

Powerlink's Customer Panel Meeting

6 December 2018



- Welcome and introductions
- Stakeholder survey results
- Update on RIT-T for replacement projects
- RIT-T process for expanding the NSW-QLD transmission transfer capacity
- Acknowledgement of thanks to Panel members & afternoon tea
- Transmission Network Vision
- Close and thanks

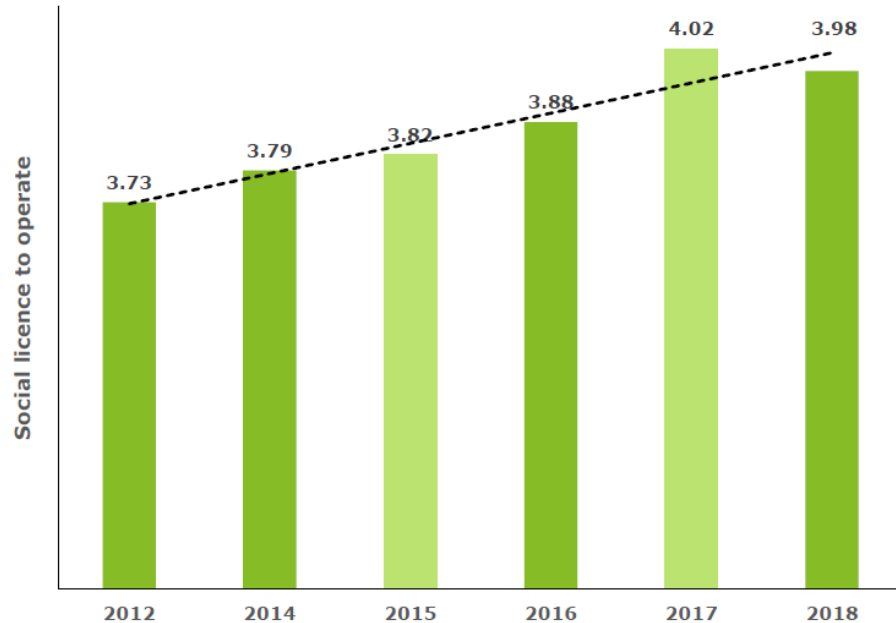
Stakeholder survey results

Gerard Reilly
General Manager Communications



- 'Comprehensive' survey completed in 2018
- Method – 97 in-depth interviews (30 to 60 minutes) over 11 stakeholder groups
- 2017 and 2015 were 'Pulse' surveys, using self complete web-based questionnaire
- Results focus on comparison with 2012, 2014 and 2016 surveys due to similar methodology
- Survey provides insights into:
 - Social licence to operate (SLO) and Reputation scores
 - Key stakeholder issues
 - Customer service perceptions

2012 - 2018 Social licence to operate

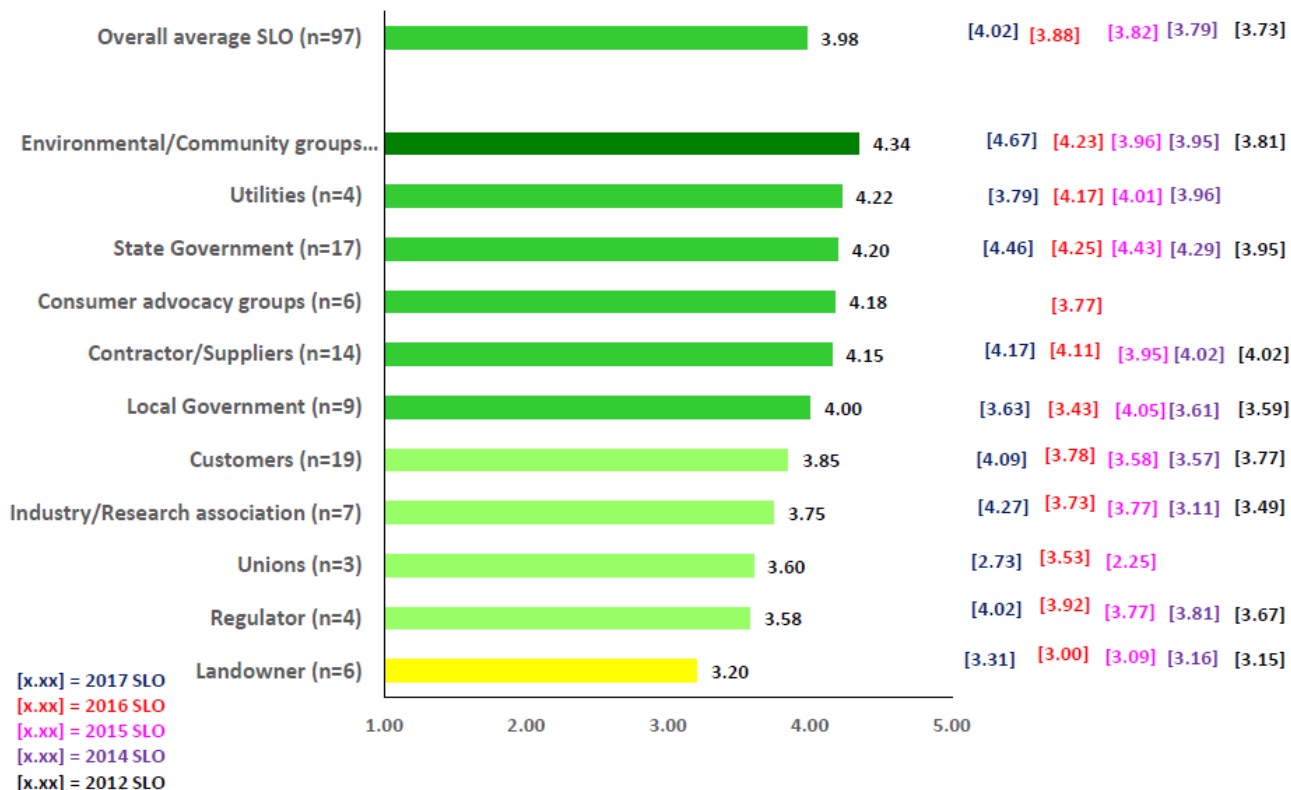


Lighter shade (2015 & 2017) signify years when 'Pulse' survey was undertaken

- Social licence has shown an upward trend since 2012
- Powerlink's social licence to operate is in the high approval range

sextile 1/6th	lower bracket	upper bracket	range and verbal label
6	4.30	5.00	>4.30 to 5.00 = full trust
5	3.93	4.30	>3.93 to 4.30 = high approval
4	3.56	3.93	>3.56 to 3.93 = low approval
3	3.08	3.56	>3.08 to 3.56 = high acceptance/ tolerance
2	2.40	3.08	>2.40 to 3.08 = low acceptance/ tolerance
1	1.00	2.40	1.00 to 2.40 = withheld/ withdrawn

2012 - 2018 Social licence to operate by stakeholder group



Customer panel (n=9) Overall average (n=97)

Social licence

Social licence to operate	4.03	3.98
Goal alignment	4.13	4.05
Motivation to collaborate	3.56	3.86
Promise keeping	4.22	4.04
Listening	4.33	4.04
Trust	4.28	4.03
Social capital	4.14	4.03

Stakeholder engagement

Rate Powerlink's engagement with stakeholders	4.33	3.68
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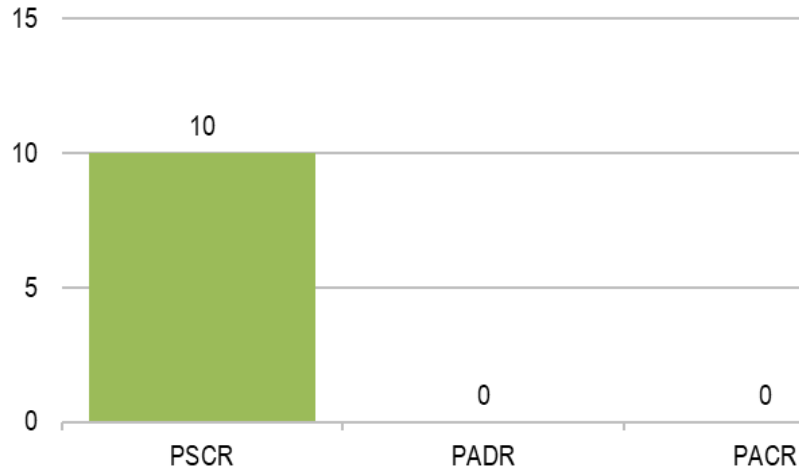
Update on Regulatory Investment Test for Transmission (RIT-T)

Roger Smith
Manager Network & Alternate Solutions

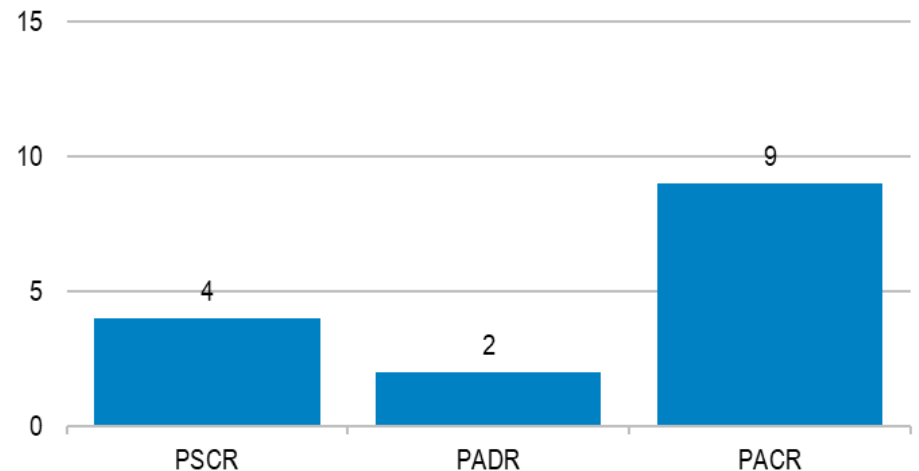


RIT-T consultations in progress and upcoming

Documents Open for Consultation



Documents Expected to be Issued Within 3 Months



RIT-T consultations in progress and upcoming



Engagement level	Project characteristics	RIT-T consultations	Proposed engagement activities
Minor (PADR Exempt)	<ul style="list-style-type: none"> • Non-network options unlikely • No material market benefits identified • Preferred option <\$41 million 	<ul style="list-style-type: none"> • Palmwoods Secondary Systems • Tarong Secondary Systems • Belmont Secondary Systems • Abermain Secondary Systems • Townsville Primary Plant • Bouldercombe Primary Plant & Transformers • Ross Primary Plant & Transformer • Woree Secondary Systems • Brisbane Metro Transmission Lines • Kemmis Secondary Systems • Mudgeeraba Secondary Systems • Blackwater Transformers • Liliyvale Primary Plant and Transformers 	<ul style="list-style-type: none"> • Notification to Powerlink Non-Network Engagement Stakeholder Register • AEMO Notice and summary • Publication of RIT-T project details on Powerlink website • Dedicated email contact to Customer Panel members • Alerts through Powerlink's Twitter and LinkedIn accounts
Normal	<ul style="list-style-type: none"> • Minor network reconfiguration / material impact on network users • Possibility of non-network options • Material market benefits identified 	<ul style="list-style-type: none"> • Kamerunga Primary Plant & Secondary Systems • Egans Hill – Rockhampton Transmission Line 	<p>In addition to engagement activities at minor level:</p> <ul style="list-style-type: none"> • Webinars • Stakeholder briefings • Discussion at Powerlink's Customer Panel
Complex	<ul style="list-style-type: none"> • Network reconfiguration / material impact on multiple network users • Likelihood of non-network options • Significant market benefits identified 	<ul style="list-style-type: none"> • Clare South – Townsville South • QNI 	<p>In addition to engagement activities at normal level:</p> <ul style="list-style-type: none"> • Stakeholder engagement plan being finalised • Phone calls to key stakeholders advising of forthcoming PSCR • Emails to all identified stakeholders prior to publication of PSCR • Dedicated engagement forum to seek feedback on options

- Addendum to Woree Secondary Systems PSCR to be issued
 - identified that some costs had been excluded for commissioning activities
 - recommence consultation period upon issue of addendum.
- AER RIT-T Application Guidelines delayed to 14 December
 - base case that quantifies risk of 'do nothing'
 - no change to approach taken with customer engagement.

Expanding transmission transfer capacity between Queensland and New South Wales – RIT-T process

Kev Kehl
Executive General Manager Strategy &
Business Development



- The transfer capacity of the Queensland New South Wales interconnector (QNI) is highly utilised.
- There is current and increasing forecast network congestion between Queensland and NSW.
- The 2018 Integrated System Plan (ISP) highlights the importance of stronger interconnection to support generation diversity and the long-term interests of consumers.
- The ISP outlines two key transmission investments to alleviate congestion:

'Group 1' - Minor NSW to QLD upgrade

- Increase in transfer capacity 460 MW northwards and 190 MW southwards
- Indicative timing of 2020

'Group 2' - Medium NSW to QLD upgrade

- An additional increase in southwards transfer capacity of 378 MW
- Indicative timing of 2023

QNI RIT-T process & timeframes



- TransGrid and Powerlink have published a Project Specification Consultation Report (PSCR) investigating and comparing a range of options to expand transmission transfer capacity on the QNI, including the projects already identified in AEMO's ISP.
- Process involves consultation with a wide range of stakeholders, including consumer advocates, customer representatives, and market participants.
- A project will proceed if clear market benefits are identified, it represents best value for customers, and funding is approved by the AER.

Regulatory Approval Milestones	Regulatory Planned Dates ^[1]
PSCR published	22 November 2018
PSCR submissions close	12 weeks after PSCR published (22 February 2019)
Project Assessment Draft Report (PADR) published	March 2019 – December 2019
PADR submissions close	6 weeks after PADR publish
Project Assessment Conclusions Report (PACR) published	May 2019 – March 2020
AER determination of RIT-T	September 2019 – October 2020
AER amended revenue determination	December 2019 – February 2021

^[1] Regulatory planned dates, with ranges, are dependent on the public submissions received, and other external legislative or guideline amendments. TransGrid and Powerlink will investigate reductions to the timeframes if these events occur.

- The Project Specification Consultation Report (PSCR) is the first phase of the RIT-T process.
- TransGrid and Powerlink have identified five types of credible options in the PSCR to increase transfer capacity between NSW and Queensland, building on the options identified in the ISP.
- These options differ in scale and technology and include:
 - incremental investments to the existing network to modestly increase transfer capacity
 - a new single-circuit 330 kV line from NSW to Queensland
 - three variants of a new double-circuit line from NSW to Queensland, including an option that involves 500 kV
 - three HVDC options
 - a grid-connected battery system
- Combination of options will also be considered as part of the process.

Overall potential benefits of stronger interconnection include:

- An upgrade could open up further access to the NEM for existing and future renewable generation, helping to meet renewable energy targets more efficiently and support the transition to a lower carbon economy.
- There may be benefits to system security, which could further enable renewable generation development in Queensland and NSW.
- There is potential for reduced reliance on localised supplies for reserves, increased transfer capability between regions, and improved competition across regions.
- An upgrade may provide greater capacity for both states to import power to help respond to unplanned network outages and other network events.

Considered 'complex' under the agreed Stakeholder Engagement Matrix for RIT-T processes.

Planned activities include:

- Brief to Powerlink Customer Panel and feedback on options in PSCR.
- Public forums in Brisbane and Sydney.
- Materials published on Powerlink website, including 'plain English' summary overview.
- Stakeholder mail out to engage with direct-connect customers, renewable proponents, regulators, consumer advocates, and industry associations.
- Inform and engage with relevant State and Local Government representatives.
- Review and respond to submissions received through statutory RIT-T submission periods.

- Publication of the PSCR opens public submissions period – closes 22 February 2019.
- Continue consultation with stakeholders, regulators, consumer advocates, market participants, customers.
- The next formal stage of the RIT-T process is the Project Assessment Draft Report (PADR).
- The PADR will include the full quantitative analysis of both network and non-network options, including responses to submissions received, and is expected to be published during 2019.

**Seeking feedback from panel members on options presented –
input on pros and cons of each.**

**What else do we need to know in considering these options with
TransGrid?**

Acknowledgement of
thanks to Panel members



Afternoon tea break



Transmission Network Vision

Daniel Andersen
Manager Network Strategy



- What is the purpose of the Network Vision?
- What is the Network Vision?
- How are we developing the Network Vision?
- Recap from our last Customer Panel meeting
- The four scenarios in more detail.

Looking forward

“ 75% INCREASE IN DEMAND IS FEASIBLE BY 2030. THAT'S GOT TO COME FROM SOMEWHERE ”

“ WHAT IF AMAZON ELECTRICITY LAUNCHES NEXT WEEK?! ”

“ DATA WILL DRIVE DECISIONS. IT WILL CHANGE HOW THE NETWORK IS OPERATED...THE ELECTRICITY COMPANY IS A DATA SCIENCE AGENCY ”

“ CYBER SECURITY RISKS WILL GROW AS THE SYSTEM BECOMES MORE DEPENDANT ON DIGITAL CONTROLS ”

“ WE'RE SEEING ALL OF THE CAR MANUFACTURES GEARING UP FOR MASS PRODUCING ELECTRIC VEHICLES ”

“ MID 2020S SEES THE ELECTRIC CAR CHEAPER THAN THE CONVENTIONAL PETROL CAR ”



Interview with DR STEFAN HAJKOWICZ

Data61 Strategic Foresight Team,
Senior Principal Scientist - Strategy And Foresight

Scenario selection



Scenario	Carbon Emissions	Location	Energy Consumption
Rise of the Prosumer	Low Carbon	Decentralised	High
Community Renewables	Low Carbon	Decentralised	Low
Renewables Thrive	Low Carbon	Centralised	High
Set and Forget	High Carbon	Centralised	High

Characteristics

- Low Carbon, Decentralised, High Energy Consumption
- Continued falling costs of solar photovoltaic panels and other on-site generation technologies, sustained high retail prices, and innovative product packaging from energy services companies leads to the widespread adoption of on-site generation.
- Residential consumers in particular are empowered by their choice to become more actively engaged in their electricity supply and call themselves 'prosumers'.
- Electric vehicle (EV) adoption is also popular.
- The use of on-site generation is also strong in commercial and industrial customer sectors.
- By 2050, on-site generation supplies almost half of all consumption.

Key impacts and observations

Degree of customer participation	Moderate-High
Importance of TNSP/DNSP role	Low-Moderate
Degree of technical differences for TNSP/DNSP	Moderate-High
Degree of regulatory changes for TNSP/DNSP	High
Volume / \$ of TNSP / DNSP solutions	Moderate-High
Level of system balancing challenge	Low-Moderate

Characteristics

- Low Carbon, Decentralised, Low Energy Consumption
- Higher decarbonisation target is achieved through a more decentralised energy landscape.
- Smart technology is used extensively to manage peak electricity demand. Appliance efficiency improves as well as a greater use of demand side actions.
- EVs are the most popular personal mode of transport. Hydrogen becomes the fuel of choice in the transport sector by 2050 to aid the decarbonisation target.
- Onshore wind and solar, co-located with storage, dominate electricity supply. Flexibility is provided by small scale storage, small gas-fired plant, some interconnection, and hydrogen production by electrolysis.

Key impacts and observations

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Importance of TNSP/DNSP role	Low-Moderate
Degree of technical differences for TNSP/DNSP	Moderate-High
Degree of regulatory changes for TNSP/DNSP	Moderate-High
Volume / \$ of TNSP / DNSP solutions	Moderate-High
Level of system balancing challenge	Low-Moderate

Characteristics

- Low Carbon, Centralised, High Energy Consumption
- Confidence in the improving costs of renewable technologies, achieved by combined efforts from government and industry around the world, results in the introduction of a linearly phased 100% renewable target by 2050 for centralised electricity generation.
- To shift demand and meet renewable supply gaps, storage technology is enabled to achieve the target at utility, network and consumer sites.

Key impacts and observations

Degree of customer participation	Low
Importance of TNSP/DNSP role	High
Degree of technical differences for TNSP/DNSP	Low
Degree of regulatory changes for TNSP/DNSP	Low
Volume / \$ of TNSP / DNSP solutions	High
Level of system balancing challenge	Low

Characteristics

- High Carbon, Centralised, High Energy Consumption
- Customer-centric model where customers consume, trade, generate and store electricity.
- Generation from traditional carbon sources still in generation mix.
- Heightened awareness about the issue of peak demand, and new business opportunities lead residential, commercial and industrial customers to adopt peak demand management.
- Demand management systems are designed to be on a 'set and forget' basis after customers have decided which level of demand management suits them.
- Measures include building large-appliance control (air-conditioning, pumps), on-site storage, specialised industrial demand reduction markets, and electric vehicle charge management, as well as advanced metering and communication to enable these services.

Key impacts and observations

Degree of customer participation	Low-Moderate
Importance of TNSP/DNSP role	Moderate-High
Degree of technical differences for TNSP/DNSP	Moderate-High
Degree of regulatory changes for TNSP/DNSP	Moderate-High
Volume / \$ of TNSP / DNSP solutions	Low-Moderate
Level of system balancing challenge	Moderate-High

Please move towards the scenario that resonates most with you. Don't worry too much as you'll have time to rotate through each scenario.

We are seeking your feedback:

1. What are the key opportunities you see arising for a transmission company under each scenario?

Around 5 minutes per scenario

2. Which scenario do you think delivers the best outcomes for customers? Why?

- Currently refining the role of transmission and services that will be valued by customers
- Two more workshops
- Looking to finalise in February 2019
- Integrate into Powerlink's Strategic Framework to provide direction as part of business as usual processes.

Thank you for your time and input.

