Powerlink Queensland

Stakeholder Update February 2020

Powerlink QUEENSLAND

Message from the Interim Chief Executive Kevin Kehl

The energy industry is undergoing unprecedented change and the one constant is that we know how important well-priced and reliable energy is to our customers supporting lifestyles and our economy. Our collective challenge across the energy system is to take our part in this change.

At Powerlink, our focus is squarely on the more than four million Queenslanders and directly-connected customers who rely on the energy we deliver.

Whether they are directly connected to our transmission network, or they are a Queensland household or business, our customers expect value for money, responsiveness and customer–focused decisions.

We recognise that the best way to manage the energy system transition is to embed customer centricity in our everyday thinking, operations and decision-making.

I am proud to say that since our last update in September 2019, we have published our first Energy Charter Disclosure Statement. The Energy Charter is the first time that representatives of all parts of the energy system have come together to take a holistic approach to delivering better outcomes for customers. Our Disclosure Statement reports on Powerlink's progress against the Energy Charter principles and is an honest assessment of where we are, what we have done well and where we need to improve. I encourage you to read more about the improvements already underway and our commitment to the future on our Energy Charter webpage.

Powerlink is playing a key role in the transition to a clean energy future. Connecting large-scale renewable generators to the National Electricity Market (NEM) presents both opportunities and challenges. Renewable proponents have been clear in telling us that grid connection and network access is their number one issue. Every state in the NEM is experiencing its own challenges in this space and we are working together with our network counterparts, market bodies and customers to improve the network connection process. The Australian Energy Market Operator's (AEMO) next Integrated System Plan (ISP), still in draft, sets out the issues and plans related to coordinating generation and transmission investment across the NEM. Transmission investment in Queensland is a focus for the next ISP.

Our annual survey of stakeholders at the end of 2019 shared insights and perceptions on various aspects of our operations as an energy business. Key corporate measures such as our social licence to operate are tracking well, but perhaps most importantly, this latest survey told us that the number one issue for our stakeholders was dealing with the energy system in transition. Our stakeholders want our help in navigating the transition and managing the uncertainty that's coming with it. Transparency and strong engagement will be critical to achieving that outcome.

An early example of our willingness to share information, engage early and collaborate is in our Revenue Determination process, now underway for the 2023–27 regulatory period. In our previous stakeholder update, we shared highlights from our Engagement Co-Design Workshop with stakeholders for the next revenue determination. Since that early workshop, we've set up a Revenue Proposal Reference Group of key stakeholders who are already providing input and testing our planning and decision-making. We're excited to see how their input and insights will help shape our Revenue Proposal, which is due for submission in January 2021.

This update also shares project highlights and achievements from around the state as part of delivering safe, cost -effective and reliable transmission services. This is just a snapshot of the work we've been doing to deliver for our customers, our communities and our stakeholders. Continuing to actively seek their input to deliver better outcomes remains front and centre to our planning and decision-making processes. I hope you enjoy reading more about where we've been, and where we're heading.

Kevin Kehl – *Interim Chief Executive*
Powerlink Queensland

Observing project work to refit parts of the transmission network in the State's south-east corner.

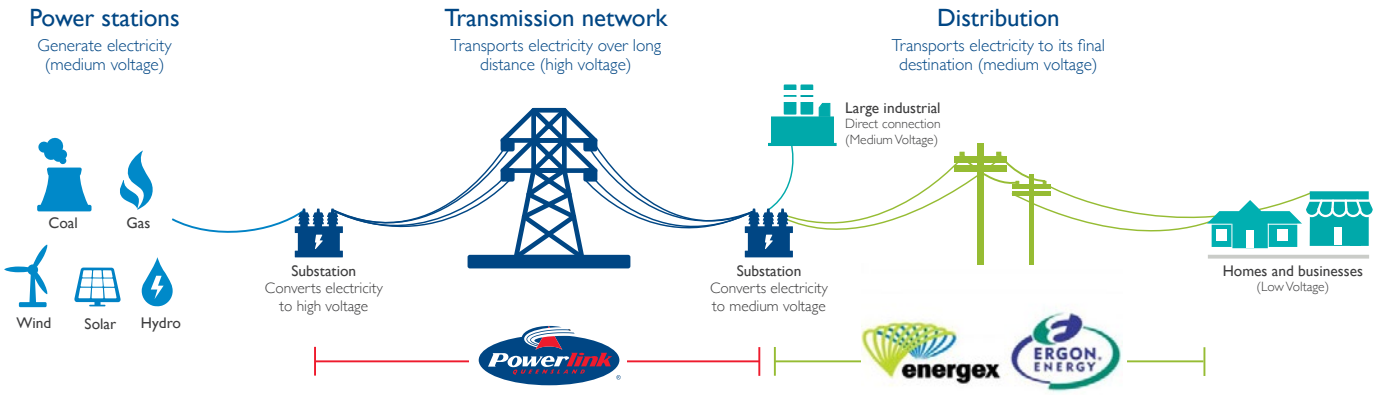
About us and our network

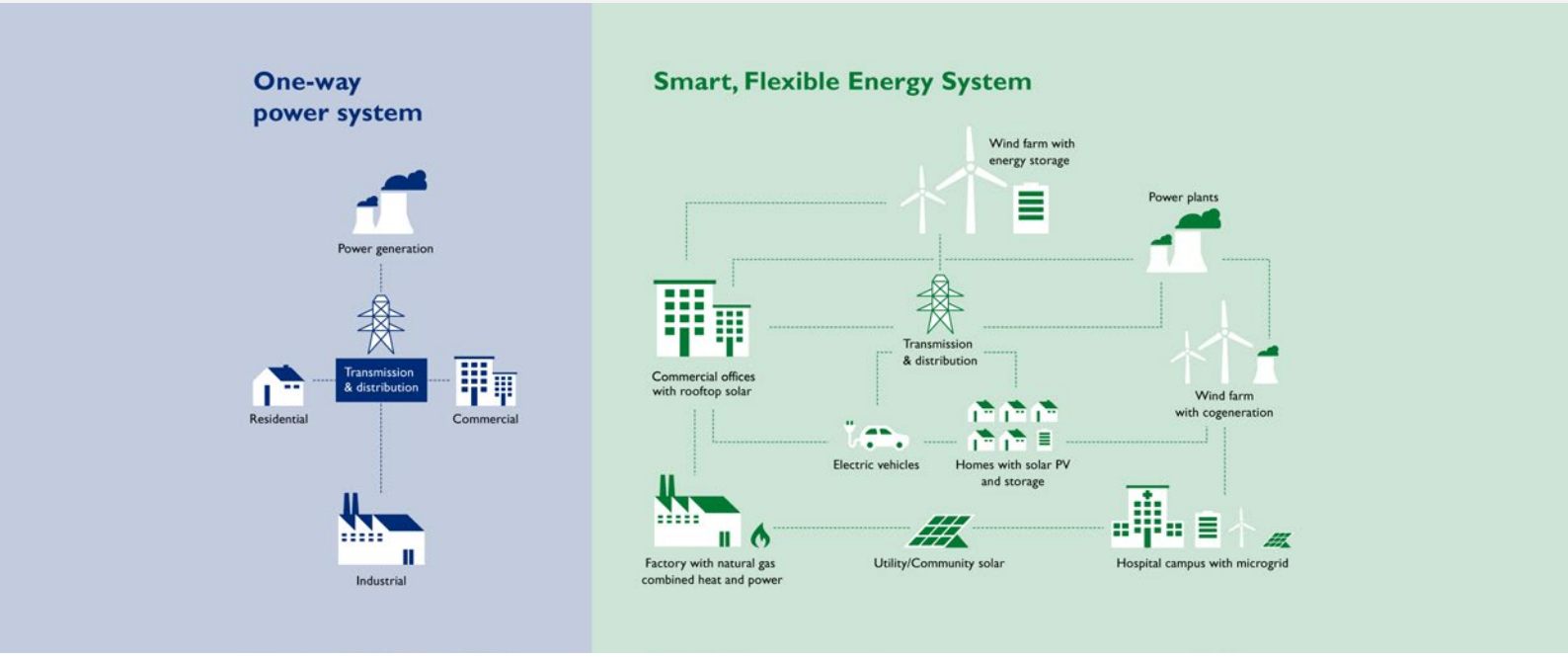
Powerlink Queensland is a Government Owned Corporation that owns, develops, operates and maintains the electricity transmission network in Queensland. Our transmission network runs approximately 1,700km from Cairns down to New South Wales.

With electricity being a key enabler of the economy and modern lifestyles, we have an important responsibility in delivering electricity to more than four million Queenslanders and businesses. Powerlink's role in the energy system is to transport high voltage electricity, produced at major power stations and large-scale renewable energy generators, through its transmission grid to the distribution networks owned by Energex and Ergon Energy (part of the Energy Queensland Group) and Essential Energy (in northern New South Wales) to supply customers. We also transport electricity to high-usage industrial customers such as rail companies, mines and mineral processing facilities, and to New South Wales via the Queensland/NSW Interconnector transmission line.

Importantly, we're helping change the future of energy.

What is electricity transmission?





The one-way power system of the past is transitioning to a multi-directional energy system of the future.

Energy services platform

The transmission network's role is shifting to that of an energy services 'platform' as part of the wider energy transition in the NEM. In effect, the transmission system is moving from transporting electricity from centralised generators to major loads and distributors, to a system that interconnects generators, loads and storage and transports energy to where it is needed.

Our most recent stakeholder research showed that their number one issue is dealing with the energy system transition (see story on page 9 on Stakeholder Perception Survey). To overcome this uncertainty in a rapidly changing environment, our customers and stakeholders are placing strong value on transparency and engagement. They want more information and greater collaboration with Powerlink.

Powerlink is responding to this challenge through a range of initiatives including:

- Using a co-design engagement approach to our 2023–27 Revenue Determination
- Being a founding signatory of The Energy Charter and making our inaugural Disclosure Statement in late 2019
- Publishing more information about our network to assist customers seeking to make a connection
- Releasing our 30-year Network Vision.

The role of our customers is changing and we realise that we need to actively seek their input to deliver services that meet their needs and expectations. Stakeholder insights from our 2019 Transmission Network Forum have helped inform our ongoing network planning and decision-making in today's rapidly changing energy environment.

Forum insights strongly focused on how we can build the capability of the whole power system to better accommodate asynchronous generation (wind and solar) and better coordinate generation and transmission investment.

At the other end of the power system, our customers are increasing the part they play in the energy system, generating and storing their own energy, and being more dynamic in how they respond to market signals. This, combined with falling technology costs for innovative solutions, means customers are becoming partners in the energy system.

For Powerlink, there has never been a greater opportunity to be part of significant change – designing and planning for the transmission system of the future while delivering more secure, affordable and reliable energy.

We are exploring the seven scenarios outlined within our Network Vision.

A 30-year vision for our network

As a key part of our future focus, our Network Vision explores potential services desired by customers from the future energy system, across a range of scenarios. During late 2019 and into 2020, the roll-out of the 30-year vision continued within Powerlink, and also across our stakeholder groups. Engaging with our customers on the vision for the network is vital to ensure the role for a transmission company continues to meet customer needs into the future.

In all scenarios in the Network Vision, electricity transmission remains a critical component of the overall power system. The Network Vision will help us build the transmission system of the future by optimising the value of our assets to:

- Meet changing network conditions by providing flexible and fit-for-purpose solutions that optimise network utilisation
- Design and operate the network in a high renewable, low fault level environment
- Integrate communication and control systems to take advantage of the network management opportunities presented by increased penetration of Distributed Energy Resources (DER)
- Utilise data analytics in network balancing, operations and asset management.

Signposts have been developed to help identify critical shifts over time and monitor changes to the uncertainties, network impacts, insights and opportunities. Examples of signposts include the uptake of electric vehicles and rooftop solar.

Both qualitative and quantitative measures were utilised to provide meaningful and practical signposts across the different time horizons. These will inform Powerlink's future strategy, our Revenue Determination process and future network design.

For more information visit: **powerlink.com.au/network-vision**

A 15-year project will deliver a network operations centre capable of meeting the challenges of our changing energy industry.

Modernising control room technology

A key part of how we are managing the energy transition is our Next Generation Network Operations (NGNO) initiative. This 15-year project will be delivered in three stages with the initial stage replacing our Energy Management System (EMS).

The EMS is the system that allows us to operate and manage our network in real time. The contemporary EMS will have an advanced system to set up our people, capabilities and network operations to meet the challenges of a changing energy environment.

It will create the technical foundations Powerlink needs to transform how we operate the transmission network, increasing collaboration and streamlining processes and systems to deliver better outcomes for our customers.

Integrated System Plan highlights importance of transmission

A 2020 draft update to the AEMO ISP for the energy sector has been released to better coordinate generation and transmission investment in the NEM. Our Powerlink teams provided strategic input into the draft, with a final report due out in June.

There are three main areas of transmission reinforcement identified in the ISP, under scenarios ranging from immediate to medium-term and longer-term developments.

For Queensland, the short-term focus is on an initial increase in transfer capacity between New South Wales and Queensland. By the mid-2020s, the ISP flags a focus on working to increase the transfer capacity between Queensland and New South Wales by a further 378 megawatt (MW).

The ISP also flags the need for more efficient connections for renewable energy sources. Our focus remains on ensuring investment is delivered at the lowest long-run cost to customers. Before progressing with major transmission investments, we must be certain it represents the best value for customers.

We are focused on putting customers at the centre of our planning to ensure a safe, reliable and cost effective transmission network for the future.

Focus on system strength

Powerlink is playing a key role in Queensland's transition to a low carbon energy future. More than 1,600MW of large-scale renewable generation has connected to Powerlink's high voltage network with more to come. One of the key challenges to connecting asynchronous renewable generators to the network is managing system strength.

System strength is a measure of the stability of a power system under all reasonably possible operating conditions. It describes a system's overall performance and its ability to recover quickly from sudden disruption events. Powerlink is responsible for ensuring adequate system strength throughout Queensland's network.

Growth in asynchronous generation (wind and solar) combined with the absence of large synchronous generating plant (coal, gas and hydro) can lead to a system strength shortfall.

Due to the long, thin shape of the Queensland transmission network – and the location of the state's large synchronous generators – North Queensland has limited system strength relative to the rest of the network.

Powerlink is working with AEMO, generators and the Queensland Government on a range of solutions to address North Queensland's system strength challenges so that we can continue to connect large-scale renewable generators throughout the network.

Powerlink is fortunate to have some of the country's leading experts on system strength and their work creating a system-wide model of system strength in Queensland is now being used as an example for other networks in the NEM.

Innovation at the heart

Powerlink has an experienced and dedicated Innovation Manager to embed our innovation framework. This is supported by a diverse team of innovation coaches from across the organisation.

Our framework assists Powerlink to innovate in response to customer, technology, regulatory and market changes. To enable transition we are focusing on tangible customer and business benefits through strategic, top-down innovation missions and tactical bottom-up innovations, raised by our people. We want to keep collaborating with customers and stakeholders, as we recognise the value of inclusion and diversity in solving complex challenges.

Engaging our customers

In October 2019, the 18 signatories of The Energy Charter – a world-first cross-sector energy industry framework – publicly released their Disclosure Statements to report on their progress against the Charter's five principles.

Our Disclosure Statement outlines how we align with the principles of the Charter, in particular our focus on early engagement.

An Independent Accountability Panel process reviewed the statements and provided directions and advice to individual businesses. The panel's findings set the baseline for ongoing change and improvement, and each signatory business is accountable to turn their recommendations and findings into action.

One of the observations from the panel's interviews with CEOs, including our own CE, is the commitment to making the actions and outcomes 'live' beyond the written disclosures. A key aim from here is for signatories to provide more comparable data which measures outcomes for customers to share with other companies – so that good practice becomes common practice.

Other themes from the Accountability Panel's report include:

- Working together on high-impact activities that will achieve better and faster outcomes for customers than a business working alone
- Ensuring customers facing vulnerabilities are not left behind in the work being done to modernise the energy system
- Less reporting on compliance with a greater focus on additional activities which go beyond compliance with regulation
- Clearer commitments to deliver specific results, including on sustainability, as well as improved customer outcomes.

With our Energy Charter action plan now in place, we will continue to evolve our customer-centric culture and deliver real improvements in service delivery, while providing positive outcomes for customers.

Strengthening our relationships with our non-regulated customers.

Energy transition a key issue for our stakeholders

Our stakeholders shared some important insights in the latest Stakeholder Perception Survey, finalised in late 2019.

We conduct this survey each year to gain a better understanding of how stakeholders perceive Powerlink's performance and their key issues.

There were positive results from a Social Licence to Operate (SLO) perspective, with a score in the high approval range, and we recorded our best reputation score in the past five years, as our stakeholder groups continued to recognise our external focus and willingness to engage.

The survey results also indicated the rapidly changing energy system is creating levels of uncertainty among stakeholders.

For the first time since we started the survey in 2012, the number one issue for our stakeholders was dealing with the energy system in transition. The rapidly changing environment that both Powerlink and stakeholders operate in resulted in strong value being placed on transparency and stakeholder engagement.

Our stakeholders clearly want more information and greater collaboration with Powerlink. This will be a key focus of our engagement activities throughout 2020.

Capturing feedback from our stakeholders at the 2019 Transmission Network Forum.

2019 Transmission Network Forum insights

The record level of interest in our Transmission Network Forum in September 2019 reinforced to us the important role the network will play in the future of energy in Queensland and the wider market. We received feedback from more than 160 stakeholders who attended the two interactive workshops, with this input now being factored into our ongoing network planning and decision-making.

Key considerations such as network capacity to accommodate asynchronous generation, transparency and information sharing, better education of the rules, systems and processes associated with network connections in the NEM were highlighted.

Our Business Development team is currently looking at opportunities to standardise the connection process and agreements we use further, as well as scheduling regular education seminars on the Generator Performance Standards process for customers and their consultants, incorporating the lessons of our own customers' recent connection experiences.

We also looked at non-network solutions to reduce short-term demand peaks. This session help identify barriers and opportunities for non-network solutions which can help us to better manage network utilisation.

This forum provides us with direct, face to face feedback from our stakeholders, in particular our customers, so that we can support them through the energy transition as well.

The post forum summary can be read at: **powerlink.com.au/engagement-forums**

Our stakeholders provided insights into our performance and what they value in a rapidly changing external environment.

2023–27 Revenue Determination Process

Powerlink's next revenue proposal is due to be submitted in January 2021 for the period 2023 to 2027. This is a critical piece of work as it sets our revenue for the provision of regulated transmission services in a prudent, safe and reliable way.

Stakeholder feedback from our 2019 co-design workshop set the collaborative tone for our engagement approach and customer and stakeholder expectations in terms of clear, open and transparent information sharing.

We have established a Revenue Proposal Reference Group (RPRG) from the membership of our existing Customer Panel. This group meets more frequently than our Customer Panel and allows for more comprehensive discussions on various aspects of our Revenue Proposal.

Powerlink's capital expenditure methodology, performance in the AER Annual Benchmarking Report for Transmission Network Service Providers (TNSP), and Service Target Performance Incentive Scheme (STPIS) have been some of the areas discussed to date with the RPRG.

To view more about our Revenue Determination engagement visit: **powerlink.com.au/regulated-revenue**

Powerlink team onsite at Columboola substation ahead of construction works starting for the area's newest solar farm.

Project highlights

Columboola Connection and Access Agreement signing

Luminous Energy finalised a contract to connect its proposed 162MW Columboola Solar Farm to our existing Columboola Substation. As Queensland's largest solar energy project, it requires construction of almost two kilometres of transmission line into the existing substation, in south-west Queensland. We have been partnering with the Luminous Energy project team extensively over a period of time to optimise their connection. Columboola solar farm will create five permanent jobs in the area on top of the construction jobs when it comes on line in early 2021.

Construction on the project's connection into the transmission system is due to start by April 2020.

Powerlink has now delivered 13 connections for large-scale renewable projects across Queensland, representing more than 1,600MW of new generation. Three of these new renewable connections – Haughton Solar Farm, Mt Emerald Wind Farm and Rugby Run Solar Farm – were officially opened during this update period.

Specialised maintenance work on on Far North Queensland's Barron Gorge to Kamerunga transmission line.

Specialised maintenance work on Barron Gorge to Kamerunga line

Perched on a steep Far North Queensland mountainside, our transmission line delivering power down to the Cairns region, adjacent to the Kuranda Scenic Railway line, recently required specialised maintenance.

This $6 million project had its challenges in that some of the 50-year-old transmission towers are on a very steep incline and are located in the Wet Tropics World Heritage Area. The height of the legs on one of the towers was a three metre difference on either side.

Due to the challenging location of the towers, logistics management was critical, and the project team thought outside the box when it came to accessing the towers, using modified equipment and all-terrain vehicles where traditional approaches were unsuitable. This highly specialised work has strengthened the tower foundations through this area, and extended the life of the line by around 15 years.

First solar farm and big big batteries

Construction has started on Shell's large scale 120MW solar farm near Wandoan in South West Queensland – the company's first global investment in an industrial-scale solar farm.

The huge new solar farm will connect to the NEM via our transmission network, with the capacity to generate enough clean energy to power 50,000 homes.

The announcement followed Singapore-based developer Vena Energy's announcement that it will soon begin construction of Queensland's largest grid-scale battery near Wandoan. The 100MW/150MWh project will be delivered under a 15-year power purchase agreement with Australia's biggest power producer, AGL.

Ingham South Substation transformer delivery

The first of two 45-tonne transformers to secure power supply to the Ingham region arrived at Ingham South Substation in late 2019. The substation was built in 2005 replacing an earlier substation however, the transformers at the site came from another substation in Central Queensland and were more than 50 years old.

This project was carefully planned across multiple stages to avoid any disruption to power supply whilst replacing old transformers with the new units, measuring six metres long and 3.4 metres high. Due to the massive size and weight, a multi-axle trailer was used to safely transport the equipment to site from the Port in Townsville.

The second replacement transformer is scheduled to be delivered to the Ingham South Substation in mid-2020 and expected to be commissioned by late 2020, which will mark project completion.

Insulator replacement project in SEQ now complete

Insulator strings on 1,225 transmission towers and steelwork on 105 towers have been replaced between Belmont and Bundamba substations.

Built in 1972, the 37 kilometre-long transmission line plays a critical role in securing power supply to Brisbane and Ipswich so replacing insulators and steelwork nearing the end of their service life was a cost-effective solution.

This work secured future electricity supply in this area, ensuring the transmission line will continue to operate reliably for its remaining 40-year service life.

Two new transformers secure supply for Townsville region.

Two new transformers secure supply for Townsville region

On-ground work to replace two 40-year-old transformers at Garbutt Substation, in Townsville, over several stages is now complete. The substation is now home to two 98 tonne transformers, standing 4.5 metres high, to secure supply to the Townsville CBD, the airport precinct and busy port area.

The original Garbutt Substation was built back in the 1950s, and was gradually developed to keep up with demand as Townsville grew into the busy regional centre it is today. The old transformers were originally installed in the 1970s and have served the region well.

Palmwoods Substation secondary systems replacement project on-ground works commencement

The Sunshine Coast region is experiencing strong population and economic growth. As a major injection point in our transmission network in this region, work to further secure supply at our Palmwoods Substation is underway.

This is one of a number of major projects we have in the pipeline for the Sunshine Coast, supporting this growing region. Our focus is on planning for the future to safeguard electricity supply on the Sunshine Coast for many years to come.

A key milestone was the arrival of a new control building, weighing 28 tonnes and measuring 16 metres in length, at Palmwoods Substation in late 2019. The control building plays a vital role in securely housing the substation's new secondary systems equipment, which is critical for monitoring and controlling the power system in this area.

Bouldercombe primary plant replacement

In Central Queensland, we started work on a primary plant rebuild at Bouldercombe Substation, which supplies Rockhampton and the wider Central Queensland region.

The substation has capably supported industrial and residential growth in the area for more than 40 years and is now reaching the end of its service life. Over a four-year project, we will be replacing all primary equipment such as circuit breakers, structures and foundations, as well as installing a new transformer on site.

The rebuild work will be completed in stages to ensure the project is delivered with minimal customer impact, with the first stage – installing the new transformer – expected to be completed by late 2021.

Our focus is on extending the life of the substation at the lowest long-run cost to customers, and with the least disruption to the local community.

Powerlink Property team member Brian Gover catching up with Moreton Bay Regional Council's Deputy Mayor Cr Mike Charlton at the LGAQ conference.

Supporting our communities

Our infrastructure crosses more than 19,000 properties across Queensland and we work closely with landholders, stakeholders, customers, and the communities in which we operate to ensure we can continue to safely and reliably operate and maintain our network.

Each year, we focus on building relationships and achieving positive outcomes through our corporate sponsorships and partnerships with key organisations. This includes a long-term connection with our local government stakeholders through our Local Government Association of Queensland (LGAQ) Annual Conference sponsorship. The most recent LGAQ conference, held in Cairns, provided us with a great opportunity to share information and seek insights from our local government stakeholders. Since then, we have continued building on those connections via face-to-face discussions with key local councils in the Wide Bay-Burnett region – Bundaberg, North and South Burnett. Strong engagement on key issues including challenges and opportunities of renewable connections, Powerlink pricing and upcoming revenue determination process, and our capital/maintenance works program were discussed. The meetings are a key engagement activity for Powerlink to ensure councils understand our role in the energy network and the value we provide customers.

We have continued to work with the Planning Institute of Australia (PIA) through their regional conferences and renewable energy study tours. Two of our key customers, Mt Emerald Wind Farm and MSF Sugar, were part of a recent PIA study tour in Far North Queensland attended by our planning team.

Since 2015, Powerlink has partnered with Ergon Energy and Energex (part of the Energy Queensland Group) as the Equipment Initiatives Support Sponsor of the Queensland State Emergency Service (SES). This year has been another fruitful one under this partnership, with an additional $200,000 in equipment provided to SES groups across Queensland. Given the intensity of recent bushfires around the state, the strong working relationship between ourselves, Ergon Energy, Energex and the SES has never been more important.

Joining Emergency Services Minister Craig Crawford to thank volunteers and hand over new equipment as part of our Energising Queensland SES partnership with Energy Queensland.

Nearly 15 years ago, Powerlink installed nesting boxes to support fauna movement along the environment corridor in Minnippi Parklands in conjunction with construction of our Belmont to Murarrie transmission line, which supplies electricity to Brisbane's CBD and southern suburbs.

We have now partnered again with the Bulimba Creek Catchment Coordinating Committee (B4C) to deliver a project of installing 12 new nesting boxes to replace the degraded shelters used by local wildlife. These new boxes will further enhance habitat connectivity and improve shelter for gliders, bats and other local wildlife.

In addition, we will be working with B4C to undertake targeted weed removal, plant recovery and tree plantings with suitable native vegetation at a community planting event scheduled for early 2020.

We continue to work towards increasing diversity within our workforce via the Engineers Australia and University of Queensland's (UQ) Women in Engineering program. The UQ 2019 program was record breaking, with female participation in UQ engineering now at 25%. This growth can be attributed to the strong engagement the program has had with high school students and their teachers, particularly during the past 12 months.

Bulimba Creek Catchment Committee Carly Murphy installing nest boxes at Minnippi Parklands.

Powerlink Planning and Approvals Advisor Ian Turton visiting Mt Emerald Wind Farm with stakeholders during the Planning Institute of Australia Renewable Energy Study Tour.

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