

Powerlink public webinar - Energy Transformation

24 March 2022



Acknowledgement

Powerlink acknowledges the Traditional Owners and their custodianship of the lands and waters of Queensland and in particular, the lands on which we operate. We pay our respect to their Ancestors, Elders and knowledge holders and recognise their deep history and ongoing connection to Country.

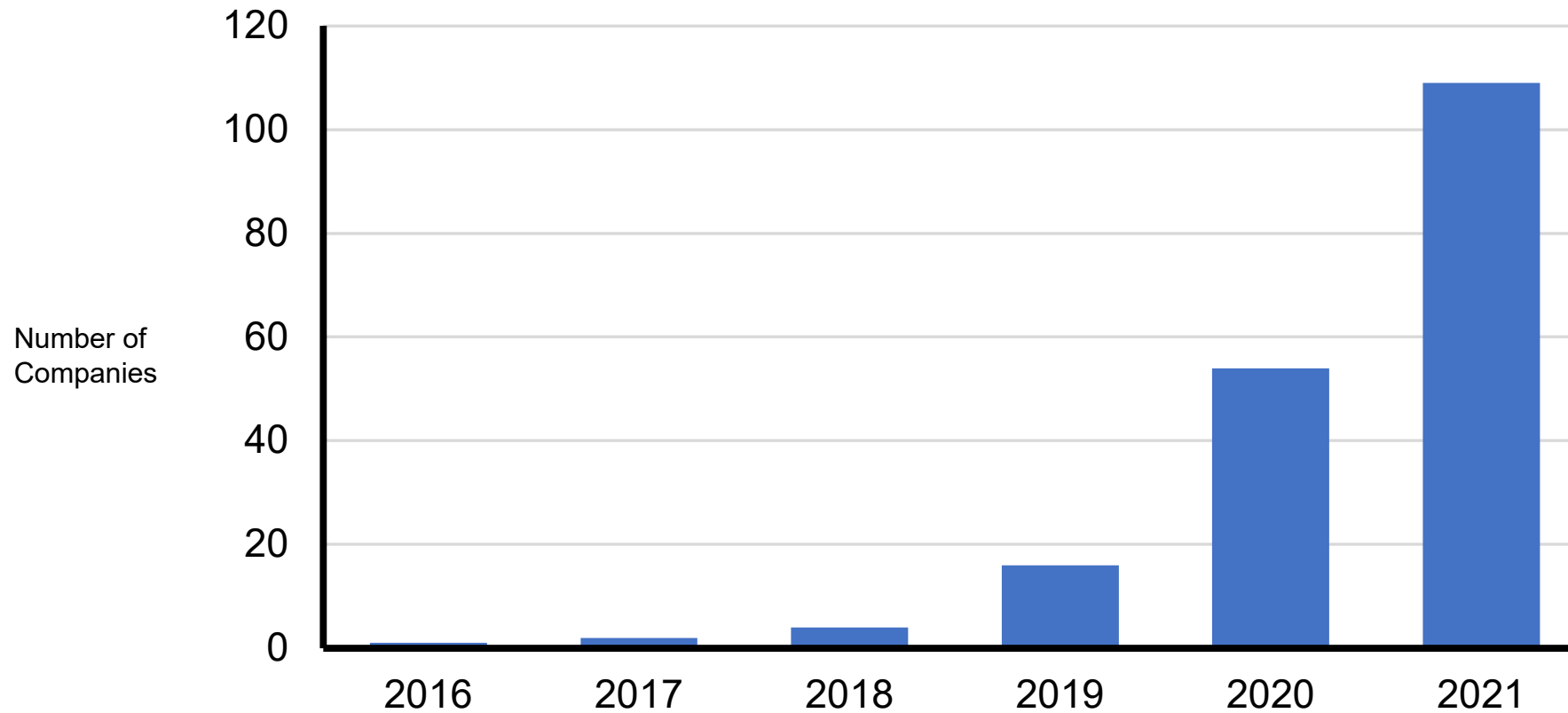
Agenda



What is driving the need for change

- 'Net Zero' (viz. COP26 global commitment by 2050)
- Capital markets and supply chains are driving the change
- Via COP26, countries are being asked to come forward with ambitious 2030 emissions reductions targets, which means
 - accelerating the phase-out of coal
 - encouraging investment in renewables
 - electrification of load
 - explore hydrogen
 - speed up the switch to electric vehicles
 - curtail deforestation

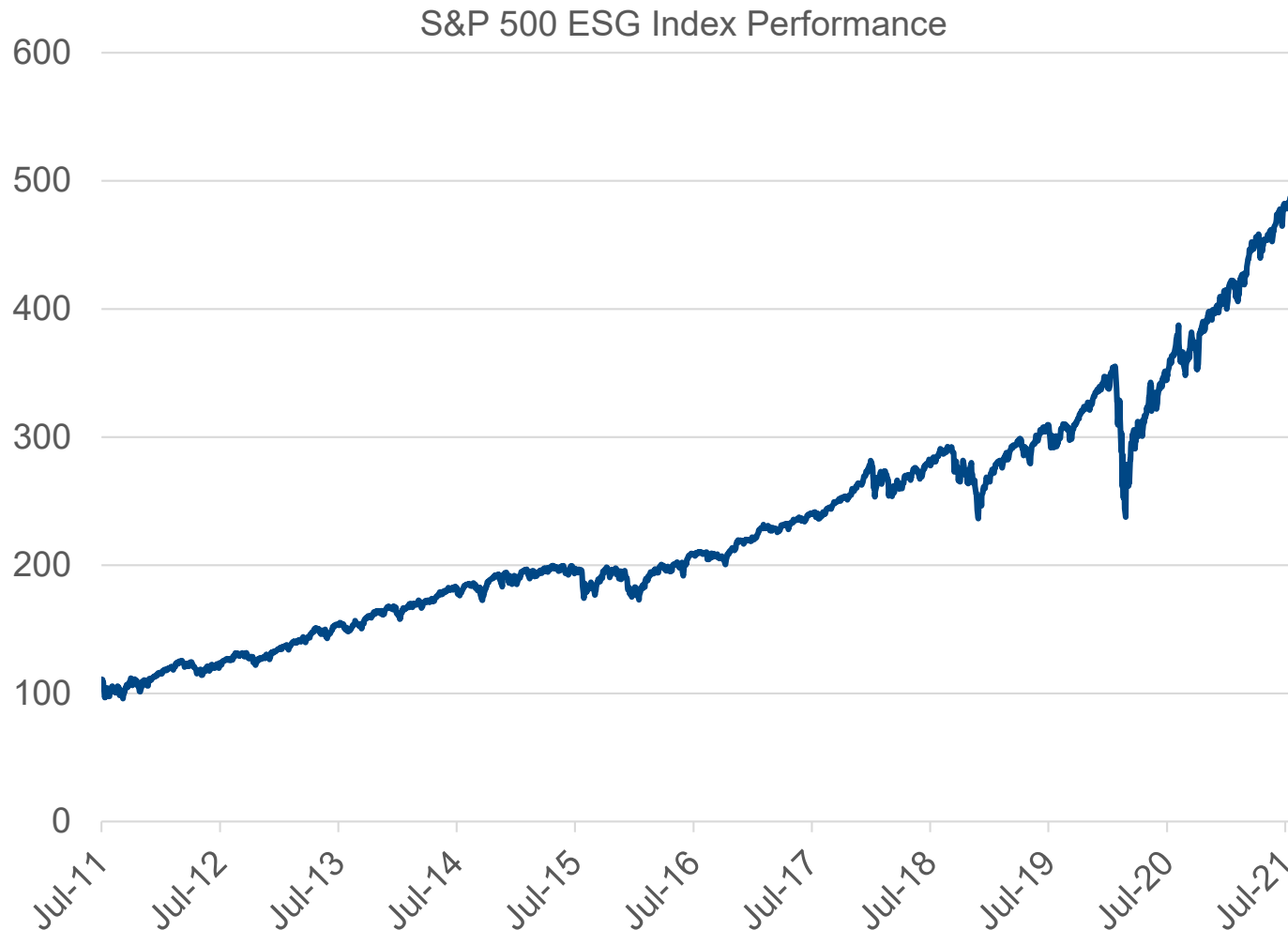
ASX300 Companies signed on to 'Net Zero'



Sources: Simshauser & Gilmore (2022), Climate change policy discontinuity & Australia's 2016-2021 renewable investment supercycle. ASX300 Chart - Macquarie Research.

Environmental, Social and Governance

ESG investment & returns ramping up over the last 10 years



Draft 2022 ISP

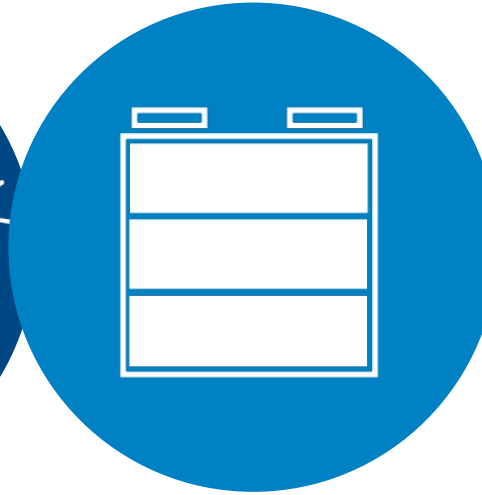
Key themes



Coal retiring
three times faster
than anticipated



**Additional
renewables**
in Queensland
(more than other states)



Ramp up storage
capacity in all its
forms



10,000km
of new
transmission line


Queensland Focus



Borumba Dam




- Detailed studies underway by Queensland Govt and Powerlink
- New dam wall at lower Borumba
- New main dam wall and saddle dams for upper reservoir
- ~1.5-2GW capacity
- Around 24 hours storage (36-46GWh)
- Transmission lines connecting to the Woolooga and Tarong substations

 50% renewable energy by 2030

30% emissions reduction on
2005 levels by 2030



 Net zero emissions by 2050

Powerlink Response

Least Regret Investment

Decisions about future infrastructure needed now

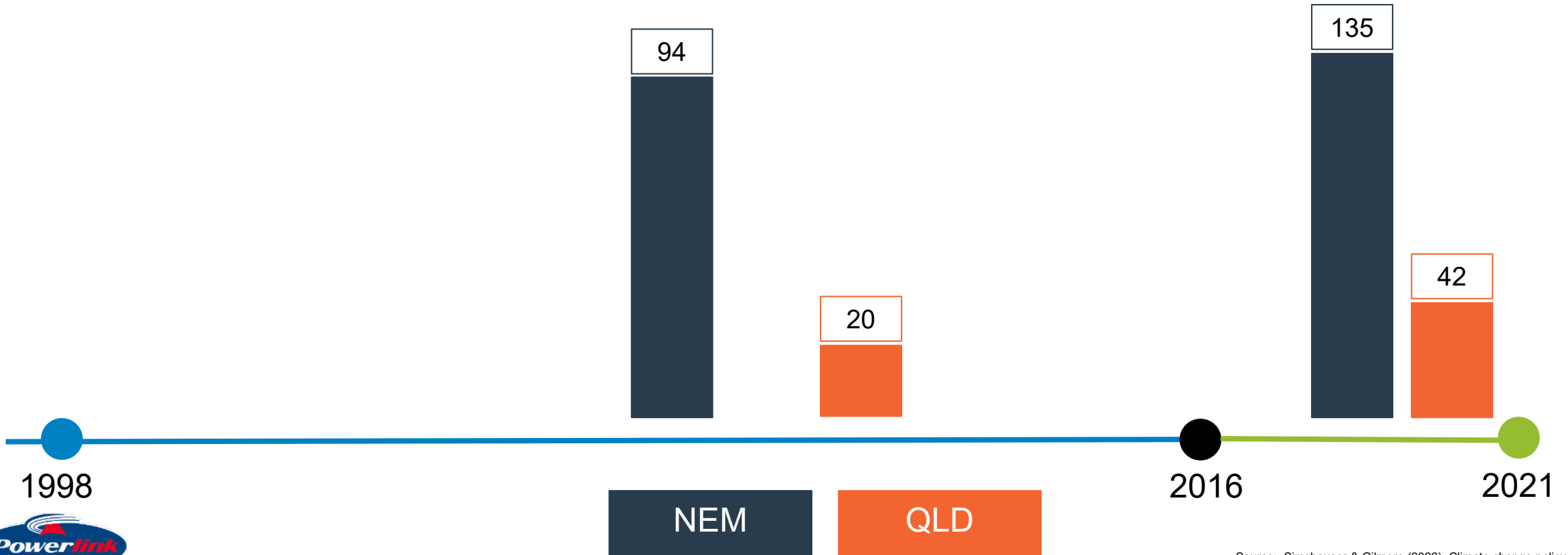
- Queensland's electricity network evolved incrementally over the past 40 years.
- The pace of supply-side adjustment is now moving very quickly.
- Transmission infrastructure has long lead times (viz. planning & development, construction, commissioning).
- Certain development pathways present asymmetric risks to customers.
- In such circumstances, decisions and trade offs need to happen now to avoid 'tail risks'.

Renewable Investment Supercycle

Connection enquiry rates have soared

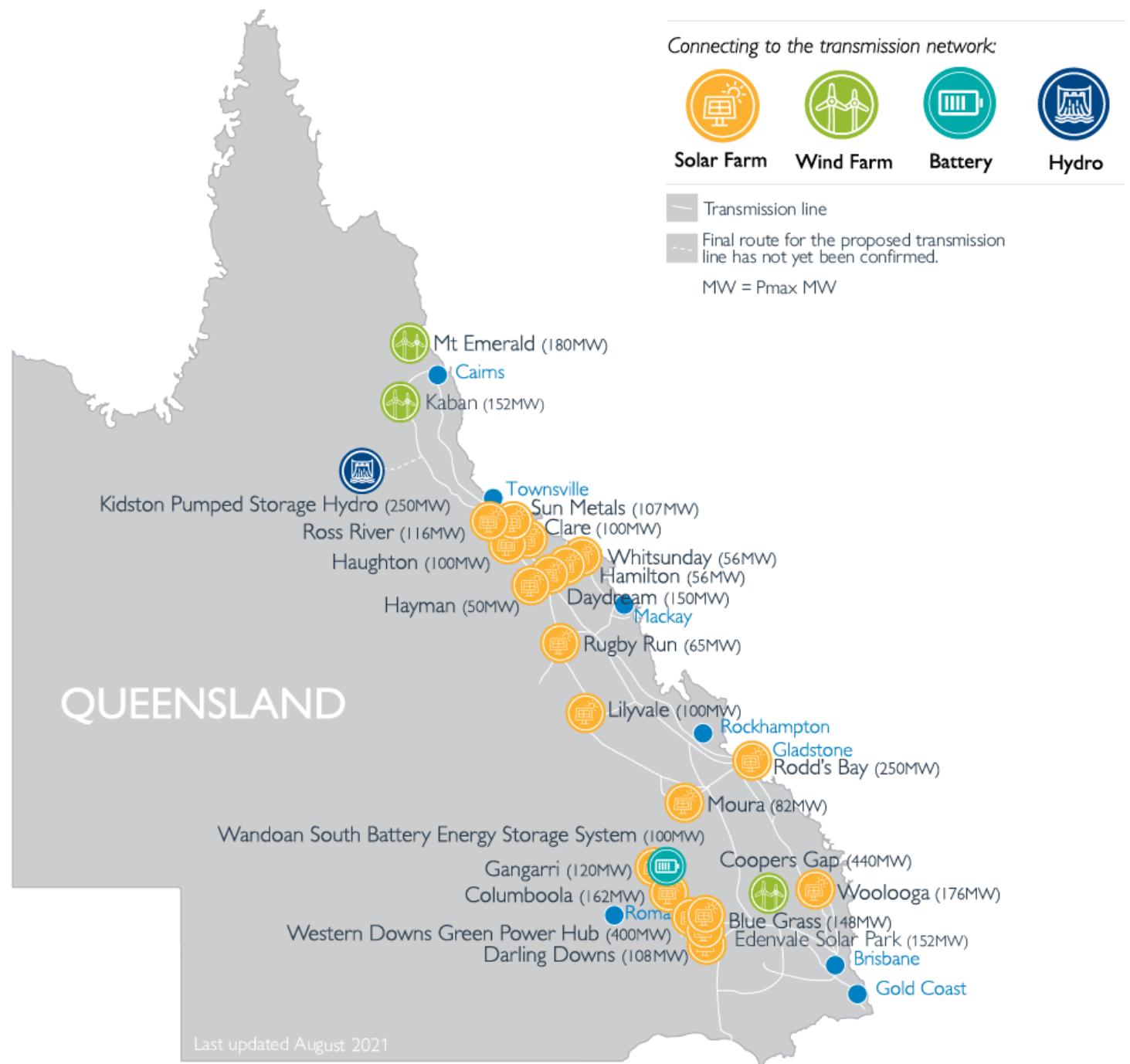
In Queensland - 32%

68%





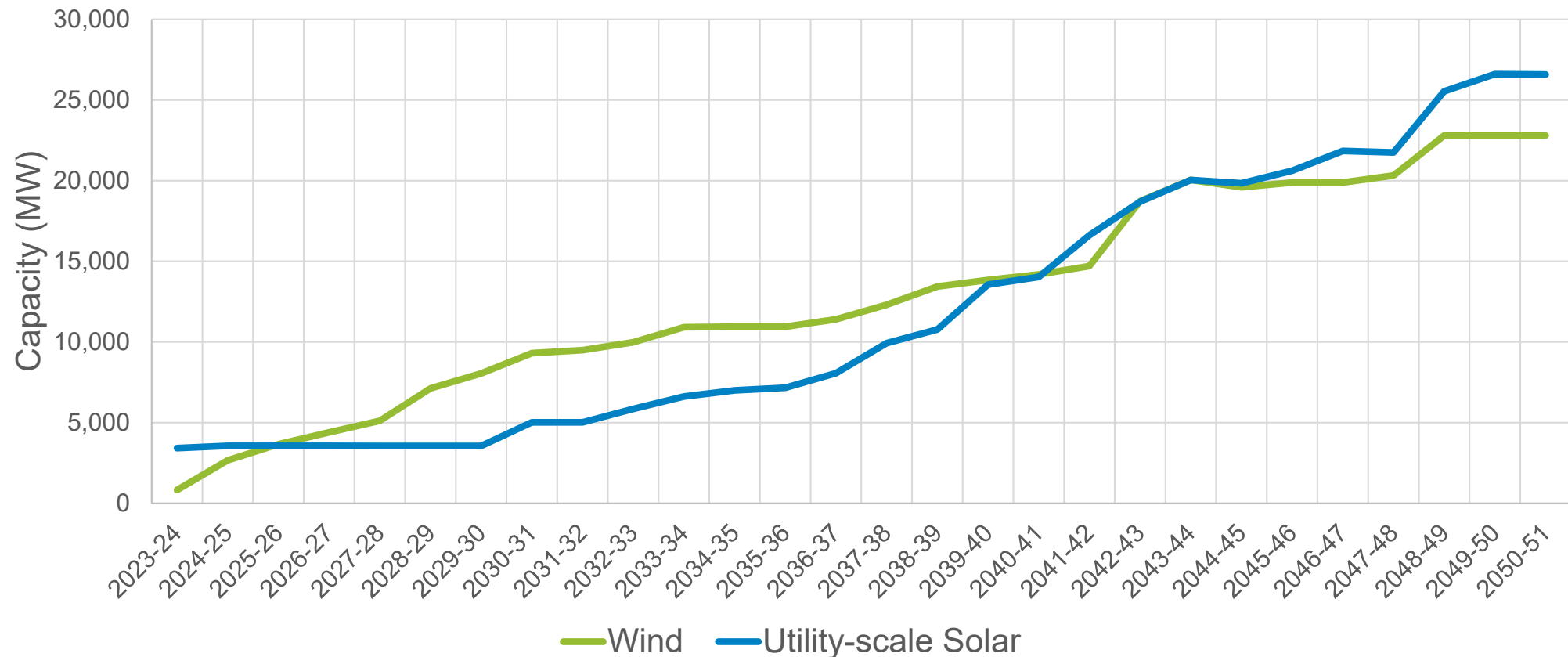
- Connected 21 renewable projects with combined maximum output of approximately 3,000 MW
- 7 renewable projects under construction with combined maximum output of 1,291 MW



Quantity of Renewables

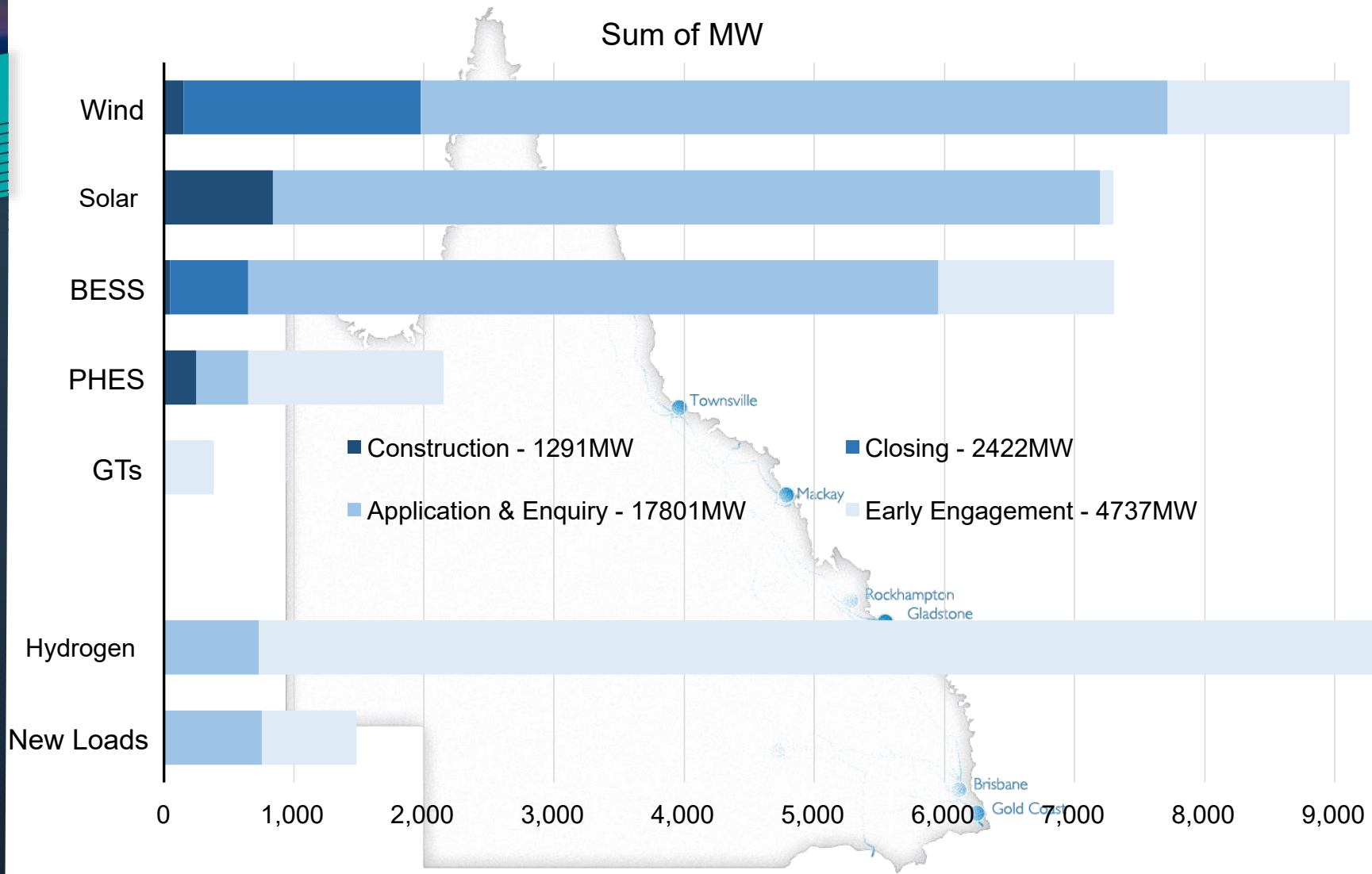
Forecast Queensland Renewables Capacity (MW)

Source: AEMO 2022 Draft ISP Step Change





- **Projects under construction** with combined maximum output of 1,291 MW generation
- **Projects approaching financial close in 2022** with combined maximum output of 2,422 MW of generation
- **Projects at the enquiry stage** with combined maximum output of 17,000+ MW

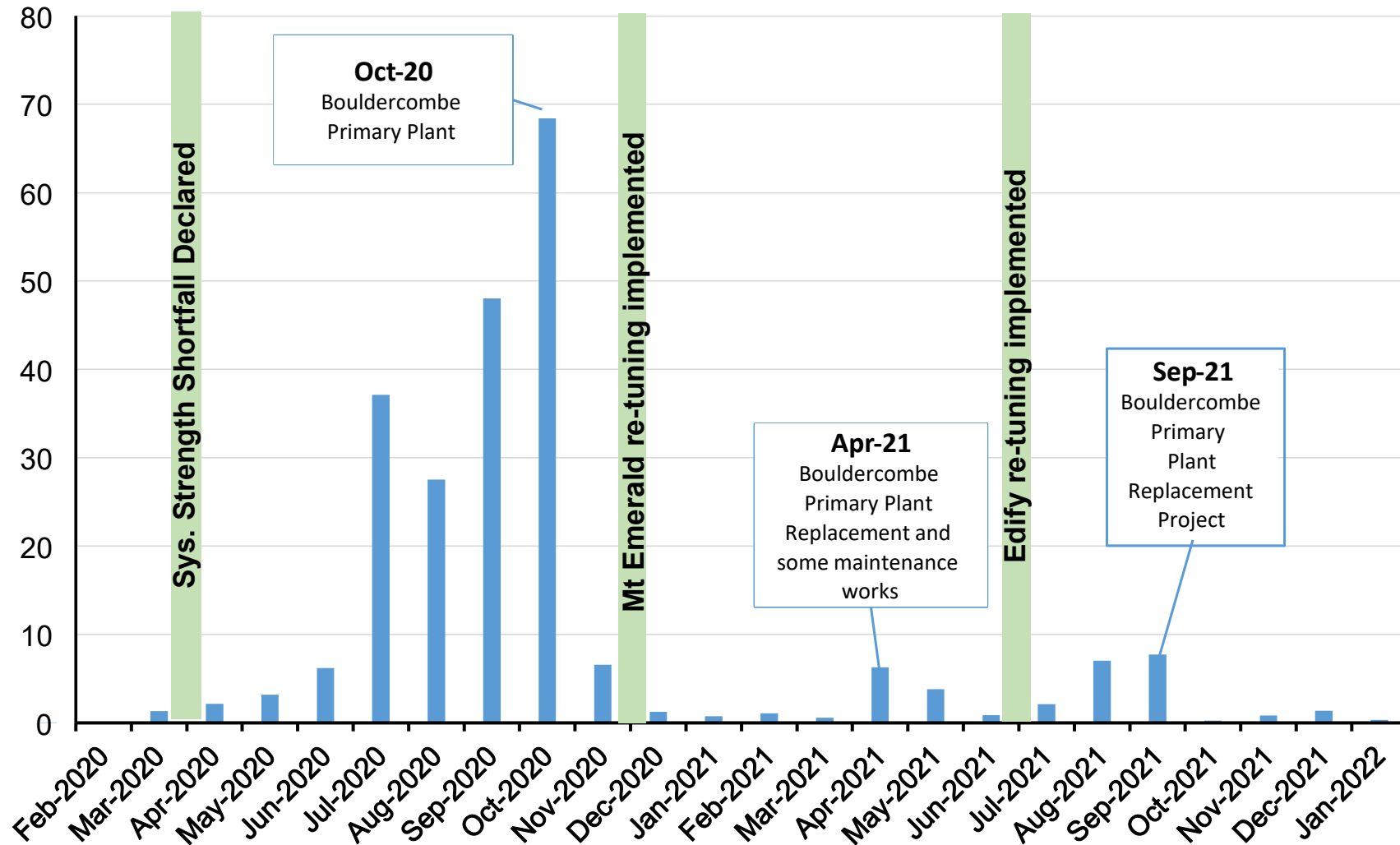


System Strength Remediation

Retuning Inverters

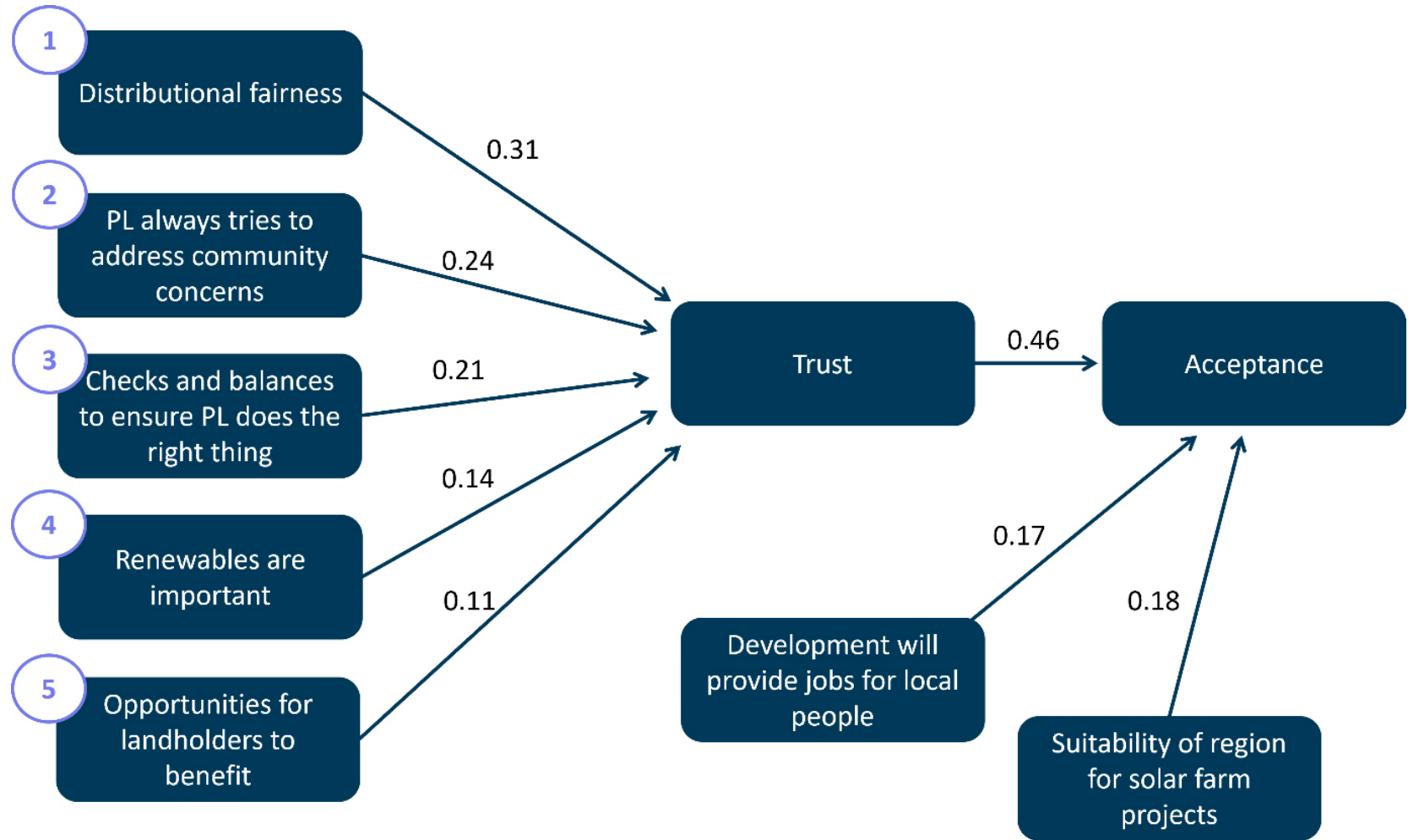
Spilled Energy
(GWh)

Network constraint impact



Social Licence to Operate

A model for social licence



“Project EnergyConnect has had costs increase from \$1.5 billion to \$2.3 billion partly due to social license issues”

David Leitch – Renew Economy Feb 2022

Early thinking on zero emissions

Powerlink 2020/21 planning scenarios

VRE, PHES and HVDC



Wind 7.0 GW



Solar 8.5 GW



Hydro 4.0 GW



HVDC 1.5GW



VRE, GTs and BESS



Wind 8.0GW



Solar 6.5GW

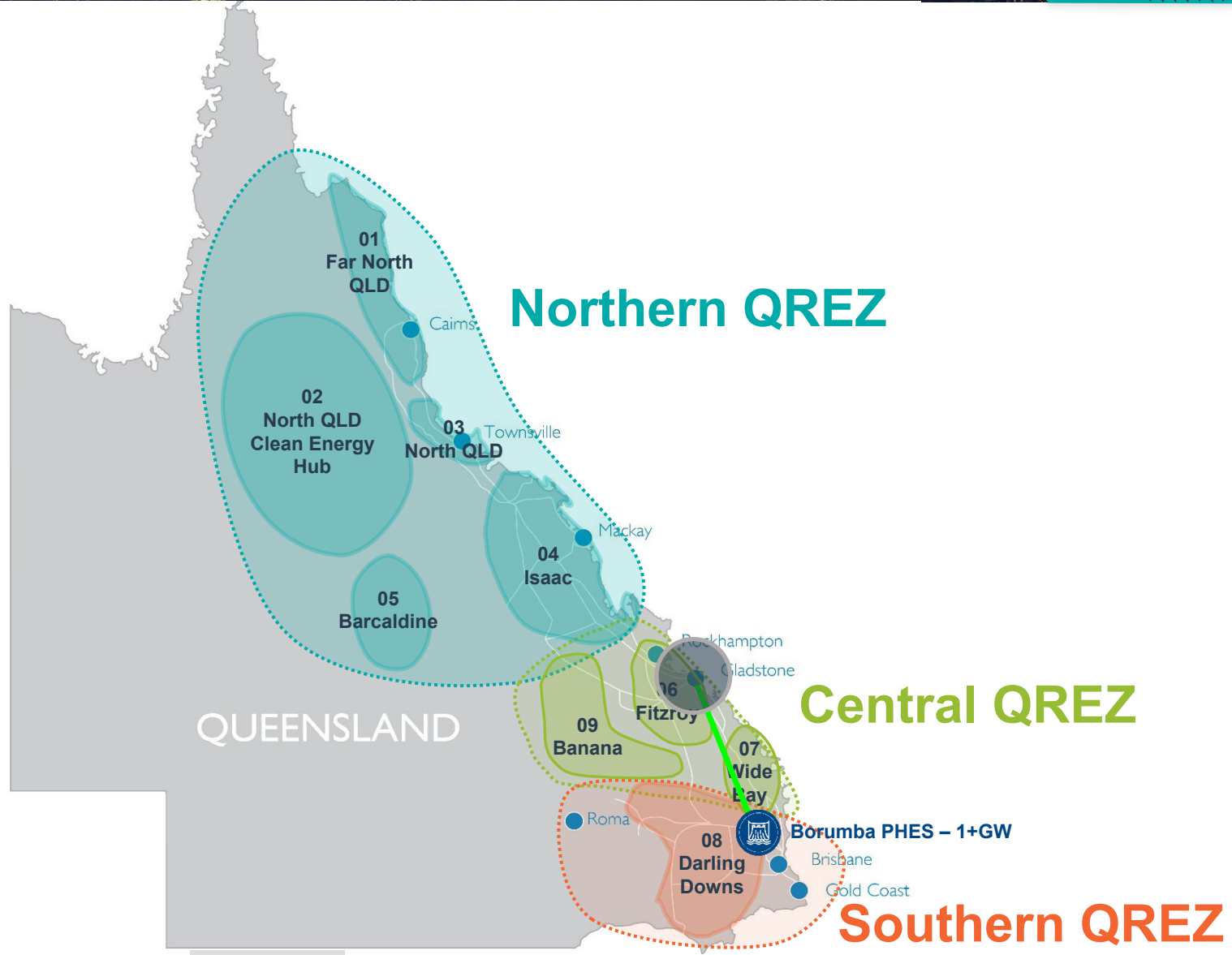


Gas turbines 6.5GW



BESS 6.5GW

Renewable Energy Zones - QREZ



Thanks and Questions