some planned network outages.

shedding arrangements may not be capable of intervening effectively when there is little or no synchronous generation on line, resulting in widespread outages.

The impact of separation on the South Australian system will increase as the regional generation mix continues to evolve and synchronous generation withdraws from the market. On 26 December 2015, South Australia experienced its lowest level of synchronous generation, with only two synchronous generators online. Playford B and Northern Power stations have been retired (786 MW), the second Pelican Point unit has been withdrawn (239 MW), and AGL has announced the future withdrawal of Torrens Island A power station (480 MW).

#### **2.4. The value of system security**

AEMO acknowledges the difficulty in quantifying the true value of system security and sees benefit in collaborating with ElectraNet (and other TNSPs and jurisdictional bodies) to address this.

High level approaches to valuing unserved energy impacts, using value of customer reliability (VCR) estimates, may not be suitable in the HILP context as such events typically results in severe, widespread and/or prolonged outages. AEMO's updated value of customer reliability recommendations in 2014<sup>11</sup> did not include outage severity, due to difficulties ascertaining customers' willingness to pay to avoid HILP events. In light of this limitation, care needs to be taken if solely relying on the VCR values to provide economic justification for implementing solutions that address HILP events. Extra information may need to be sought to fully appreciate such as event's prolonged and/or widespread consequences, and/or the cost to business of mitigating such risk.

This may require direct engagement with end users to assess their perception of HILP situations, expert opinion, as well as consideration of international experiences of city wide disruptions.

AEMO sees value in industry collaboration to further examine HILP events on the interconnected NEM power system in order to:

- Characterise what they might be both now and over the long-term planning horizon.
- Understand their potential causes and the extent to which TNSPs could act to restore service if they occurred, to better understand their likelihood and impact.
- Develop a consistent framework for evaluating the true economic impact by engaging with jurisdictional governments and regulatory bodies, end users, and consumer groups, and through the AEMC's Reliability Panel.

#### **2.5. The case for further interconnection**

AEMO understands that ElectraNet is conducting a pre-feasibility study of an interconnector linking South Australia to New South Wales. If results of this study show merit, ElectraNet proposes to treat the potential investment in further interconnection under the contingent

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<sup>11</sup> AEMO. 2014. *Value of Customer Reliability review*. Available: <http://www.aemo.com.au/Electricity/Planning/Value-of-Customer-Reliability-review> Viewed: 12 May 2016

project framework.<sup>12</sup> AEMO will engage with ElectraNet and other stakeholders on the specification of robust triggers for interconnection investment.

AEMO is also investigating the potential benefits of further interconnection between South Australia and the rest of the NEM. The 2016 NTNDP will examine network and non-network technical solutions that address emerging system security challenges in South Australia resulting from the changing generation mix. Sharing insights from these studies will allow the full range of reliability and system security requirements in South Australia to be considered and addressed holistically.

Benefits of further interconnection would include:

- Mitigating the risk of regional separation events and potentially widespread implications for South Australian end users and the state economy.
- Wider system security benefits through greater sharing of network support services between regions.
- Benefits associated with allowing otherwise-curtailed excess generation in South Australia to flow to where it is most needed.
- Increasing import capability to help reduce generation costs across the NEM.

Any investment decision will need to consider the full range of possible reliability, security and market implications, and credible cost-effective alternative solutions, acknowledging that new interconnection may not address all of the potential system security issues that might arise over the long-term planning horizon. For instance, there may be local network challenges (e.g. low fault level) in parts of the network connecting wind generation that further interconnection will not alleviate. In addition to the cost, investment in further interconnection will involve considerable lead times. Measures to manage system security in the interim may be required.

### **3. Asset utilisation and replacement decisions**

Slowing demand growth, and the retirement or mothballing of generation and large industrial loads across the NEM has brought focus to the risk of stranding transmission network assets, and the need to explore cost-effective alternatives to like-for-like replacement.

#### **3.1. Connection to less utilised transmission corridors**

There may be opportunities to utilise network assets more efficiently and reduce the need for additional network investment by connecting new generation or load to less-utilised parts of the network. This could also address network limitations brought about by the retirement of existing generators or loads.

The 2015 NTNDP highlighted the value of new generation strategically connecting to strong parts of the network with sufficient capacity to support expected generation output. The 2016 NTNDP will examine the potential utilisation of national transmission flow paths over the next 20 years and explore (in consultation with TNSPs) possible opportunities to downgrade or retire transmission assets.

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<sup>12</sup> As specified in clause 6A.8 of the National Electricity Rules: AEMC, *National Electricity Rules Version 79*. Available: <http://www.aemc.gov.au/Energy-Rules/National-electricity-rules/Current-Rules> Viewed: 12 May 2016

Our stakeholders are changing, and so too is the type of information and data required to help stakeholders in their planning. In the 2016 Victorian Annual Planning Report (VAPR), AEMO is aiming to guide prospective generation and loads by highlighting, through a spatial map, areas of the Victorian Declared Shared Network where spare capacity still exists for new generation connections, and where the network is congested. AEMO acknowledges that ElectraNet already provides this information to prospective generators and loads in tabulated form, and commends them for this initiative.

### **3.2. Cost-benefit discipline and transparency for asset retirement and replacement**

ElectraNet has identified the potential for the development of a competitive off-grid and microgrid services market, and the resulting impact of this on the centralised network. AEMO agrees with ElectraNet that it is in consumers' best interests that long-term investment decisions are technology neutral and based on an impartial assessment of different supply options – network, non-network alternative and integrated strategies.

AEMO also supports the AER's proposal to raise transparency around network asset retirements and facilitate more economic consideration of asset replacement decisions.<sup>13</sup> Emerging technologies and slowing demand growth will continue to increase opportunities for feasible, cost-effective alternatives to like-for-like replacement.

## **4. Competition in the delivery of network upgrades**

AEMO considers that competition in the delivery of major network upgrades would benefit market participants and consumers. This applies to the potential development of further interconnection, given the substantial costs and importance of this infrastructure in the context of the overall NEM.

An example of contestability in the delivery of major transmission augmentations exists in Victoria, where AEMO functions as the planner-procurer for AusNet Services' transmission network. If a required transmission upgrade is separable from the existing shared network, AEMO conducts a competitive tender to procure the service. This approach has given rise to better value outcomes compared to the traditional model, and recent moderation in energy consumption and maximum demand is enhancing its effectiveness due to increased competition from non-network alternatives. AEMO has observed a distinct increase in the level of competition in the Victorian transmission tender processes between providers of both network and non-network solutions:

- **Network solutions.** TNSPs are looking beyond traditional avenues to grow their businesses, seeking new opportunities as the declining demand environment sees network augmentation investment needs in their own networks reduce.
- **Non-network solutions.** New alternative providers of various technologies and services are emerging and participating in an increasingly diverse environment. AEMO is actively keeping abreast of the cost and capability of these technologies, to understand how they can be included in network planning cost-benefit studies.

It is in consumers' interest that the core principles of competition and technological neutrality are applied to addressing the emerging challenges facing the South Australian system. Balanced treatment of network and non-network alternatives, coupled with contestability in

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<sup>13</sup> In line with current practice for network capacity augmentation decisions, through the regulatory investment tests for transmission and distribution. The AER intends to submit this proposal to the Australian Energy Market Commission by July 2016.

the delivery of these solutions, will help to direct efficient investment to address transmission network limitations.

## **5. Transition to the power system of the future**

AEMO supports ElectraNet's focus on better understanding new technologies and the importance of sophisticated data analytics to inform network decision making:

- AEMO is monitoring ElectraNet's and other investigations into large-scale storage, and the wider benefits this technology may provide.<sup>14</sup>
- AEMO will continue to work with ElectraNet to examine the nature and extent of ancillary services that may be required to maintain the security of the South Australian power system into the future.
- As part of ESCOSA's currently ongoing review of the South Australian Electricity Transmission Code, AEMO<sup>15</sup> recommended that the flexibility made possible by emerging technologies be explicitly accommodated into the connection point reliability categories.
- In the absence of visibility over decentralised, behind-the-meter generation technologies, AEMO is investigating robust analytical methods to support the forecasting and real-time integration of new products and services.
- AEMO is working to better understand the impact of rooftop PV at the regional, system, and connection point level. This impacts load shedding schemes enabled after non-credible separation of South Australia from the rest of the NEM. AEMO will further engage with ElectraNet on the work it has done to better model the aggregated behaviour of PV output in the region.

Building capability to better understand the operation and potential impact of new technologies across the energy supply chain allows us to better account for these implications in our scenario planning. This also extends to how new technology can be best deployed to address network limitations and provide other services necessary for system security.

<sup>14</sup> AGL, ElectraNet and Worley Parsons. 2016. *Energy Storage for Commercial Renewable Integration* Available: <http://arena.gov.au/project/energy-storage-for-commercial-renewable-integration/> Viewed at 4 May 2016.

<sup>15</sup> AEMO. 2015. *Review of the South Australian Electricity Transmission Code Reliability Standards*. Available: <http://www.escosa.sa.gov.au/projects/235/electricity-transmission-code-review-2018-2023-regulatory-period.aspx#stage-list=0> Viewed: 2 May 2016



# Submission to **ElectraNet**

## **Re: Network Vision, Discussion Paper**

From UnitingCare Australia

February 2016

Contact:  
Mark Henley  
Energy Advocate  
UnitingCare Australia

Ph: 0404 067 011

*UnitingCare Australia is the national body for social services in the Uniting Church in Australia, supporting service delivery and advocacy for children, young people, families, people with disabilities, and older people*

## About UnitingCare Australia

UnitingCare Australia is the Uniting Church's national body supporting community services and advocacy for children, young people, families, people with disabilities and older people.

The UnitingCare network is one of the largest providers of community services in Australia, providing services and supports to more than 2 million Australians each year in urban, rural and remote communities. The network employs 35,000 staff and 24,000 volunteers.

UnitingCare Australia works with and on behalf of the UnitingCare network to advocate for policies and programs that will improve people's quality of life. UnitingCare Australia is committed to speaking with and on behalf of those who are the most vulnerable and disadvantaged for the common good.

Stewardship of our environment is a fundamental responsibility of societies both in the short-term and for the benefit of future generations. We strongly support the notion of the triple bottom line for government community and business organisations whereby economic stewardship, environmental stewardship and the nurture of citizens (social stewardship) are equally valued and reported on publicly.

UnitingCare Australia's principle interest in energy regulation arises because energy is an essential service with rising costs that are putting inordinate financial pressure on growing numbers of households in Australia.

Uniting Communities is the South Australian based member of the UnitingCare network that has been most actively involved with energy market issues and is likely to be the UnitingCare agency with which ElectraNet has had most contact. The UnitingCare Energy Advocate, Mark Henley, is a member of the ElectraNet consumer reference group.

## Context for SA regulated Electricity Networks

In responding to the ElectraNet question of "what do consumers value?" we first provide some broader context for the theme of 'affordability' as part of a response to this question.

Our figure 1 below shows the proportion of various groups of people who are living below 2 different and widely used measures for poverty in Australia<sup>1</sup> – 50% and 60% of median income. Median private income in 2013-14 was 61,776pa, so 50% median is \$30,888 per annum income or \$37,065pa for the 60% median income poverty line. Note that for South Australia, nearly a quarter of people live with \$37,065 or less per year, consequently

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<sup>1</sup> Note that there are a number of 'poverty line' measures that are used in Australia. The 50% and 60% median income measures are used here because of their simplicity to give indications about the extent of income stress. We have therefore not used the more detailed "Henderson Poverty Line" which is updated quarterly by Melbourne Institute of Applied Economic and Social Research, The University of Melbourne, and which is a preferable measure, we suggest, for more detailed considerations of poverty and disadvantage.

electricity bill increases of the order of, say, 20% over a year (even 10%) are very difficult to pay, yet electricity prices have risen by this order of magnitude over recent years. For the nearly 14% of the population living on \$30,888 per year, or less, the median SA standing offer bill of \$1538, is a substantial amount of money, 5% of annual income. There are people who have to spend much more than even 5% of their disposable income on electricity.

Table 3: Groups at high risk of poverty: proportions living below poverty lines in 2011-12 (%)		
	50% of median income	60% of median income
Unemployed households	61.2	67.6
Single adults over 65 years	25.2	57.5
Households whose main income is social security	40.1	64.1
People with a disability*	27.4	44.5
Lone parent families	33.0	45.3
Singe adults (without children) of workforce age	29.1	35.9
People of working age not in the labour force	48.4	62.2
<b>All people</b>	<b>13.9</b>	<b>22.0</b>

Figure 1. Source: ACOSS Poverty in Australia 2014

This table shows that there are a number of household groups who are likely to struggle with their bills due to low income, in particular unemployed households, households whose main income is Social Security recognising that this is about a third of the South Australia population and includes sole parents who are supporting children.

Figure 2 shows how the cost of housing has increased in relative terms over the last 3 decades. The reality is the cost of the median priced house 30 years ago was about three and half times median full time income. This ratio is now nearer to seven – the median priced house is now about seven times the median annual salary, dramatically increasing the cost of housing, mortgage or rental.

When combined, housing + electricity costs for some financial counselling clients account for two thirds of disposable income.

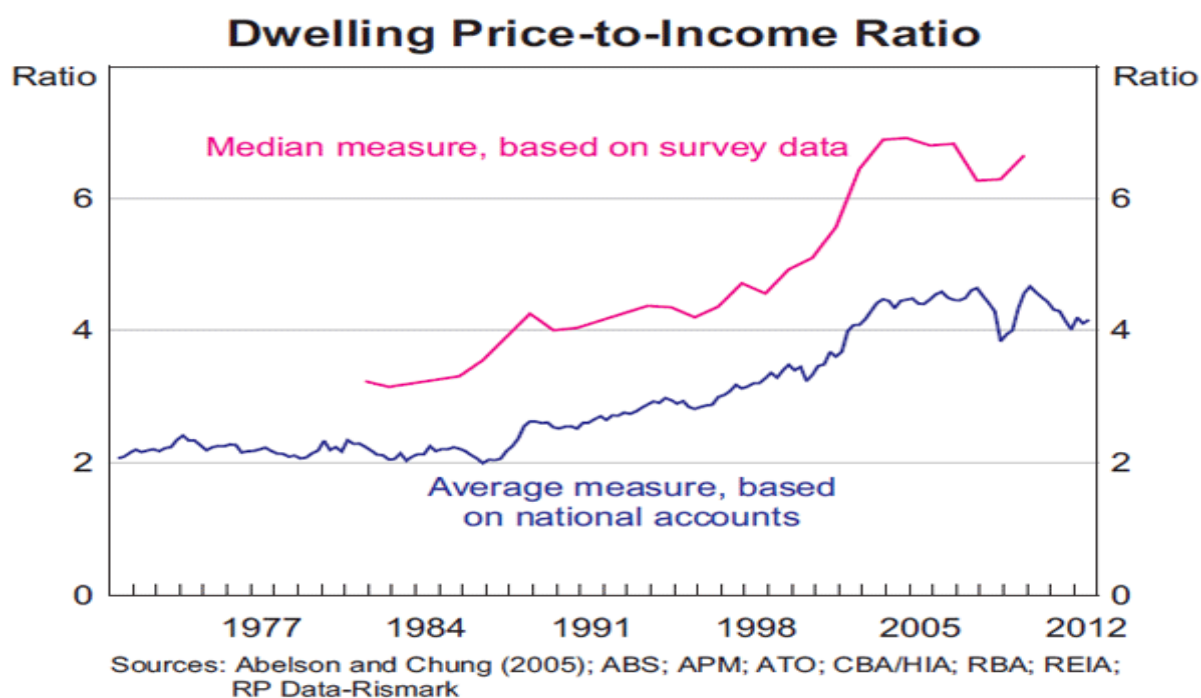


Figure 2. Sources REIA and others

We also think that there is value in understanding the income and wealth distribution in Australia because this again highlights that significant numbers of households are financially stretched with income either based on social security payments or casual labour meaning that income is low and in many instances uncertain. Low and relatively fixed income means adjusting for unexpected bills or higher than expected bills creates major problems for low and modest income households.

## Income Inequality

Figure 5: Average weekly income after tax by quintile, 2012

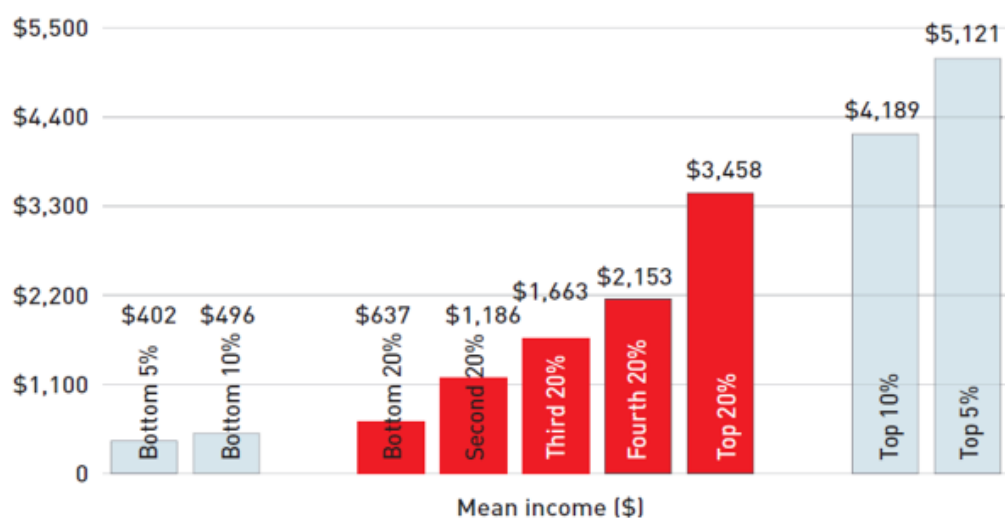


Figure 3. Source: ACOSS Poverty in Australia 2014

Figure 3 shows average weekly income after tax by income decile, as well as for the poorest and richest decile and richest in poorest 5% of the income distribution. The data shows that the average income for the poorest quintile is \$637 per week and \$1186 for the second quintile. This data further emphasises the importance of understanding the distribution of income and recognition that significant numbers of people at the poorer end of the income distribution are having significantly lower incomes than average and above income earners. This translates into considerable difficulty paying for electricity bills for substantial number of households.

Wealth distribution is shown in Figure 4, with the difference between higher and lower wealth households even more extreme than for income distribution.



Figure 4. Source: ACOSS Poverty in Australia 2014

Having presented the fairly generic income and wealth distribution data above, we now consider the situation of electricity charges against this household income and wealth background.

The chart shown as figure 5 and taken from the Australian Energy Regulator's annual retail performance report shows that over about the last decade, retail electricity prices in all jurisdictions across Australia have grown substantially. The modest reductions of the last year or so (except in Brisbane) in no way make up for the dramatic price increases experienced over an extended preceding period. Note that South Australia, the yellow line in figure 5, has the highest electricity retail prices in Australia and has not had recent price reductions of the same order as most other Australian jurisdictions.

The combination of low and minimally changing income levels with this rapid escalation of electricity prices over much of the last decade has been the experience for most people in the bottom half of the South Australian income distribution.

**Figure 5.6**

**Retail price index (inflation adjusted)—Australian capital cities**

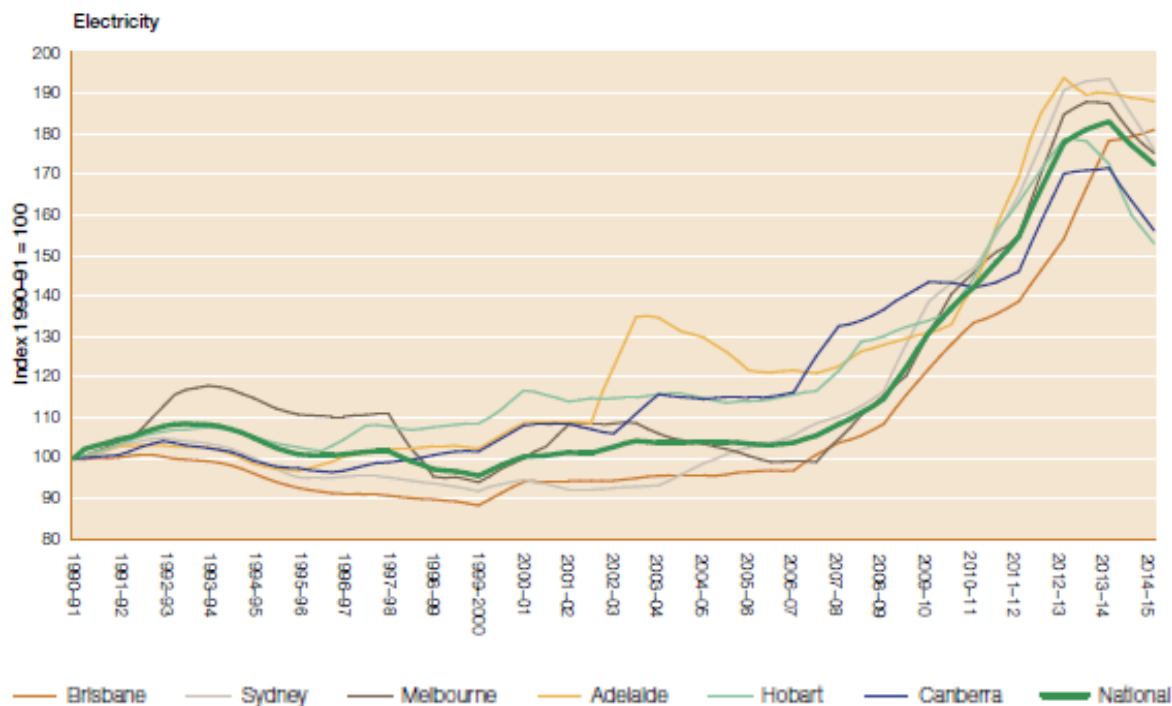


Figure 5. Source AER, 2014–15 ANNUAL REPORT ON THE PERFORMANCE OF THE RETAIL ENERGY MARKET

The combination of flat income growth and high energy price increases has produced a number of unsatisfactory outcomes for residential (and small business) consumers. Figure 6 shows residential electricity disconnections for non-payment from 2009-10 to 2014-15 for South Australia, showing that the number of disconnections has nearly doubled over the six-year period. While there has been a slight decline from the previous year for 2014-15, levels of disconnections are still extremely high.

The data in figure 7 shows that the number of people disconnected and then reconnected for South Australia, increased from 2013-14 to 2014-15. It is this data which most clearly reflects disconnections due to inability to pay. The data in figure 7 also shows that South Australia has the highest rate of disconnections for inability to pay for electricity in Australian NECF jurisdictions.

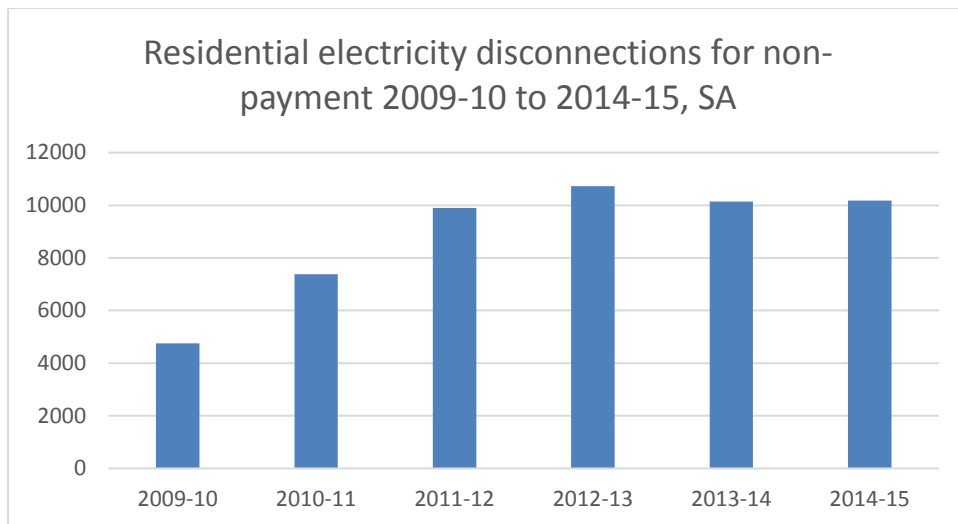


Figure 6. Source AER, 2014–15 ANNUAL REPORT ON THE PERFORMANCE OF THE RETAIL ENERGY MARKET

**Figure 2.8: Residential customers disconnected for non-payment in 2013-14 and 2014-15 by jurisdiction**

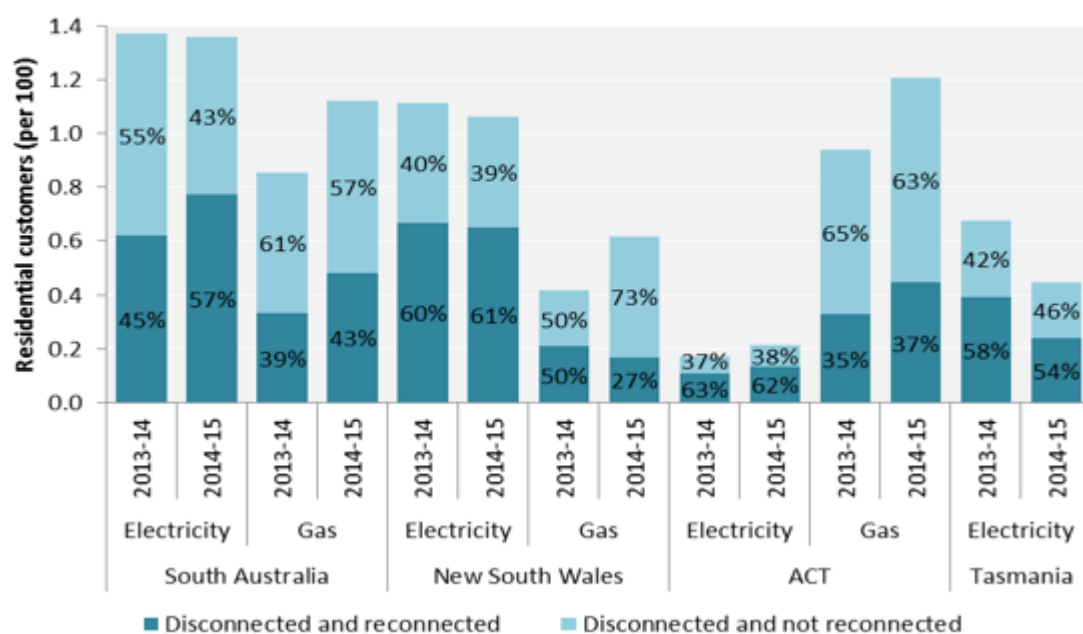


Figure 7. Source AER, 2014–15 ANNUAL REPORT ON THE PERFORMANCE OF THE RETAIL ENERGY MARKET

Figure 8 shows data regarding the proportion of residential electricity customers repaying electricity debt as of June 30, 2014. Again South Australia has the highest rates of customers repaying debt across Australia though Tasmania has the highest levels of average debt for customers on electricity retailer hardship programs. We regard the figure of 6% of electricity customers repaying debt as being far too high in a modern, wealthy country.

**Figure 2.2: Residential electricity customers repaying debt and average debt – as at 30 June**

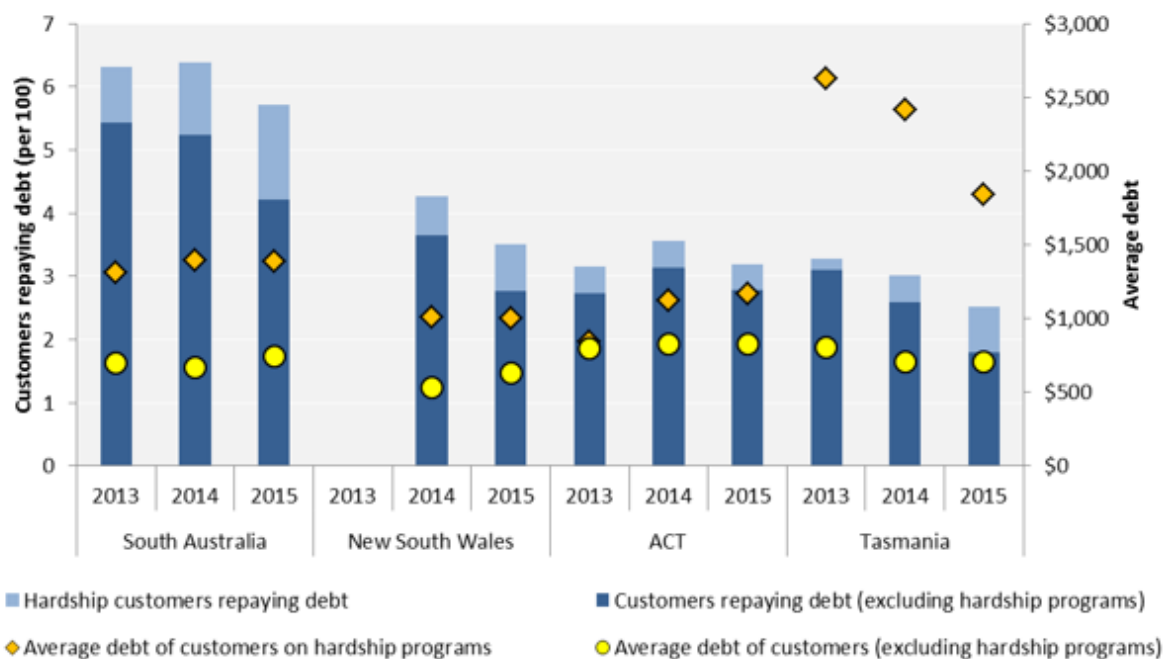


Figure 8. Source AER, 2014–15 ANNUAL REPORT ON THE PERFORMANCE OF THE RETAIL ENERGY MARKET

Figure 9 shows that South Australia has the highest rate of electricity customers on hardship programs.

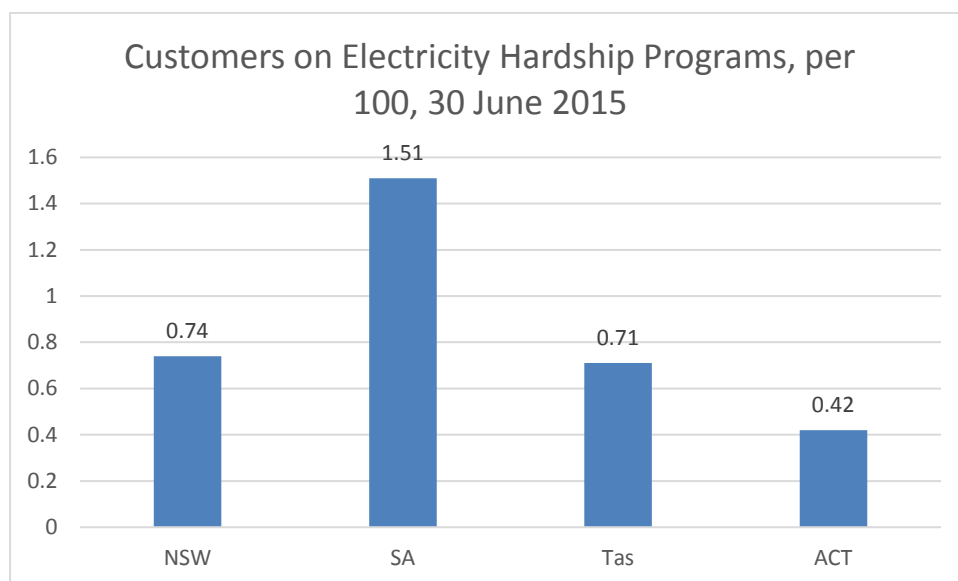


Figure 9. Source AER, 2014–15 ANNUAL REPORT ON THE PERFORMANCE OF THE RETAIL ENERGY MARKET

## **ElectraNet's Network Vision**

Given the context summarised in the previous section, the following considers the questions raised by the ElectraNet "Network Vision" discussion paper and responses to the questions asked in that paper, questions are given in italics at the commencement of each section. We are well aware that ElectraNet is not responsible for the full bill that customers receive indeed nearer 10% of that bill. However we believe that all businesses contributing to the bill that end consumers pay need to be acutely aware of the financial situation of customers in general and to be as responsive as is possible to the growing financial burden placed on increasing numbers of households by ongoing high electricity price increases. So in the context of setting transmission revenue, we apply similar perspectives to ElectraNet as to all other businesses involved with the supply of electricity to South Australian consumers.

### **What do consumers value? Section 2**

*To what extent do you agree with our summary of customer and customer expectations? Which do you think are most important? Are there other expectations that should be considered?*

The discussion paper summarises three themes valued by customers: affordability, reliability and choice.

The information given in the previous section shows that different consumers have differing needs and situations and so are going to value different aspects of energy provision in varying ways.

This said, given that about half of the state's population are going to struggle with paying electricity bills at some stage over a 12 month period we believe very strongly that "affordability" must be the dominant theme for all energy businesses.

We agree that reliability and choice are important to customers but do not regard choice as an important theme for ElectraNet which by definition is a natural monopoly and so there is no choice of transmission business South Australian customers. We agree that electricity network businesses need to be able to enable consumers to choose to use new and emerging technologies and to value renewable energy and demand management opportunities. Networks play an important role in enabling choice at this level.

Regarding the list of expectations given in the discussion paper we suggest that the critical expectation that is not included is that of "trustworthiness." Energy businesses are not well trusted by customers at the moment, yet our feedback is that customers want to be able to trust electricity businesses, retailers generators and network businesses, so all electricity businesses need to work simply and together to rebuild lost consumer trust.

We believe that trust is this one of the most important issues confronting the energy industry at large in Australia, with lack of trust heavily influencing consumer attitudes in Australia at the moment. Figure 10 shows recent data regarding energy industry trust versus average industry trust, for a number of nations. Australia fares very poorly on this measure, by international comparison. Consumer trust is only lower in Great Britain and South Africa.

Addressing the lack of consumer trust is a priority issue for all businesses within the Australian energy market

#### Energy Industry Trust<sup>2</sup>

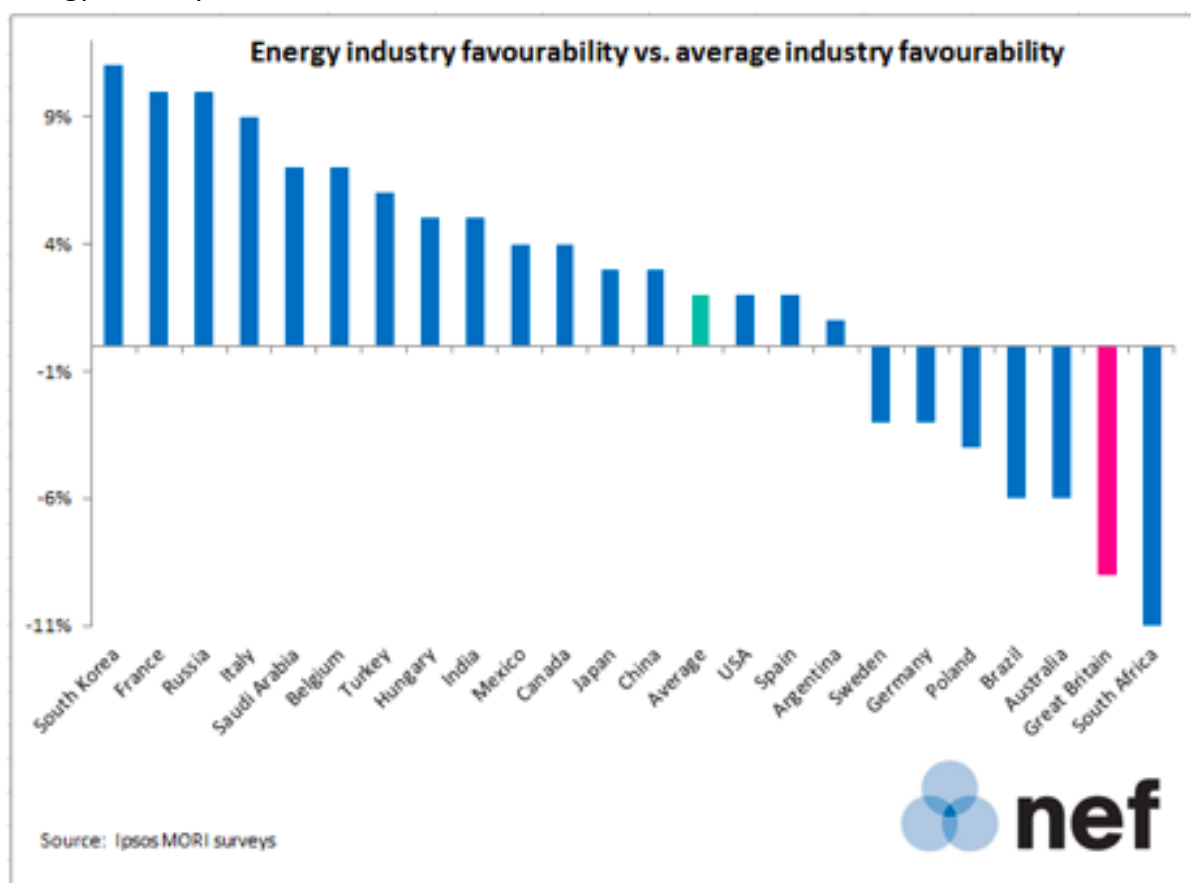


Figure 10. Energy Industry trust

ElectraNet can enhance trustworthiness by actions including:

- providing clear timely and accurate information to end customers particularly on outages and supply restrictions.
- Transparent dealings with all customers including direct connect commercial customers as well as generators, and retailers SAPN

<sup>2</sup> <http://onestepoffthegrid.com.au/why-australians-hate-their-energy-utilities-more-than-most/>

- active and ongoing relationships with consumer groups and consumer representatives
- ensuring that all aspects of the business are managed efficiently and effectively so that consumers are paying no more than they need to for transmission use of system.

Note that in identifying the importance of trustworthiness we are not in any way implying that ElectraNet is not trustworthy, rather that the electricity industry at large is not well trusted and so this is an ongoing priority for continuous improvement.

From the list of consumer expectations from the discussion paper we suggest that “transmission services delivered at lowest long run cost” needs to also reflect the expectation of consumers that short run costs are kept low too.

We also note with interest the following table which has been prepared by the CSIRO for the energy networks Australia (ENA) Future Grid / Roadmap project.

**Table 1:** Summary of future residential customer segments based on what they value most

	Autonomous	Tech focused	Hands on	Be my agent	Service dependent
Distinctive features	<p><b>Independent:</b> Wants full control, granular cost management and the ability to configure the operation of the electricity solution.</p> <p>Will often involve disconnecting from the grid entirely, and may be motivated by locational cost or reliability issues.</p>	<p><b>Empowered:</b> Has a strong affinity with technology and desires control.</p> <p>Wants to influence directly the design and operation of the customised solution.</p> <p>System cost is important but maximising returns on investment from trading energy services with the grid is critical.</p>	<p><b>Active:</b> Wants to understand what each available option has to offer and to be involved fully in the selection process.</p> <p>Willing to maintain a moderate to high involvement in the ongoing operation.</p> <p>System cost and return on investment from interacting with the grid to trade energy services are both important.</p>	<p><b>Passive:</b> Prefers electricity solutions that provide ease and convenience at a reasonable cost.</p> <p>Desires an agent to provide a shortlist of options that make sense, are easy to deliver and require a minimum of ongoing involvement.</p> <p>May invest in additional cost saving measures if simple and convenient.</p>	<p><b>Dependent:</b> Needs affordable network services and help to identify the most suitable options.</p> <p>Includes vulnerable customers experiencing energy hardship.</p> <p>Also includes households that cannot adopt new electricity solutions, given rental property constraints or a lack of access to capital.</p>
Common features	<p>All customer segments will value solutions that provide secure and reliable electricity for Australia's modern lifestyle. Some customers may want to trade off some aspects that have been standardised traditionally, in return for a financial benefit.</p> <p>Participation in a given segment is fluid and bi-directional. Households are likely to transition between segments at different stages of the life cycle, either towards greater autonomy or increased dependence.</p> <p>Customer segments are likely to be less affected by income level, as evolving business models and financing mechanisms make complex solutions available to larger proportions of customers.</p>				

Figure 11: Future residential customer segments

This aggregation of consumers into five different groups and discussion about what they value most is both useful and consistent with the comments made above. From the UnitingCare perspective, many of the people we see in services across the country are in the “service dependent” category, though there are elements of the “autonomous” category that also apply to the service dependent category, that is to say many people

who are service dependent, desperately want to be much more autonomous in their decision-making and able to make choices. For example, it is very difficult for low income renter to influence any of their living environment and often there is considerable limit even to the extent that they can have choice in their appliances. This makes them victims to poor housing design, inefficient appliances and generally shoddy accommodation, this is not what these people want – it is what they are forced to endure.

The CSIRO research identified four separate scenarios which are also useful in considering what future customers are likely to want, recognising that there is a diversity about what future customers want. The four scenarios are also helpful in thinking about change drivers. The CSIRO scenarios are:

*“When interpreting the long term scenarios, another point of difference between the 2013 Forum set and the 2015 set relates to customer behaviour. All four scenarios (both 2013 and 2015 sets) feature a particular customer behaviour:*

- »» Scenario 1 ‘Set and forget’: passive; prefers agents to manage services*
- »» Scenario 2 ‘Rise of the prosumer’: engaged; active involvement in service selection and management*
- »» Scenario 3 ‘Leaving the grid’: lacking trust in utilities; interest in disconnection as an unintended response to incentives*
- »» Scenario 4 ‘Renewables thrive’: warmth, familiarity and preference for renewables and storage.”*

Regarding “environmental and sustainability practices consistent with accepted standards,” we suggest that there is an emerging expectation that environmental and sustainability’s outcomes exceed prevailing standards.

## **Change drivers. Section 4**

*To what extent do you agree with the major change drivers discussed above? Are there additional drivers that need to be recognised or contemplated?*

*Which change drivers (already noted above all those not yet captured) do you think will have the greatest impact on the future role of the transmission network and why?*

Before dealing with the change drivers from the network vision paper, we refer again to the CSIRO / ENA Electricity network transformation roadmap with figure 2.15 from that report showing projected average residential network costs from 2015 to 2050, for each of their four scenarios.

While it is not surprising that distribution costs will continue to be significantly more than transmission costs, the divergences of costs for the various scenarios, from about 15 years time, for TUOS is significant for different scenarios. The relative increase in the costs for the

“renewables thrive” scenario is greater for transmission than distribution costs, while the lowest cost transmission scenario for consumers is the “set and forget” scenario which we understand is where mainly ‘third parties’ provide energy management systems and services for residential and we assume small business customers to minimise their costs.

**Figure 2.15:** Average residential network costs per kilowatt-hour, by scenario

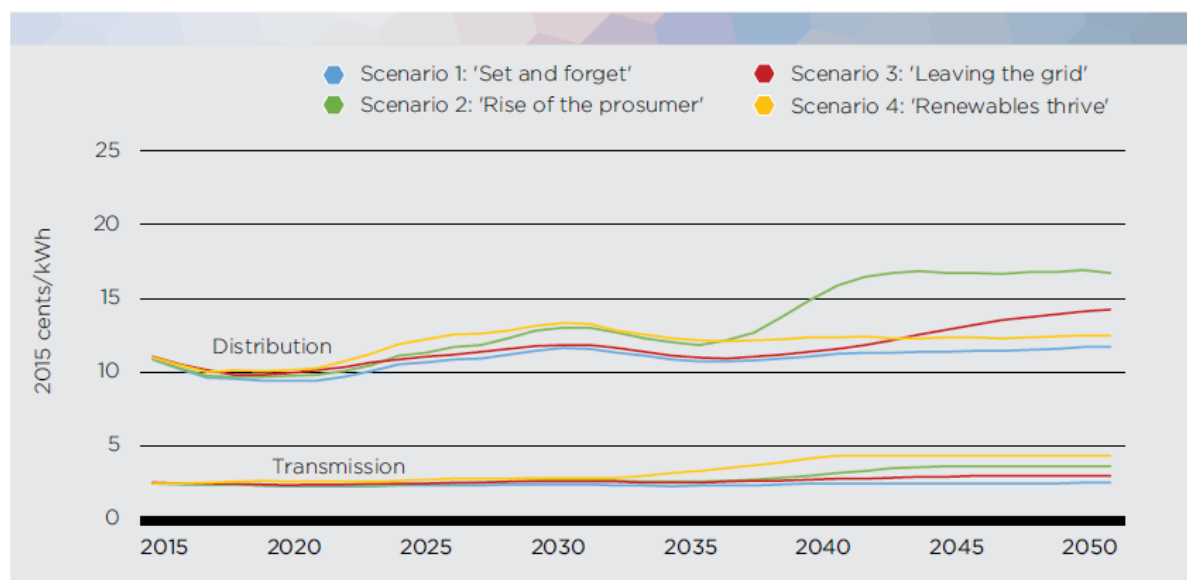


Figure 12: Source CSIRO/ENA roadmap for network reform

The change drivers identified in the ElectraNet discussion paper are:

- economic growth
- population growth patterns
- energy prices
- technological development
- consumer attitudes
- environmental policy
- network regulation
- network condition

### Economic growth

This list summarises the major change drivers, although we spell out the importance of jobs growth and in particular the growth of regular jobs with consistent incomes as a critical part of the economic growth drivers. We anticipate a short to medium term high focus for State Government policy on jobs growth in South Australia.

### Population growth patterns

Similarly for population growth patterns we recognise the importance of regional and rural communities is critical for the South Australia economy and as important communities in their own right. ElectraNet has an important role in the development of opportunities for regional and rural economic growth; building on the state's agriculture and horticulture mining, tourism and wine industries. Through strategic expansion of the transmission network it is possible that ElectraNet can help to create the necessary infrastructure for economic and employment growth in regional locations.

### Energy prices

The uncertainty of future energy prices, particularly gas, means uncertainty about demand and consequently networks. Prices will continue to be an important issue for ElectraNet, an issue it will need to work with consumers, State Government and emerging business on an ongoing basis.

### Technological development

We note the AEMO (2015) Emerging Technologies Information Paper<sup>3</sup> which is an excellent consideration of emerging technologies, which we know that ElectraNet has closely considered.

Our expectation is for non-linear uptake of new and emerging technologies particularly from mid-2020s when we believe that a 'tipping point' in community expectations will occur particularly driven by global warming and stronger desire for renewable energy. We suggest that the outcomes of the Paris climate change talks in December 2015 have provided a significant base for future growth of renewable energy and demand management approaches, particularly compared to the much more status quo outcomes from Copenhagen in 2008.

We believe that technological development is one of the most significant of the change drivers and probably the most difficult to predict. Again this is an area where ongoing dialogue and shared learning between ElectraNet consumers and other key stakeholders is of crucial, ongoing importance.

### Consumer attitudes

As suggested above, we expect consumer attitudes to move more strongly in favour of renewable technologies and carbon reduction strategies, over the coming decade. We are also aware of retirees and near retiree households having the attitude at the moment that going off grid, or as near to off grid is possible, is important for their own retirement energy security and financial management.

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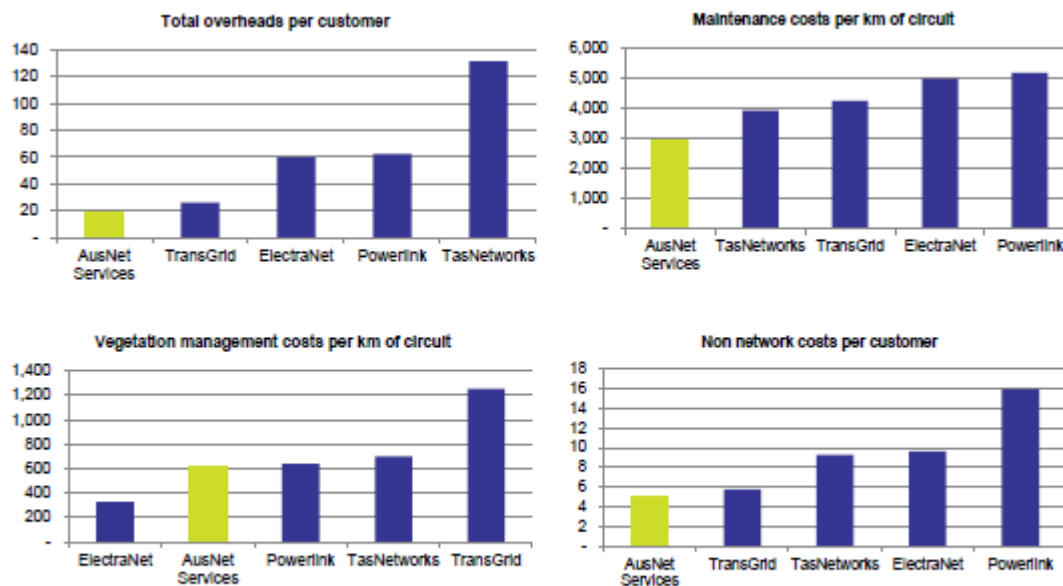
<sup>3</sup> [www.aemo.com.au/.../Emerging%20Technologies%20Information%20Paper.ashx](http://www.aemo.com.au/.../Emerging%20Technologies%20Information%20Paper.ashx)

As the electricity industry regains trust with the community, and the near decade-long pattern of electricity price increases changes, we suggest that this attitude to going 'off grid' will also change. Anecdotally there are many people who will overinvest in PV and batteries in order to insulate themselves from exposure to 'the grid' and expectation of future electricity price shock.

### Pricing

We expect that the significant electricity price increases of the last decade will abate and that over the next 5 to 10 years consumer bills we will reduce compared to recent years, reducing real prices paid by end consumers and taking a fair bit of the media and political heat out of energy market development.

Figure 13 below benchmarks the 5 Australian Electricity TNSP's against 4 cost measures. ElectraNet has the best performance for vegetation Management, has median overhead costs per customer and is worse than median for two measures, maintenance and non-network costs. This indicates that ElectraNet is about the mark in terms of costs to consumers, but suggests at least two measure sin which there is a little room for improvement.



Source: AER RIN data, Huegin Consulting, AusNet Services

Note: Excludes easement land tax for AusNet Services

Figure 13. Source, AusNet Services regulatory Proposal 2017-22

### Network condition

We expect that for the foreseeable future some replacement capital expenditure will be needed but that network condition will not be a major driver of change.

Our instinct is to suggest that the major change drivers for ElectraNet over the next couple of decades will still be price. For technological change, in particular we expect battery

storage at both end user level and at grid level to have an increasing impact on electricity networks over the second half of the next decade, and beyond.

#### Change Drivers with Greatest Impact on future of transmission

In response to the question about the most important change drivers, we suggest that the top three from a current perspective are:

1. energy prices
2. consumer attitudes, including 'trust'
3. technological development

### **Planning for the future. Section 5**

*How do you view the scenarios which were developed? How well do you think they will cover a reasonable range of plausible futures based on the scenario drivers?*

*To what extent do you agree with the adoption of the conventional wisdom scenario as the central planning scenario? If not, what scenario should be selected?*

We think that this is a very useful chapter and note that there is similar work being undertaken by CSIRO / ENA and that AEMO also released a very useful report about new technologies in the middle of 2015. Scenario planning is a very useful tool and we encourage ElectraNet to align their planning for the future scenarios with the CSIRO / ENA: ELECTRICITY NETWORK TRANSFORMATION ROADMAP - Interim Program Report. They use the terminology and scenarios of:

- **Scenario 1:** 'Set and forget'
- **Scenario 2:** 'Rise of the prosumer'
- **Scenario 3:** 'Leaving the grid'
- **Scenario 4:** 'Renewables thrive'

Alignment of scenario thinking across current reports would help all stakeholders including consumers to be able to engage more readily in these debates due to a common language

Regarding which of the ElectraNet scenarios to use, we believe that over the longer term, say 15 to 20 years, the “conventional wisdom” scenario will give way to something more akin to the “decentralised world” scenario. In terms of maximum demand, a critical component in future network planning, the decentralised world scenario only starts to deviate from the predicted trend for conventional wisdom from the early 2030s, so planning for both scenarios in the medium term is realistic, with capacity to adjust into the future, if our more optimistic projections for South Australia in the medium to longer term prove to be accurate.

## **Future scenario implications, chapter 6**

*what is your view of the scenario outcomes presented above?*

*what are the implications for the future role of the transmission network?*

We are happy with the scenario outcomes that are presented in the paper recognising that they are predictions and like any forecasting unlikely to be accurate, but usefully indicative.

With regard to storage uptake and electrification of transport, we suggest that these are critical areas for network businesses to work with retailers and consumers to develop appropriate pricing structures and incentives that enable storage uptake and electrification of transport to play important roles in increasing the multifactor productivity of networks, and outcome of benefit to all stakeholders.

We suggest that the most important implications of the future scenarios for transmission businesses are that there will continue to be a need for a transmission network well into the foreseeable future and that more active and ongoing dialogue with stakeholders and particular consumers is going to be of ever more importance to transmission businesses as the vagaries of emerging technologies play out.

## **Network vision, chapter 7**

*how does the network vision, outlined above, a line with your views of what the transmission network will need to look like in future? If there are gaps, what are these?*

*To what extent does the network vision, outlined above, tell you about how the future transmission network will likely be planned?*

*Does the network vision appropriately identify all the key issues that should be taken into account in developing specific transmission network plans for the 1 July 2018 to 30 June 2023 five-year regular trip period?*

While we are happy enough with the network vision statement that “Electra net’s vision is for the South Australian transmission network is that it will deliver affordable and reliable power supplies that support customer choices into the future.” We suggest that there are two very important factors which also need to be part of the future vision, namely fostering state economic growth including in regional locations and ensuring that the transmission network supports a low carbon future.

We agree that stakeholder engagement is critical for all stakeholders into the future and support the comment about ElectraNet remaining committed to genuine engagement with customers, consumers and other stakeholders. We suggest that in the way transmission businesses do business, this is probably the most important area of change over the coming 5 to 10 years.

We fully support the statement that “in the future, potential new transmission connections, particularly for regional and remote sites, may choose to install on-site solar PV and/or storage to lower their connection and energy costs, or even transition to a micro-grid or off grid environment.”

In response to the specific questions that ElectraNet has asked for this section of the discussion paper, we highlight a strong belief that developing strong agile and robust consumer engagement and ongoing stakeholder engagement is the critical development for ElectraNet as a transmission business. UnitingCare Australia offers to be as closely involved as we can to support and enable appropriate processes to achieve ever greater consumer engagement.

## **Directions and priorities chapter 8**

*What do you see as the future direction South Australia’s transmission network?*

*To what extent do you agree with the key themes, directions and priorities set out above?  
Which do you see as being the most important priorities? Are there others which should be contemplated?*

We now respond briefly to these questions from the list of proposed priorities in the order presented in the discussion paper.

### **1. Continuing role of the transmission network**

#### Top Priority

- focus on efficiently prolonging asset life wherever possible and deferring major replacement

#### Medium Priority

- explore more efficient pricing arrangements to promote clarity, stability and fairness
- manage any major mining triggered developments as contingent projects within the regulatory framework
- continue to maintain the existing network as safely and efficiently as possible through reliability centred maintenance. (Though we remain somewhat concerned about the potential for over engineering in the name of safety)

#### Low Priority

- retired assets unlikely to be needed in the future where economic to do so.
- consider options to recover past and future investment in the most timely manner to protect future consumers

(Our concern about these two proposed priorities is the potential for additional or even excessive cost burden on consumers in the short-term associated with differing views about what actually constitutes fairness - in particular intergenerational fairness. We suggest that these are critically important topics for wide discussion, debate and resolution with consumers and other stakeholders)

## **2. Distributed Energy**

### Medium Priority

- actively monitor trends and developments to ensure the grid is ready to integrate distributed energy technology. We suspect that this will be achieved in collaboration with other bodies also looking at similar issues including CSIRO/ENA, AEMO, other TNSP's and consumers.
- plan for in emerging technologies in order to maintain safe, reliable and secure supply under foreseeable operating conditions

## **3. Changing generation mix**

### Top Priority

- Pursue efficient options to address more complex network operation with less conventional generation. Noting that South Australia is globally at the forefront of integrating renewable technologies into the electricity grid. We hope that ElectraNet being at the forefront of this work can create export opportunities from South Australia, so the being at the forefront of renewable integration is an economic as well as environmental and social positive.

### Medium Priority

- investigate further interconnector upgrade opportunities where in the consumer interest

## **4 New technologies and network service delivery**

### Top Priorities

- continue to investigate application of grid scale storage where economic and seek to gain experience in the deployment and operation of this emerging technology
- actively pursue demand-side solutions and other innovations in the deployment of non-network solutions and new technology.

### Medium Priority

- develop analytical capability to manage 'big data' to improve decision-making in asset management and network operation. Again we see that this may be a part of research and development which can contribute to expertise development with export potential.

### **Missing Priority**

Ongoing engagement with consumers and other stakeholders to assist in problem solving and efficient network development. We have identified in some of the priorities above where this approach could apply. We are strongly of the view that ElectraNet can be a leader in genuine, 2-way high, trust problem solving directly with consumer interests.

The future that we imagine is one where ElectraNet works closely with consumer groups and other stakeholders in an ongoing capacity to both provide affordable and reliable electricity to South Australia in consumers while enabling more environmentally sustainable energy system and generating expertise in transmission services with export potential.

Comments or Questions

### Contact:

Mark Henley

Ph: 0404 067 011

Email: [MarkH@unitingcommunities.org](mailto:MarkH@unitingcommunities.org)



## CENTRAL IRRIGATION TRUST

Trustee: Central Irrigation Pty. Ltd. ACN 075 446 810  
4 Fowles Street PO Box 34  
Barmera SA 5345  
Telephone 08 8580 7100  
Fax 08 8588 2001



Simon Appleby  
Senior Manager Regulation and Land Management\  
PO Box 7096  
Hutt Street Post Office  
Adelaide SA 5000

Email [Consultation@electranet.com.au](mailto:Consultation@electranet.com.au)

21/12/2015

Dear Simon,

Thank you for the invitation to participate in the recent forum on the Network Vision and the ability to provide comment on the "Network Vision Discussion Paper".

Overall I believe that the paper provides a reasonable but overestimated vision of the future for electricity production, consumption and distribution.

As a significant user of power in regional South Australia we are disappointed with the Electricity Industry in general from what we believe are unsustainable price increases over the last 7 years. We are at a point where we have the highest power prices in the world, not a position that is an enabler to attracting new business to the state or even worse retaining current SA businesses in the state.

As the current power prices are significantly higher than the other states participating in the NEM the situation in South Australia can only lead to one eventual outcome, stagnant, but more likely falling demand for both peak and volumetric supplies. At the current prices businesses in our region are exploring all avenues possible to remove themselves from or reduce their dependence on the grid and decrease peak usage. Projects in the feasibility stages involve solar installations, use of waste for generation of heat and/or electricity and supplementary diesel generation.

If total energy prices continue to escalate customers using alternative supplies will increase rapidly as the shorter pay back periods for business and residential energy users become more attractive.

In my view the advent of viable battery technology will challenge the existence of the transmission industry as embedded wind, solar and bio generation with battery backup makes local grids practical.

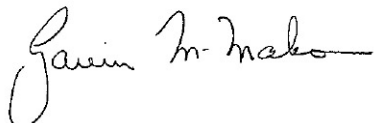
The challenge for Electranet is how to remain viable and relevant into the future. They along with the other segments of the electricity industry must be cost competitive and low cost service providers. They may also expand their business model and rather

than solely rely on the transmission business expand into energy storage. However this will be a competitive market and the early adopters are more likely to succeed.

South Australia will also see more economic headwinds in the near future with the eminent closure of car manufacturing and the impacts of the Murray Darling Basin Plan. If power prices continue to increase further closure of large manufacturers who consume significant volumes of energy may occur. We believe that scenario 4 more closely reflects the economic conditions for South Australia over the life of the network vision.

If you would like any further information please feel free to contact me.

Yours Sincerely,

A handwritten signature in black ink, reading "Gavin McMahon". The signature is fluid and cursive, with the first name "Gavin" being more prominent than the last name "McMahon".

Gavin McMahon  
Chief Executive Officer

cc Barnaby Joyce MP, Senator Ann Ruston, Tony Pasin MP

Tim Kelly

Adelaide South Australia

31/1/2016

Simon Appleby  
Senior Manager Regulation and Land Management  
PO Box 7096 Hutt Street Post Office ADELAIDE SA 5000  
[consultation@ElectraNet.com.au](mailto:consultation@ElectraNet.com.au)

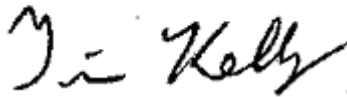
Dear Simon,

Thankyou for providing the opportunity to provide feedback on the proposed ElectraNet Vision.

In this submission, there are some high level suggestions in regard to ElectraNet striving for a higher level sector wide outcome whilst maintaining its commitments to its shareholders and customers.

I would be happy to meet with you in the near future to discuss our suggestions.

Kind regards

A handwritten signature in black ink that reads "Tim Kelly". The signature is written in a cursive, flowing style.

Tim Kelly

Representative, Conservation Sector  
ElectraNet Consumer Advisory Panel

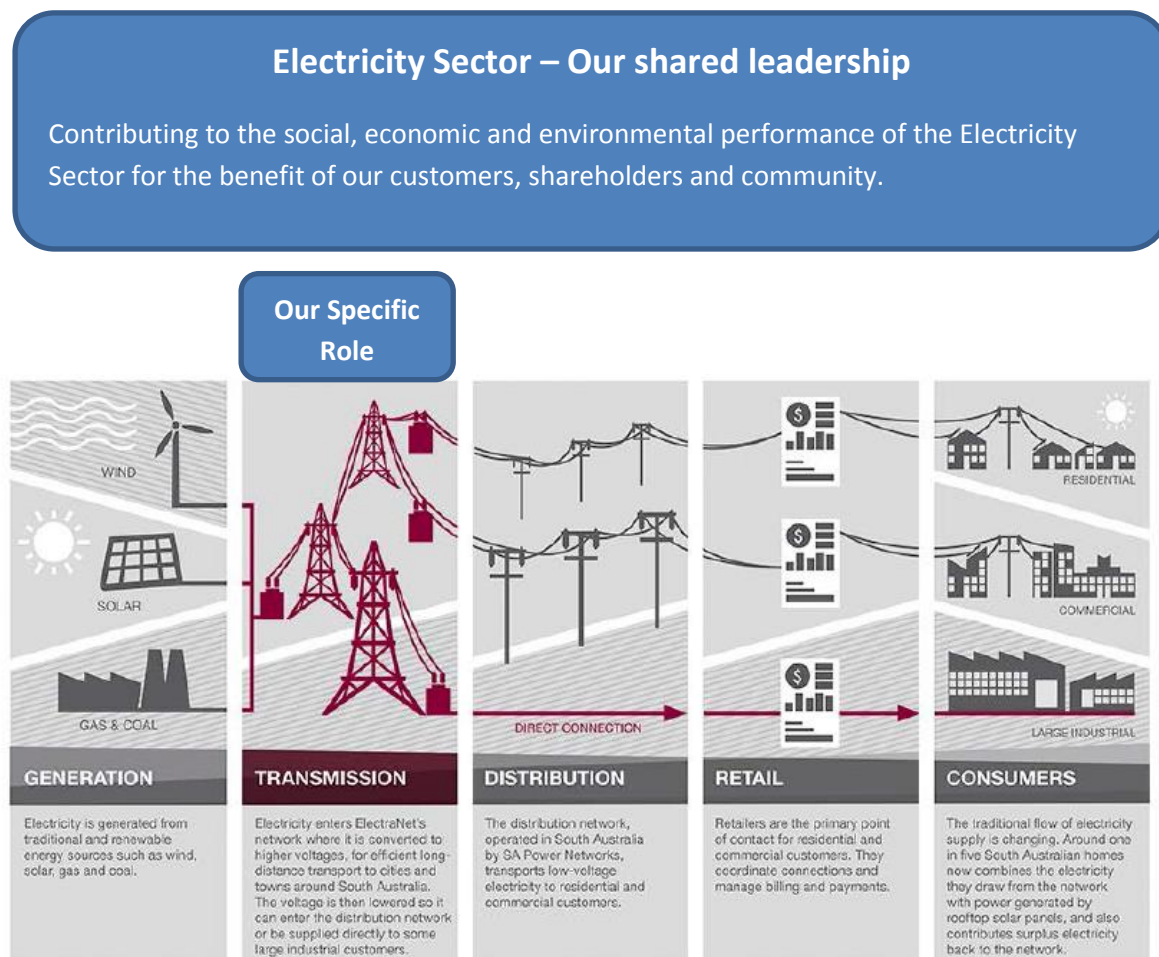
## **SUGGESTION 1      Identify that ElectraNet plays a shared role towards achieving a sustainable electricity system.**

The diagram and caption suggests that ElectraNet is thinking primarily about reliability and price, not the broader range of social, economic and environmental aspirations that consumers may have. Whilst it is acknowledged that ElectraNet has few end user customers, it plays a broader role in an industry sector that has millions of end user customers. I am seeking that ElectraNet discover and embrace their work in this broader context.

Based in this concept of a broader shared leadership role, it is suggested that the diagram also show ElectraNet as an industry sector leader, sharing in the responsibility for the social, economic and environmental performance for the longer term.

large industry. The services we provide also impact on the cost and reliability of electricity for consumers that are connected to SA Power Networks' distribution network.

The role of ElectraNet in the electricity supply chain is illustrated below.



## Why is this important?

Shared responsibility for the electricity sector as a whole is important so that ElectraNet can be assured of the best future. If the retail sector or the generators lose customers because they are not meeting customer needs or expectations, ElectraNet will also ultimately suffer.

Two areas of greatest concern could be selling the storyline and role of the future electricity grid, including GreenPower to keep renewable customers attracted to the grid. Currently, there is damage to the grid electricity sector with competition from household renewables and now battery systems taking part of the market. There is an electric vehicle market that could explode at any time. Whilst at one level such innovation is welcomed, there is also further scope for legal and pricing reforms for the accredited GreenPower framework which offer benefits to make the grid more attractive for renewable energy minded users to remain connected.

Whilst ElectraNet do not have a direct role in these customer issues, it should be aware there is a need for a greater pace of reform and transition in the greater electricity sector to keep the grid electricity framework attractive and to provide competitive value for money.

No matter what the issue, ElectraNet can play a key role in co-leadership of the entire sector.

## **SUGGESTION 2      Network Vision – A vision that extends beyond the direct role of ElectraNet.**

As a renewable end user, this vision at this stage lacks the future I am seeking.

The vision as stated reads “ElectraNet’s vision for the South Australia’s transmission network is that it will deliver affordable and reliable power supplies that support consumer choices into the future”, and is not yet a statement that will lead all aspects of ElectraNet’s purpose into the future

In comparison, the AGL vision (as another part of the electricity sector) is broader than its core business. “We are taking action toward creating a sustainable energy future for our investors, communities and customers”.

It is suggested that the last phrase be broadened to finish in a way that also conveys a vision of a sustainable electricity future. This may read as “ElectraNet’s vision for the South Australia’s transmission network is that it will deliver affordable and reliable power supplies that support consumer choices **for a sustainable future**”. Such an amendment would recognise the role of customers in contributing in a partnership towards achieving that future.

One potential component that could also be part of a longer term vision is “**Towards 100% renewables**”. This is currently confined within Section 6.3 Generation Connections as just one of many a future scenario implications. It would be better if this was presented as a stand alone priority section in future documents.

## MINOR SUGGESTIONS

### SECTION 2 What do consumers value?

It is suggested that in line with the shared industry leadership role, key customer groups be identified

#### 1. Wholesale customers and direct customers (those directly engaging with ElectraNet)

- A safe, secure and reliable supply of electricity to power homes, businesses and the economy
- Transmission services delivered at lowest long-run cost
- Service solutions developed by evaluating all reasonable alternatives, including non-network solutions such as demand management
- Secure integration of renewable energy generation and emerging technologies
- Environmental and sustainability practices consistent with accepted standards
- Effective engagement to understand their needs and expectations and to respond to these in our business planning

#### 2. Retail customers (no direct relationship with ElectraNet)

- Safe secure and reliable supply of electricity to power homes and businesses
- A socially sustainable and affordable electricity supply which meets the needs of consumers, including vulnerable consumers
- An environmentally sustainable electricity supply, transitioning to renewables and near zero emissions
- Retail accredited GreenPower renewable electricity options that are fair and supported by legislation and allocation frameworks
- Faster approach to assist in the integration of disruptive technologies – battery storage, electric vehicles and on site renewable options.

### Section 3.1

The first paragraph is not actually valid. ElectraNet can promote its view that the RTN can play the major role in how consumers get their electricity but this should not be stated as an absolute essential. Consumers can move off the grid. ElectraNet has a role to market the grid to consumers, but not imply that consumers do not have another choice.

A blanket claim that the network provides a cheaper overall solution than stand-alone systems will not be valid in all circumstances. For those customers that would need to spend tens of thousands to connect to the grid the statement is not correct. Other customers that have small needs and may be prepared to wear some loss of reliability could install renewables, batteries and an on-site generator for when absolutely needed.

The point of these comments is to identify the need for the electricity sector to actively compete on its merits.

Given the recent state Government commitments for a net zero emissions future, it is suggested that a new '**Near zero carbon future**' section be included in final documents.

This is particularly important and it is worth noting that the Premier has announced that the SA Government will begin work on a plan for a near 100% renewable Energy Target by 2050 (Please note that this was not in the new climate strategy, but in a Paris COP climate change announcement).

### **Consumer attitudes**

Many consumers concerned about climate change maintain their concerns 24/7, in 52 weeks of each year. Concern for the environment and cost of living does not need to be portrayed as a competition or as a balance, as they each represent customer needs. It may be fair to say that whilst consumers may be concerned about the environment, under difficult economic conditions consumers may be less prepared or able to accept higher prices. There is also a question as to what environmental commitments and other conditions actually cause higher prices.

Many consumers continue to pay up-front costs for household renewables, with partial support from the Small Scale Renewable Energy Scheme (SRES) through the sale of SRES certificates..

### **Discussion Questions - What is missing?**

- Potential transition to a near 100% renewable energy future by 2050.
- Customer choices for 100% renewable energy from their onsite systems and grid supplied renewables (not currently possible because GreenPower is not supported by legislation and allocation frameworks).

### **ElectraNet Scenarios**

Customer demand for renewable energy could also be added to the horizontal axis. If this was considered Scenario 1 (with renewables) may be stronger.

### **Electrification of transport**

Great to have this section in the vision. What is missing is the policy reform agenda that is necessary to support a transition for electric transport to be from renewables. Without this reform, there will be extensive and harmful debates as to whether an electric vehicle charged from grid mix power is better for greenhouse emissions over the life cycle of all aspects.

### **8 Directions and Priorities**

Customers and consumers concerned about climate change are seeking more than a safe, reliable and affordable electricity supply. It is suggested to expand this sentence in future documents to read: '**A safe, reliable and affordable and sustainable electricity supply**'.

As an emerging direction, final documents could also cover the *Shared Leadership* role for the future of the grid electricity sector. This could also be included as a priority in this emerging direction to include:

- To actively monitor the changing expectations of ElectraNet's direct customers and of the electricity sector end users as a whole.
- To engage and work to resolve issues from across the electricity sector from generation to end users.

## Terms

The Terms described do not seem to be set out in a consistent foundation of Standard International (SI) units. It is suggested that the basic scientific and SI foundation is presented first, which can be followed by more easily read text for non-technical people if deemed necessary. This would remove inconsistency.

- **Energy** - Best to also add in that energy is described an amount of work. Refer to units of Joules (J) or Wh, kWh and/ or MWh
- **Power** – If there is an explanation of energy, there should also be an explanation for Power, the rate of doing work, using the units of J/s, W, kW or MW.
- Then the following explanations of kW, kWh and MW etc would not sit stand alone (could be set as dot points within the Energy and Power definitions)
- Could describe the Renewable Energy Target (RET) mechanism as a market push scheme driven by Government requirements
- Could describe GreenPower and its role as a market pull mechanism to support post 1997 and new renewable electricity driven by customer choices.

# Network Vision feedback form

## Contact Details

### Title

Mr

### First Name

Greg

### Last Name

Zooeff

### Email

[greg.zooeff@nyrstar.com](mailto:greg.zooeff@nyrstar.com)

### Company

Nyrstar

### Street Name

Risdon Road, Lutana

### Suburb/City

TAS

### Postcode

7009

### Telephone

03 62784935

### Mobile

0438 559 604

## Feedback Questions

**To what extent do you agree with our summary of customer and consumer expectations in Section 2? Which do you think are most important? Are there other expectations that should be considered?**

**To what extent do you agree with the major change drivers discussed in Section 4? Are there additional drivers that need to be recognised or contemplated?**

**Which change drivers (already noted above or those not yet captured) do you think will have the greatest impact on the future role of the transmission network and why?**

**How do you view the scenarios which were developed and discussed in Section 5? How well do you think they cover a reasonable range of plausible futures based on the scenario drivers?**

**To what extent do you agree with the adoption of the Conventional Wisdom scenario as the central planning scenario? If not, what scenario should be selected?**

**What is your view of the scenario outcomes presented in Section 6?**

**What are the implications for the future role of the transmission network?**

**How does the Network Vision, outlined in Section 7, align with your views of what the transmission network will need to look like in future? If there are gaps, what are these? To what extent does the Network Vision, outlined in Section 7, tell you how the future transmission network will likely be planned?**

**Does the Network Vision, outlined in Section 7, appropriately identify all the key issues that should be taken into account in developing specific transmission network plans for the 1 July 2018 to 30 June 2023 5-year regulatory control period?**

**Please feel free to provide any other feedback below.**

Some follow up questions:

1. There is a comment of opex being maintained but the recurrent capex spend in this period was ~\$600 million – I don't understand why there is such a large maintenance opex requirement going forward still if that quantum of capex will be spent?
2. WACC at 7.5% isn't that low...Electranet should also benchmark other non-related industries in competitive markets to understand the type of returns companies are getting
3. Why is there still ~\$400 million being proposed TBC for the new regulatory control period given Electranet have just off expenditure of ~\$600 million – this appears still too high...presumably this is all replacement capex?
4. What forecast demand scenario are you basing the capex and opex on? What sensitivity will you be doing on this?
5. What innovation and technology are using deploying to reduce opex?
6. In relation to the grid vision – two questions...1. What scenario are you leaning on ie doldrums or other..2. What probabilistic modeling will Electranet do with these scenarios?
7. Interconnectors – I didn't see much comment on interconnectors. 1. Can the Heywood interconnector be further expanded in import/ export capacity...~250MW increase in capability doesn't appear that large and especially in the current market upheaval SA is facing. My understanding is that the Heywood interconnector assets are rated to 900-1000MW but that stability issues may be a concern. If it can be upgraded further at relatively modest capex what would be the timeframe of this expansion 2. If 1. Not feasible is Electranet planning for a third interconnector? 3. upon review of the business case for the Heywood interconnector Northern Power Station exit was not contemplated nor was other thermal generators...will Electranet revisit the business case in light of these major structural changes and contract market impacts as the RIT-T did not consider these at the time?
8. With the Heywood interconnector upgrade I understand some outages will be needed...how is Electranet planning to minimize outages and impacts on wholesale market?

Regards Greg

**Please select this box if you do not want your submission published**

Yes

# Network Vision feedback form

## Contact Details

### Title

Mr

### First Name

Tom

### Last Name

Geiser

### Email

[tomgeiser1@gmail.com](mailto:tomgeiser1@gmail.com)

### Company

### Street Name

### Suburb/City

### Postcode

### Telephone

### Mobile

## Feedback Questions

**To what extent do you agree with our summary of customer and consumer expectations in Section 2? Which do you think are most important? Are there other expectations that should be considered?**

agree

**To what extent do you agree with the major change drivers discussed in Section 4? Are there additional drivers that need to be recognised or contemplated?**

I agree with the drivers and most of your expectations. Note: Electric heating is competitive with gas if reverse cycle air-con is used. Net-back costs for gas aren't likely to be too high e.g. \$12/GJ. Gas price volatility will increase driving gas storage. Why do you quote MMBTUs? This isn't america. Did Ezra write this paper?

**Which change drivers (already noted above or those not yet captured) do you think will have the greatest impact on the future role of the transmission network and why?**

Renewable energy. SA has little local fuel reserves. Renewables are currently cheaper than new build fossil plant in SA. Driven by the RET, household and large scale wind will continue to be built out in SA. Post 2020 PV will continue to be built to the point of saturation for all customer types. This makes for high use of transmission to both import and export to SA.

**How do you view the scenarios which were developed and discussed in Section 5? How well do you think they cover a reasonable range of plausible futures based on the scenario drivers?**

A good range of possible scenarios.

**To what extent do you agree with the adoption of the Conventional Wisdom scenario as the central planning scenario? If not, what scenario should be selected?**

I think elements from 1,2, and 3 are all likely. In 3 I disagree that there will be weak environmental policy. 2 underestimates technological progress. 1 overestimates customer engagement and decentralisation.

**What is your view of the scenario outcomes presented in Section 6?**

Aggregate and max demand follow historical trends. Solar may saturate sooner than scenario 1 suggests. Centralised storage is ignored (FCAS), but there will be less need for it if customers have it behind the meter. Elec cars and storage will feed each other's cost reductions, the rate is expected to be as rapid as solar PV. Elec cars could act as storage. In 6.3 im/exports are ignored skewing generation proportions.

**What are the implications for the future role of the transmission network?**

Lower utilisation isn't necessarily so bad. A lot of the cost is already sunk. Transmission is still the backup for peak demand and allows exports during high generation. The value for a solar/battery customer in being able to export is likely to be worth paying for transmission, in other words they won't want to defect.

**How does the Network Vision, outlined in Section 7, align with your views of what the transmission network will need to look like in future? If there are gaps, what are these?**

I broadly agree. Given the high bang for buck of transmission I think there will be more pressure on distribution to reduce costs and improve service.

**To what extent does the Network Vision, outlined in Section 7, tell you how the future transmission network will likely be planned?**

I think Electranet's long term planning is effective.

**Does the Network Vision, outlined in Section 7, appropriately identify all the key issues that should be taken into account in developing specific transmission network plans for the 1 July 2018 to 30 June 2023 5-year regulatory control period?**

Yes

**Please feel free to provide any other feedback below.**

**Please select this box if you do not want your submission published**

Yes

# Network Vision feedback form

## Contact Details

### Title

Mr

### First Name

Stuart

### Last Name

McPherson

### Email

[stuart.mcpherson@escosa.sa.gov.au](mailto:stuart.mcpherson@escosa.sa.gov.au)

### Company

ESCOSA

### Street Name

### Suburb/City

### Postcode

### Telephone

### Mobile

## Feedback Questions

**To what extent do you agree with our summary of customer and consumer expectations in Section 2? Which do you think are most important? Are there other expectations that should be considered?**

Generally agree with the summarised points, with reliability and price being the most important to ElectraNet's customers. Renewables and emerging technologies should be considered primarily in maintaining or improving reliability/cost in balance with costs associated with their development and take-up.

**To what extent do you agree with the major change drivers discussed in Section 4? Are there additional drivers that need to be recognised or contemplated?**

Again, broadly agree with the change drivers presented. The major pressure point for ElectraNet may be servicing high-demand spot loads such as in the mining sector. A turn-around in the manufacturing industry may be unlikely in the medium term whereas it is more likely possible in the resource sector. It is important to be able to effectively respond to economic signals.

Population growth does not seem to be factor when observing the SA growth trend over the last 50 years or so, where SA has shown a small growth rate since the early 80s (Ref ABS).

Network condition is a key factor where assets near end-of-life.

**Which change drivers (already noted above or those not yet captured) do you think will have the greatest impact on the future role of the transmission network and why?**

Renewables - implications on network management (stability etc).

Mining loads - if they eventuate, particularly on the Eyre Peninsula where the existing network is limited.

Alternative technologies - how network demand will be managed e.g. battery or small scale generation (including mobility of solutions for demand and restoration).  
Additional interconnection - An additional interconnector from NSW would provide even greater security for SA. Major hurdle is attracting the necessary investment.  
Tapping Eyre Peninsula wind resource capability - Further network development could be undertaken to tap into the wind capability of the west coast of Eyre Peninsula. Cost-benefit/investment may prove difficult but future mining development may possibly help the cause.

**How do you view the scenarios which were developed and discussed in Section 5? How well do you think they cover a reasonable range of plausible futures based on the scenario drivers?**

Developed scenarios cover a broad range of considerations that must by definition take a realistic view.

**To what extent do you agree with the adoption of the Conventional Wisdom scenario as the central planning scenario? If not, what scenario should be selected?**

Conventional Wisdom scenario as proposed in 5.3 is a logical step in accounting for the range of uncertainties confronting network operators.

Introduction of cost-reflective tariffs may be more aligned to a moderate timeframe, given the rate of change of technology and a growing customer understanding of price signals and power of choice.

**What is your view of the scenario outcomes presented in Section 6?**

The broad scenarios are a starting point in understanding the direction of generating and transporting energy, down to how it might be consumed and the impact on the transmission system.

Storage uptake is an unknown inasmuch as penetration will depend strongly on cost, customer education (and power) and how it is adapted to the network, eg micro-grids, substation storage, network support. The market needs to be structured to encourage the mix of storage technologies.

Battery technology exists now that supports the scenario of some regional and remote bulk supply points being taken off-grid. Agree with expectation of maintaining metropolitan bulk supply points under the centralised grid.

**What are the implications for the future role of the transmission network?**

The transmission network will maintain its role in transporting energy to customer connection points. The network as it stands will be 'business as usual', especially in connecting renewables - particularly wind where the resource is remote from the demand.

Where high spot loads are created in the future (eg mining), the viability of extending the network will compete with localised generation/storage technologies and therefore must be cost competitive.

Regional and remote areas may see the shrinkage of the transmission system if renewable/storage technologies become viable solutions for off-grid supply, eg Leigh Creek.

**How does the Network Vision, outlined in Section 7, align with your views of what the transmission network will need to look like in future? If there are gaps, what are these?**

The transmission network will maintain its role in transporting energy to customer connection points. The network as it stands will be 'business as usual', especially in connecting renewables - particularly wind where the resource is remote from the demand.

Where high spot loads are created in the future (eg mining), the viability of extending the network will compete with localised generation/storage technologies and therefore must be cost competitive.

Regional and remote areas may see the shrinkage of the transmission system if renewable/storage technologies become viable solutions for off-grid supply, eg Leigh Creek.

**To what extent does the Network Vision, outlined in Section 7, tell you how the future transmission network will likely be planned?**

Customer choice, in the end, may dictate the way in which the businesses operate.

The network vision highlights the need to be dynamic in managing and planning the network and being able to react to rapid change (technology, policy, customer power).

Storage/renewables may impact significantly on the customer base if customers choose to abandon the networks where cost permits, ie the expected consumer pressure.

**Does the Network Vision, outlined in Section 7, appropriately identify all the key issues that should be taken into account in developing specific transmission network plans for the 1 July 2018 to 30 June 2023 5-year regulatory control period?**

Yes. However, the extent of change to the current business model depends on the rate of change of external factors ("disruptive" technologies etc). The impact of, and adjustment to, any change needs careful consideration of how it is accounted for in the regulatory framework.

**Please feel free to provide any other feedback below.**

**Please select this box if you do not want your submission published**

Yes