

## Overview

It will not be any surprise to members of Powerlink's Customer Panel that the energy industry is in a state of transition. We're currently seeing:

- Changes in the generation mix with large amounts of grid-connected asynchronous generation (almost 1,600MW either connected or in construction) displacing traditional synchronous plant, which is creating operating challenges on Powerlink's network.
- Customer concern with electricity prices and how their electricity is supplied.
- There are now over half a million residential rooftops in Queensland and the interest in residential storage is also increasing.
- A shift to digitisation with block-chain and the Internet of Things driving load aggregation capabilities and Virtual Power Plants.
- A shift to new technologies e.g. Electric Vehicles, Solar PV and storage with rapidly falling cost curves.
- Numerous market reviews including the Finkel Review, CSIRO and Energy Network Australia's Electricity Network Transformation Roadmap (ENTR), AEMO's Integrated System Plan (ISP) and the Queensland Government's Powering Queensland Plan.
- Extended debate on energy policy at a federal level.

We believe that Powerlink and our transmission network will play a key role in facilitating this change – as both a platform for energy exchange and an important piece of physical infrastructure to continue delivering a reliable supply of power.

## What is the Network Vision?

In light of this transforming environment, we see the need for a forward-looking Network Vision to help Powerlink navigate through this period of change – to better understand our role in the future and ensure our transmission network continues to provide value and deliver services at the lowest cost to customers. The Network Vision will create a clear direction for our people, stakeholders and customers, providing guidance in transforming Powerlink to appropriately respond to this changing environment.

As part of the Network Vision's development, Powerlink is not creating a future network topology, i.e. a physical representation of our assets. From our perspective, a number of other recent key industry reviews, e.g. ISP and ENTR, in which Powerlink has had strong participation, have already provided this view. It is our intent to leverage and reference these reviews and include their outputs as part of the Network Vision.

We'll also be using the Network Vision as an input to and support for Powerlink's next Revenue Reset process which will commence in 2019.

## Customer at the centre

Ultimately, Powerlink's long-term future is to deliver energy services of value to our customers.

The Network Vision is about identifying the functions and services that Powerlink will provide to customers and a roadmap on how we can evolve to have a sustainable business. To assist, Powerlink has engaged Aurecon to help us explore our future customers' needs and help develop the Network Vision.

We further explored the Network Vision with our stakeholders as a breakout session at Powerlink's recent Transmission Network Forum on 7 September 2018. We asked participants the following questions:

1. What trends are you seeing that impact your market and customers?
2. If these continue, what could your business look like in the future?
3. What would help you unlock the future and what role might Powerlink play?

A summary of responses is included below as part of pre-reading.

In working with the Customer Panel, we are keen to delve deeper into your end-users and their needs, including how the energy sector (and by extension, Powerlink) might best serve them in that future. To this end, we will be exploring the following two questions below.

## Questions

1. How are your customers' needs changing? Why is that?
2. How might the energy sector evolve to meet these changing expectations?

## Summary of input received at Powerlink's Transmission Network Forum – Network Vision Breakout Session on 7 September 2018

### Q1. What trends are you seeing that impact your market and customers?

- Politics - energy is being used as a political lever
- Transition versus system wide, we need to be thinking big and holistically
- What will batteries and EV uptake do for the network?
- Have a low tolerance and trust now due to retailers and lack of transparency in other industries (finance)
- Pace of change is accelerating, from 30 to 40 year planning horizon to exponential; regulators and retailers slow to respond
- Decarbonisation driving variability in supply and demand
- Customer behaviour changing: more educated on costs, desire flexibility and control
- Globalisation: businesses required to be internationally competitive; shorter investment payback period; reduce costs and improve efficiency
- Privatisation brings into question foreign ownership and short-term profitability versus long-term value
- All customers have increasing expectations to be engaged well in advance
- Necessity of electricity and managing vulnerable customers
- Electricity demand is interlinked with gas market as kJ can be converted to kWh
- The trend of moving from AC to DC network infrastructure for efficiency– could lead to the stranding of AC assets
- Hydrogen has been completely off the radar until recently
- Ageing population and scarcity of resources.

### Q2. If these continue, what could your business look like in the future?

- The system could be designed to oversupply so where's the wider agenda around leverage and collaboration so we can best re-purpose the network to meet alternate sources (such as hydro)
- More technology and more bespoke configurations will be needed despite consumers (and potentially > businesses) leaving the grid
- Predictability of supply remains key

- Our transmission network will be smaller in the future, so what exactly is our value offering in this future? More point-to-point based value? Transport versus trading?
- Duty of care is a must, looking after vulnerable residents is a must, ageing population, only increase this pressure; and our remote agriculture and industrial users
- Customers' expectations are on the up-and-up, and value perceptions remain a critical driver
- Businesses more data driven; open access to data drives greater benefits and enables wisdom from information
- Electrification may not result in larger network if digitally enabled
- Queensland opportunities could have global impact if done right
- Residential penetration of solar and batteries likely to be in the realms of 50% to 70% where people may install up to four times demand
- Australia is unique and can be at the vanguard of moving to 100% renewables
- The process for proponents to connect should be more transparent and efficient
- Regulation needs to be flexible, light touch, adaptable and more forward thinking
- Electrification in the agriculture industry
- Bespoke customer and service provision.

### **Q3. What would help you unlock the future and what role might Powerlink play?**

- Transformation agent and influencer of change for industry and politics, be the voice of the customer, balancing technology and cost trade-off, driving a culture of empowerment and informing customers and community. Shaping what "better" regulation can look like, taking a system-wide lens
- Customer centric: share information and make better decisions; incorporate risk analysis; data driven; improve productivity and lower costs
- Powerlink will always be about keeping the system running and providing a predictable, essential service for the community
- Help shape and provide an incubator-type space to help industry and consumers test this?
- What does beyond the transition, the transformation look like? Traders of bandwidth? Equitable energy trading? Exotic energy traders? System stability (bigger than what we do now)? New service integration incubator for new technology (and potential R+D)?
- Reframing what Powerlink provides. This means our core business might shift but we will always be a provider of essential (energy/capacity) services. Is there potential for co-location of other assets and co-sharing of future easements?
- Be customer centric; engage early with customers to test new insights into the future
- Leader in technical skills development and deployment
- May be a direct service provider to disconnecting customers
- Could be the supplier of last resort for microgrids or a trading mechanism
- Larger role of HV DC connections for large scale renewables; potentially internationally, Powerlink has advantage of being so far north
- Could be regionally or sub-regionally based; modelled around growing load centres (e.g. Rockhampton, Toowoomba, Ipswich) but there may be more competition with potential non-regulated network providers
- Shift toward facilitating other energy markets (e.g. hydrogen). Will be competing with hydrogen export market. Could provide upstream and downstream services (e.g. procurement, transport, transformer supplier).