2025 Central Queensland
Transmission Network Forum

State of the Network

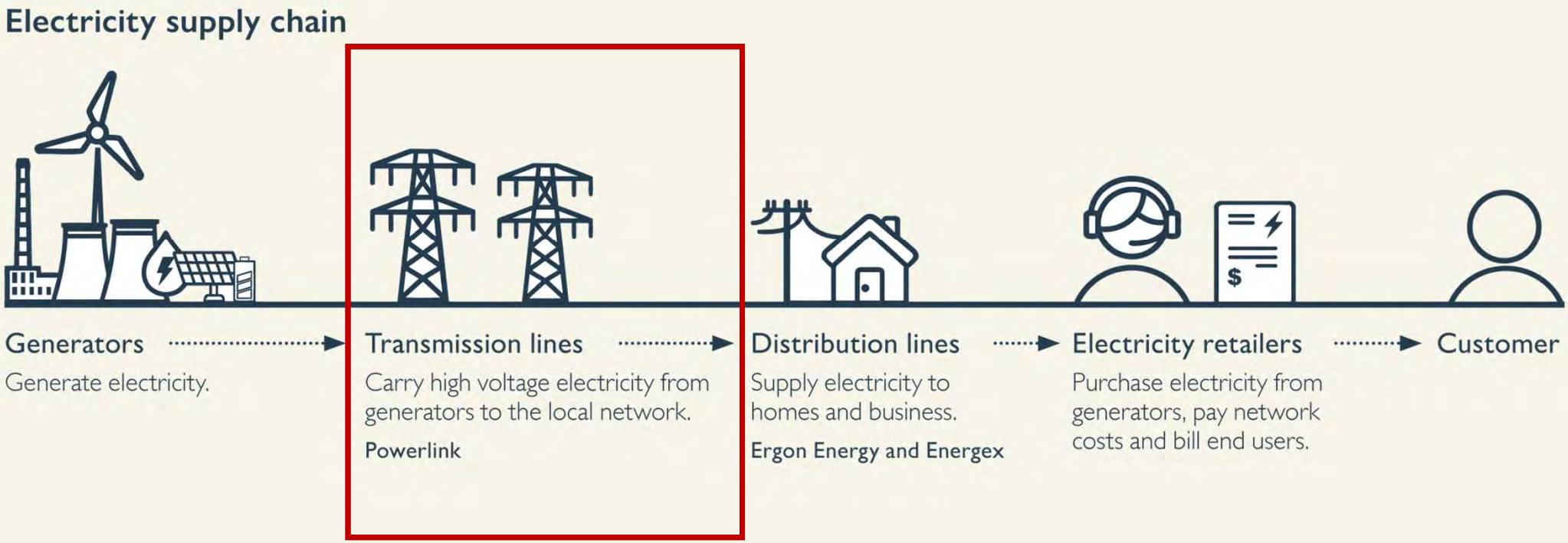
Paul Simshauser
Chief Executive
Powerlink Queensland

Acknowledgement

Powerlink acknowledges the Bailai, Gurang, Gooreng Gooreng and Taribelang Bunda Peoples as the Traditional Owners and custodians of the lands and waters of this region.

We pay our respects to their Ancestors, Elders and knowledge holders and recognise their deep history and ongoing connection to Country.

The role of transmission



Powerlink Queensland

Queensland Government owned – one of Australia's leading transmission network utilities.

We own, develop, operate and maintain the **high voltage transmission** network.

Our network runs **1,700km** from north of Cairns to the New South Wales border.

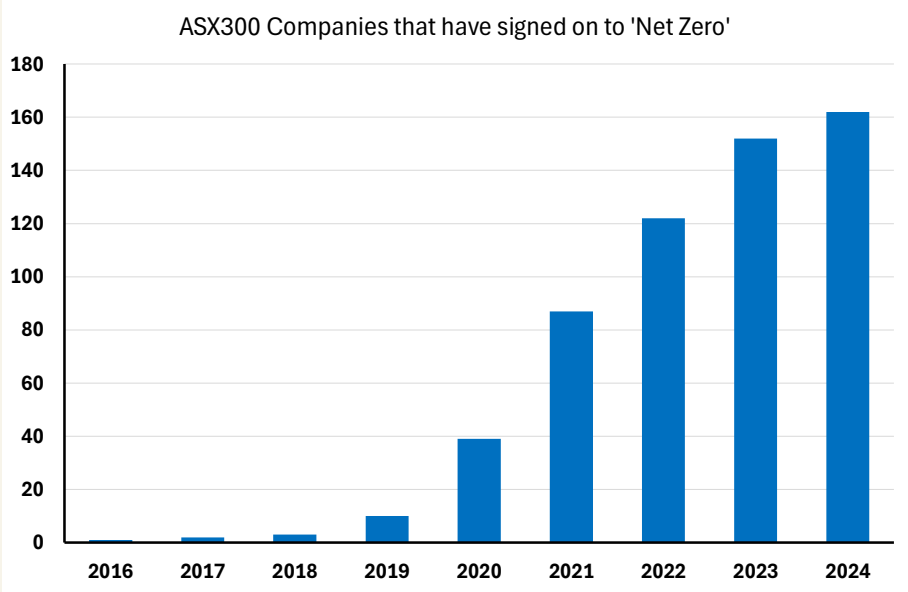
Comprises **15,559** circuit kilometres of transmission lines and **152** substations.

National Electricity Market renewables… *market led*

In Australia's National Electricity Market (NEM), investment commitments in renewable (RE) projects have been 'market led' from 2019…

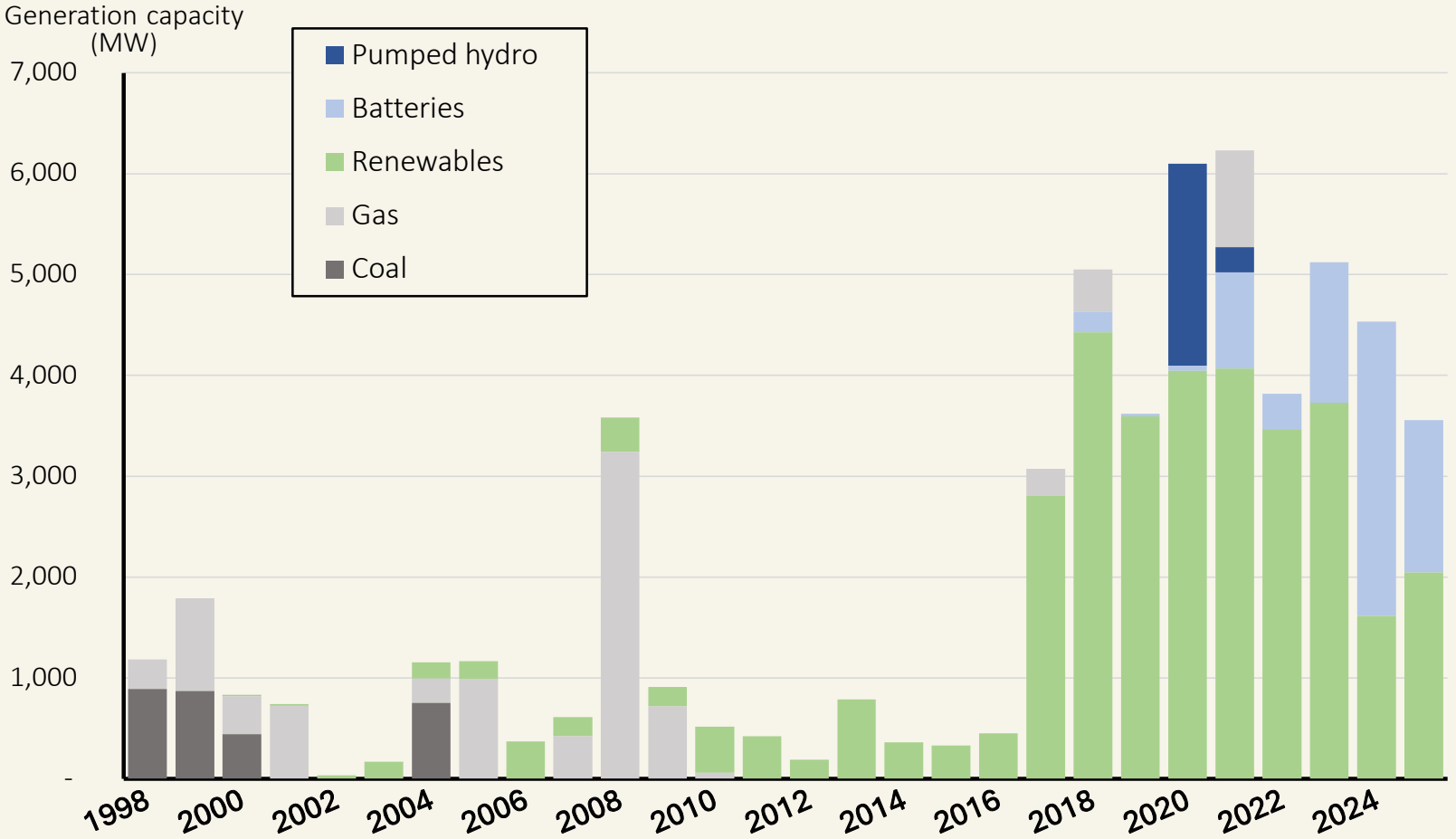
- Government policy & RE subsidies drove investment from 1998-2018 in the NEM

- Capital markets and entry economics took over (2019 -)
- Boardroom Investment Commitments in RE and firming:
  - 2019 to 2025 = $66 billion, 150 projects, 29,000 MW
  - 1998 to 2018 = $32 billion, 125 projects, 11,300 MW
- Plus, *kitchen table* Investment Commitments (rooftop PV)
  - $10 billion, 14,400 MW (2019-2025)
- Total (2019-2025) ~43,000 MW



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

NEM investment commitments 1998-2025 – New capacity



2017-2025
- 224 projects
- 37.2GW
- $84.3 billion

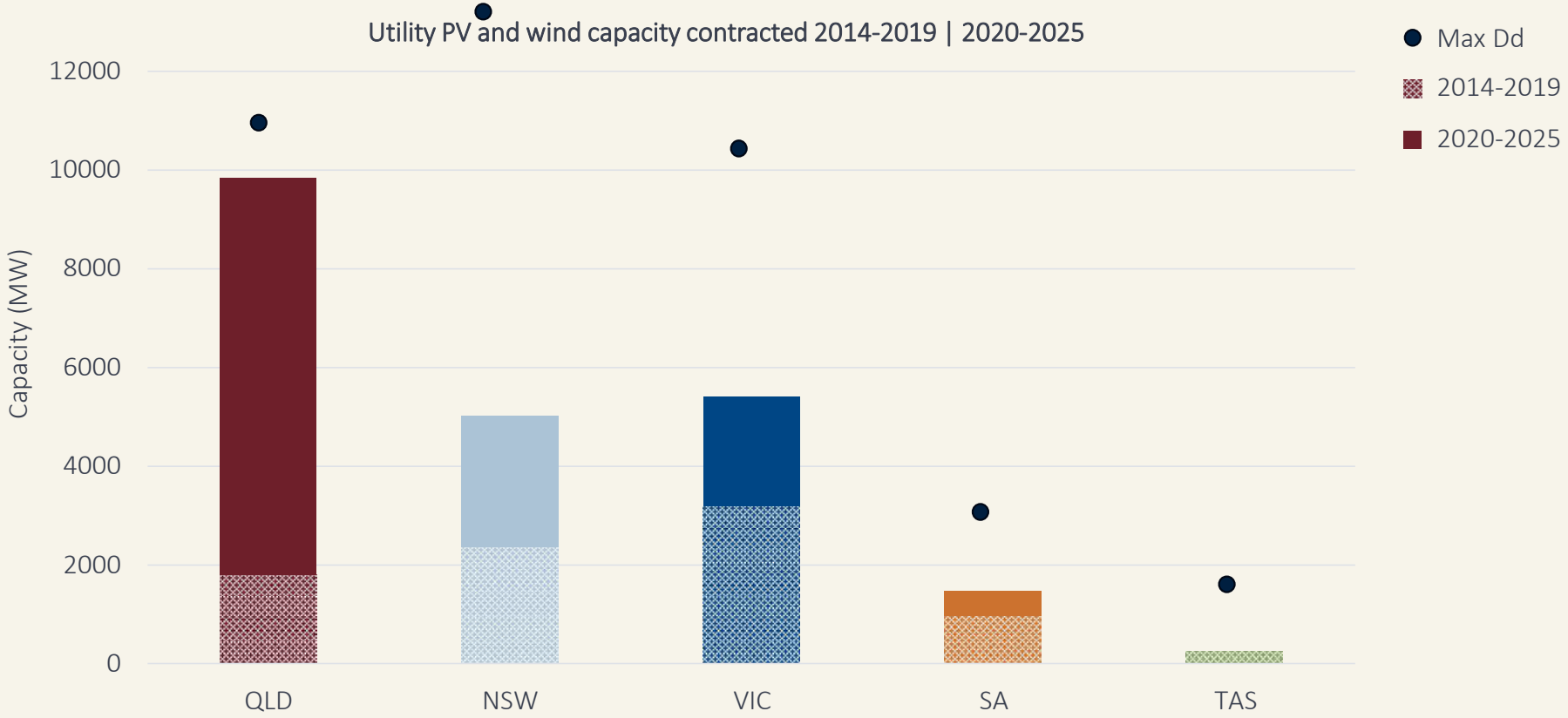
Wind
- 51 projects
- 10.6GW
- $27.8 billion

Solar
- 118 projects
- 15.2GW
- $27.6 bn

Batteries
- 48 projects
- 7.4GW
- $10.7 bn

Source: Simshauser & Gilmore (2022), Climate change policy discontinuity & Australia's 2016-2021 renewable investment supercycle. Energy Policy, Vol.160

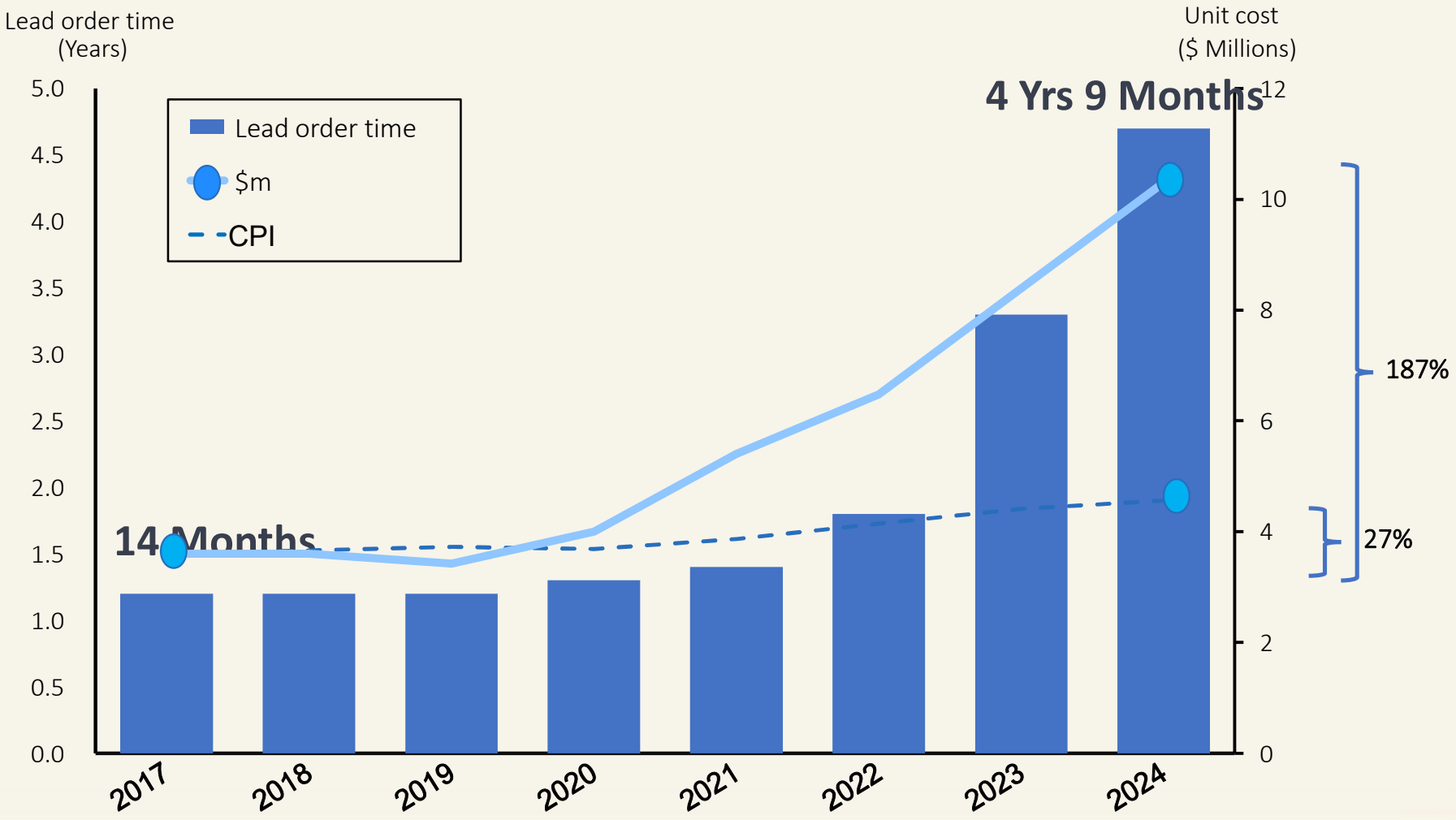
RE commitments (2014-2025) by NEM region



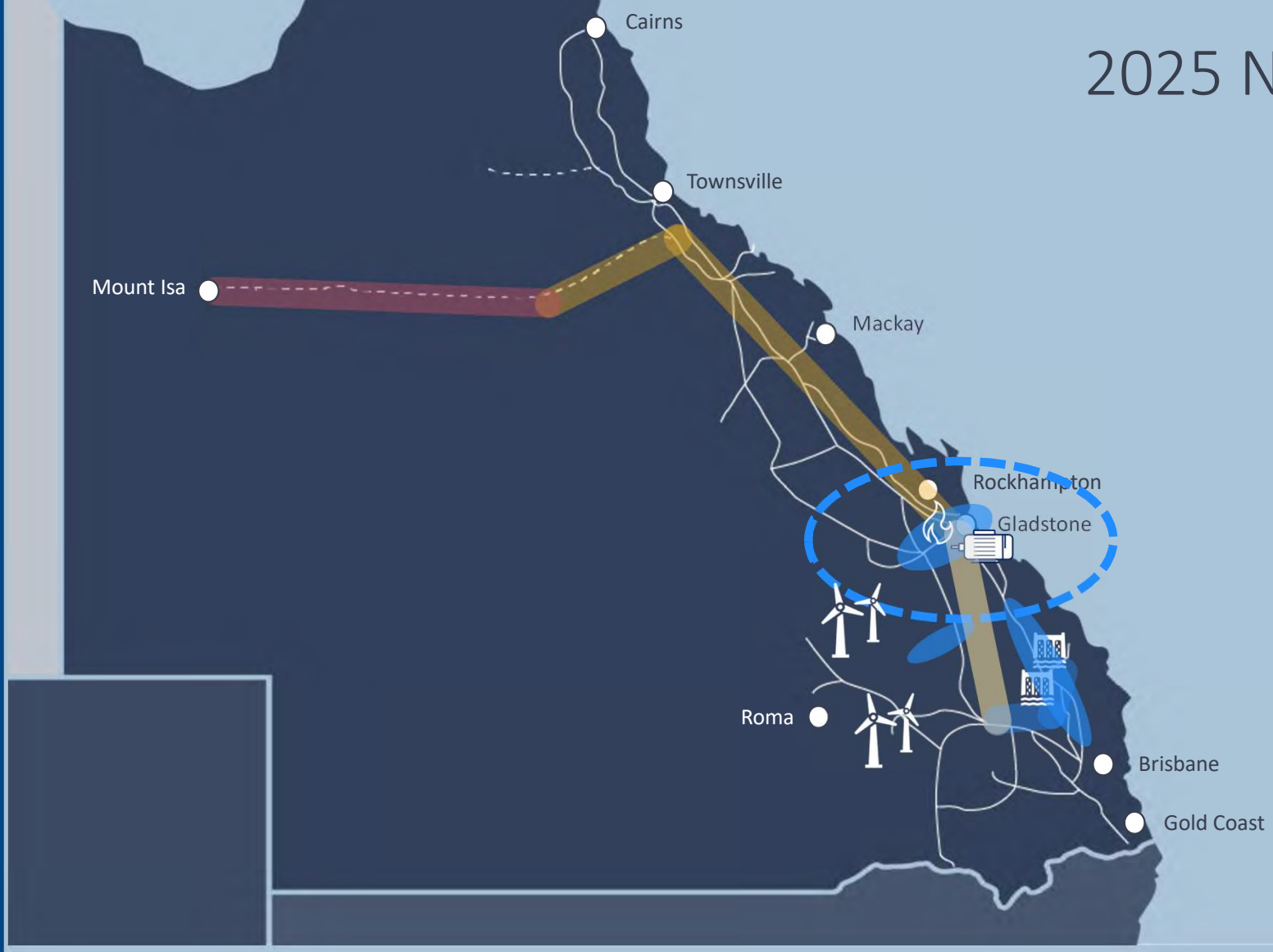
Source: Rystad Energy Research and Analysis

2021-22 NETWORK PLAN

275kV transformers – time and cost



2025 NETWORK PLAN



Central Queensland is a critical part of the power system, and the Queensland economy more broadly

Gladstone region load

20-25%
state electricity supply

1.1GW
Largest load outside SEQ

Gladstone region generation

1680MW
Gladstone Power Station
Scheduled close in 2035

700MW
Callide B Power Station
Scheduled close in 2031

27,000MW
Battery/solar/wind already in development

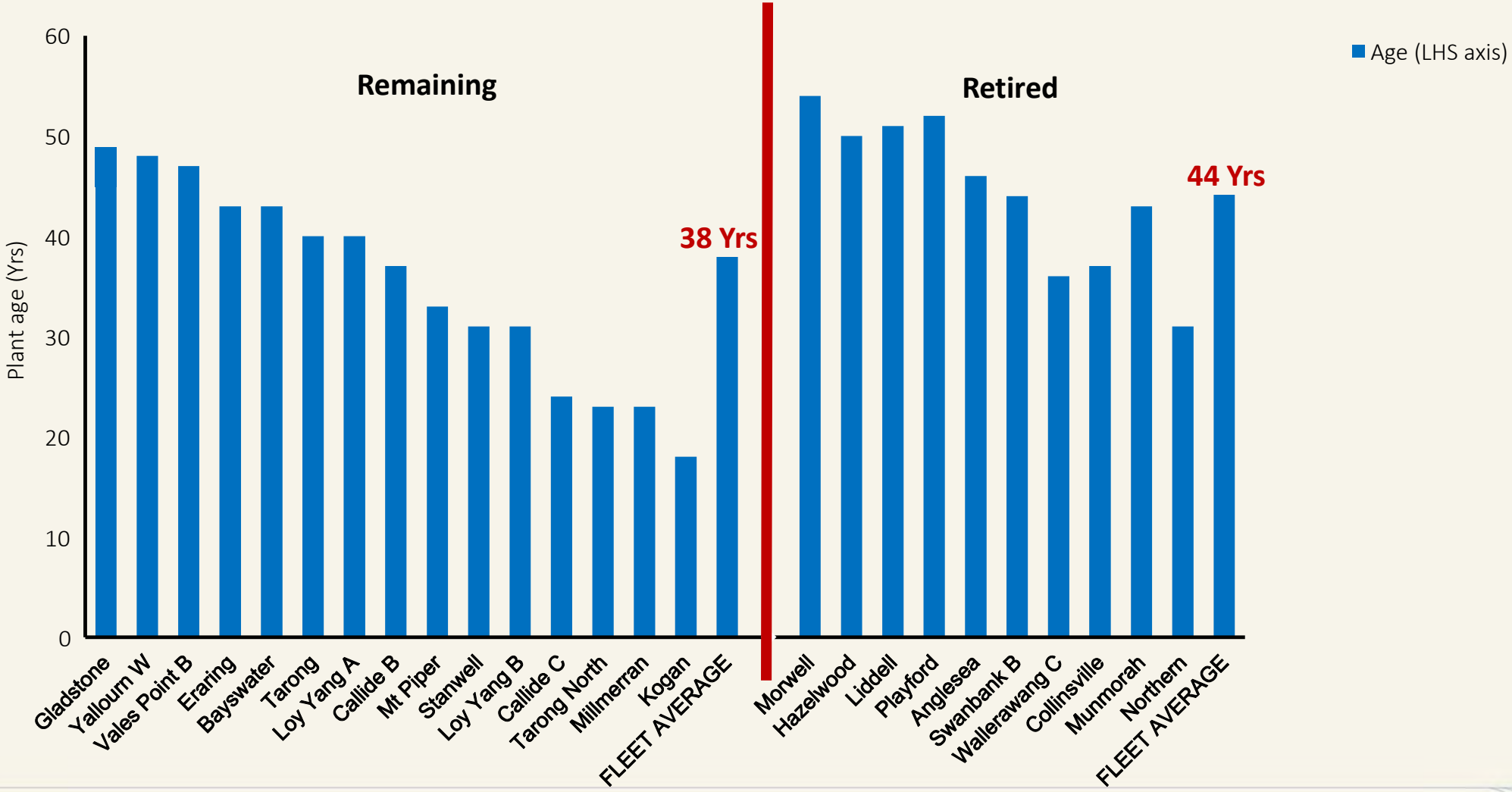
At least 3.5 years' notice of expected closure required

Our legacy coal fleet is important for price stability, reliability and system services.

However,

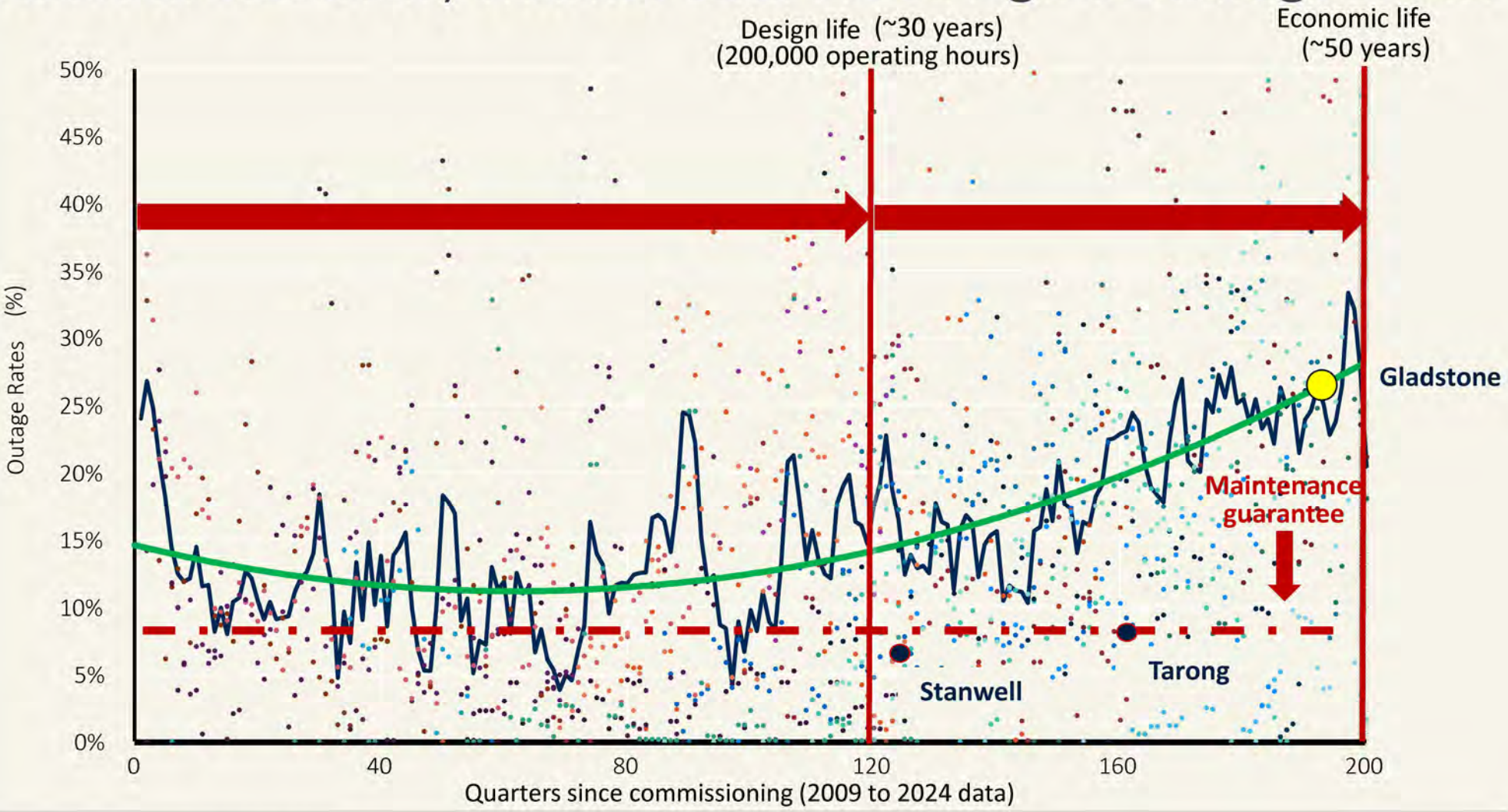
- Not all coal plant is low cost
- Plant age and outage rates are correlated

National Electricity Market coal fleet – Remaining vs Retired



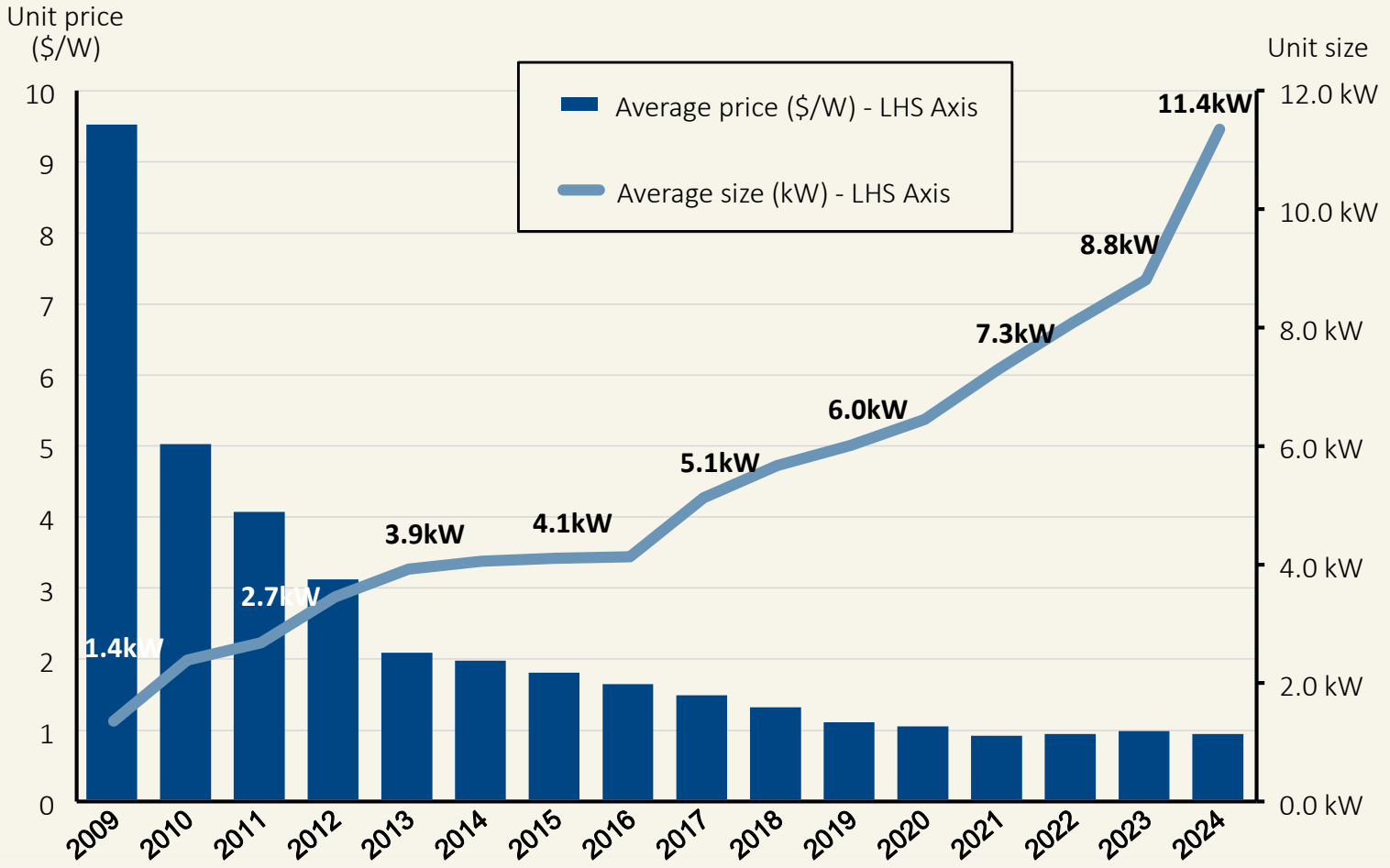
Source: Simshauser & Gilmore (2023), "The Counterfactual Scenario: are renewables cheaper?", CAEEPR Working Paper, Griffith University.

National Electricity Market Coal Fleet: Age vs Outage Rates



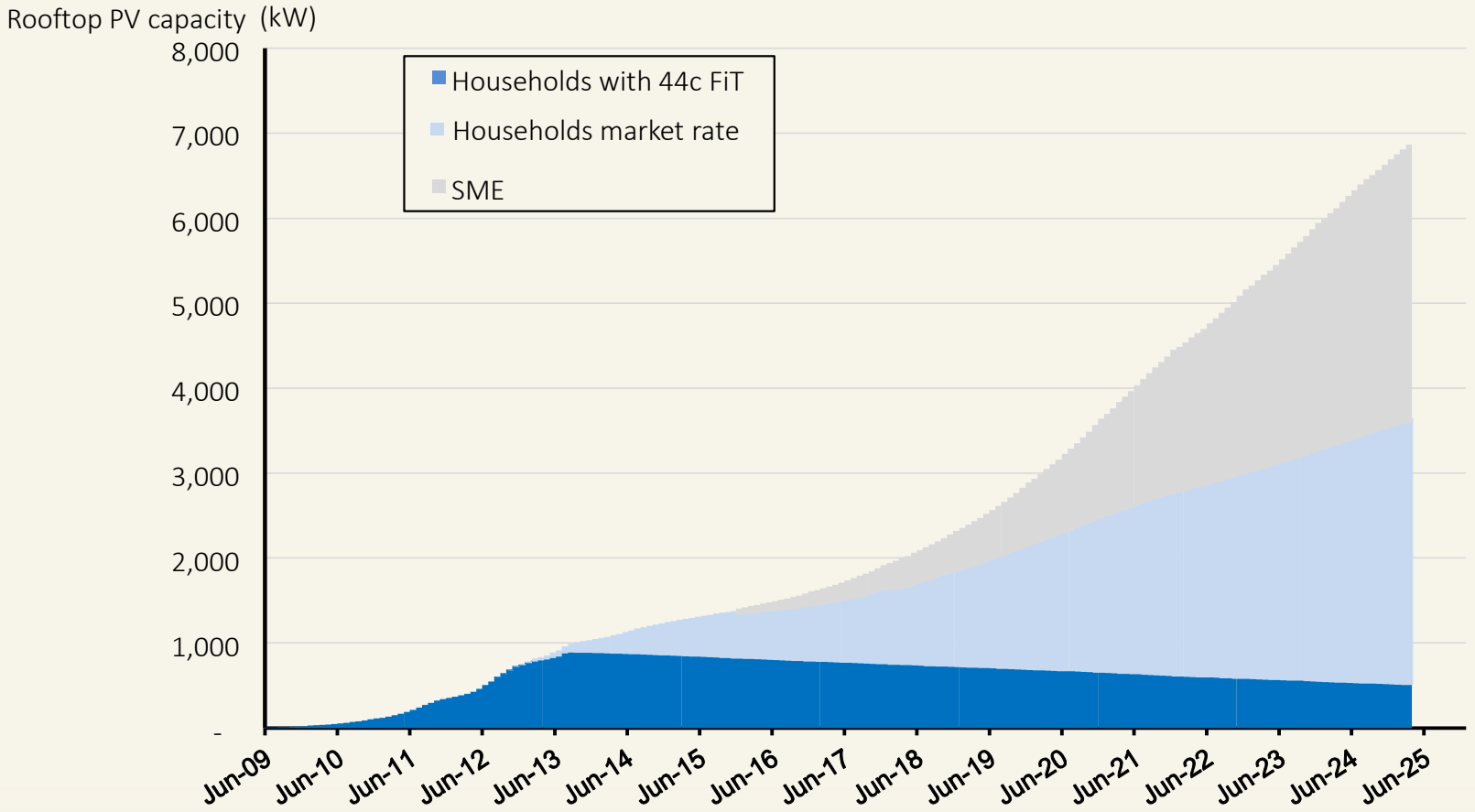
Source: Simshauser & Gilmore (2023), "The Counterfactual Scenario: are renewables cheaper?", CAEEPR Working Paper, Griffith University.

Rooftop solar, cheaper and larger



Source: Simshauser, Nelson & Gilmore (2023), "The Sunshine State: causes and effects of mass rooftop solar PV take-up rates in Queensland", Book Chapter.

Queensland rooftop – 53.7%
(highest take-up rate in the world)

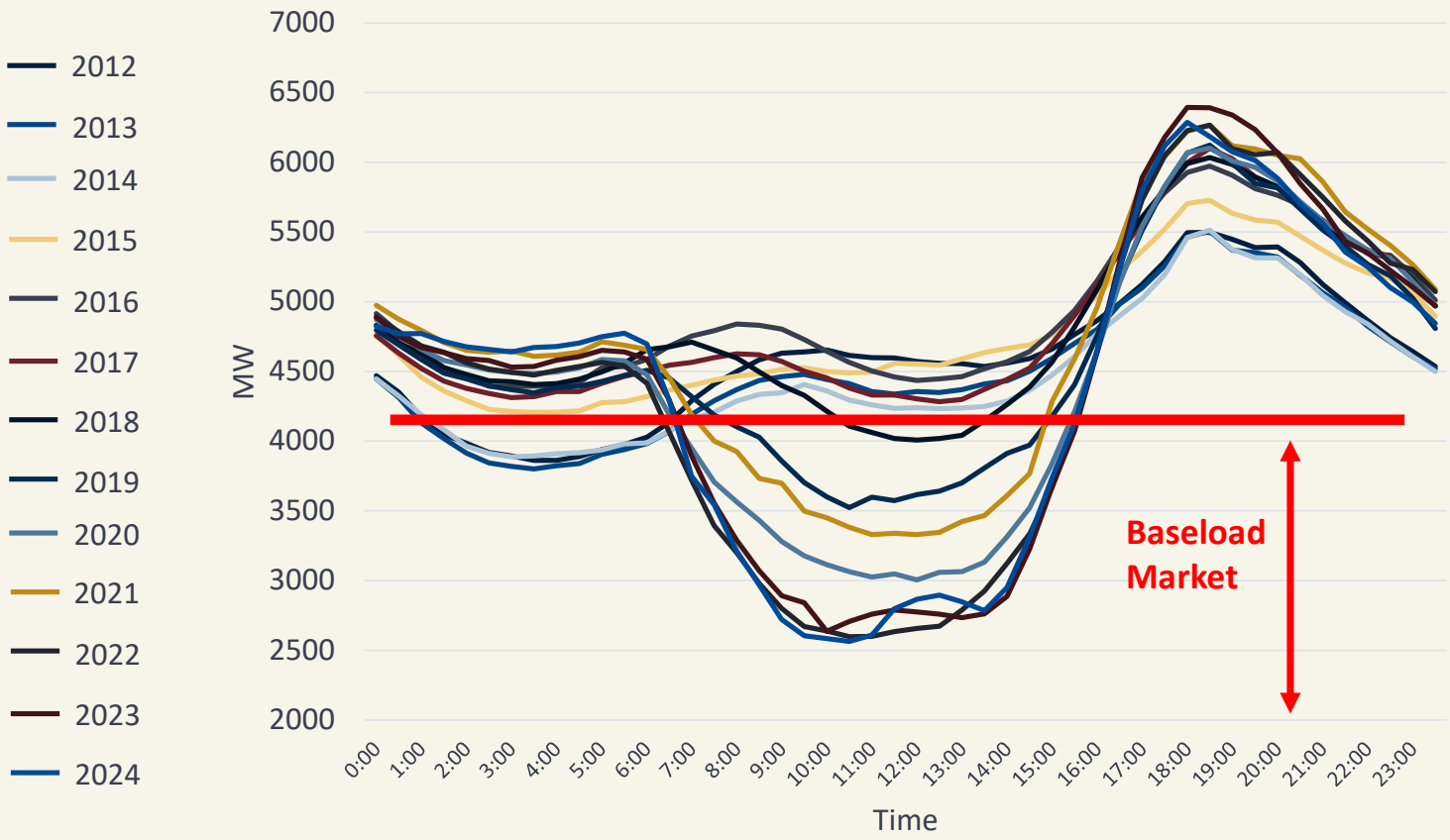


Source: Simshauser, Nelson & Gilmore (2023), "The Sunshine State: causes and effects of mass rooftop solar PV take-up rates in Queensland", Book Chapter.

The baseload market is contracting

Coal plants need to run continuously between their minimum stable load and maximum rated capacity.

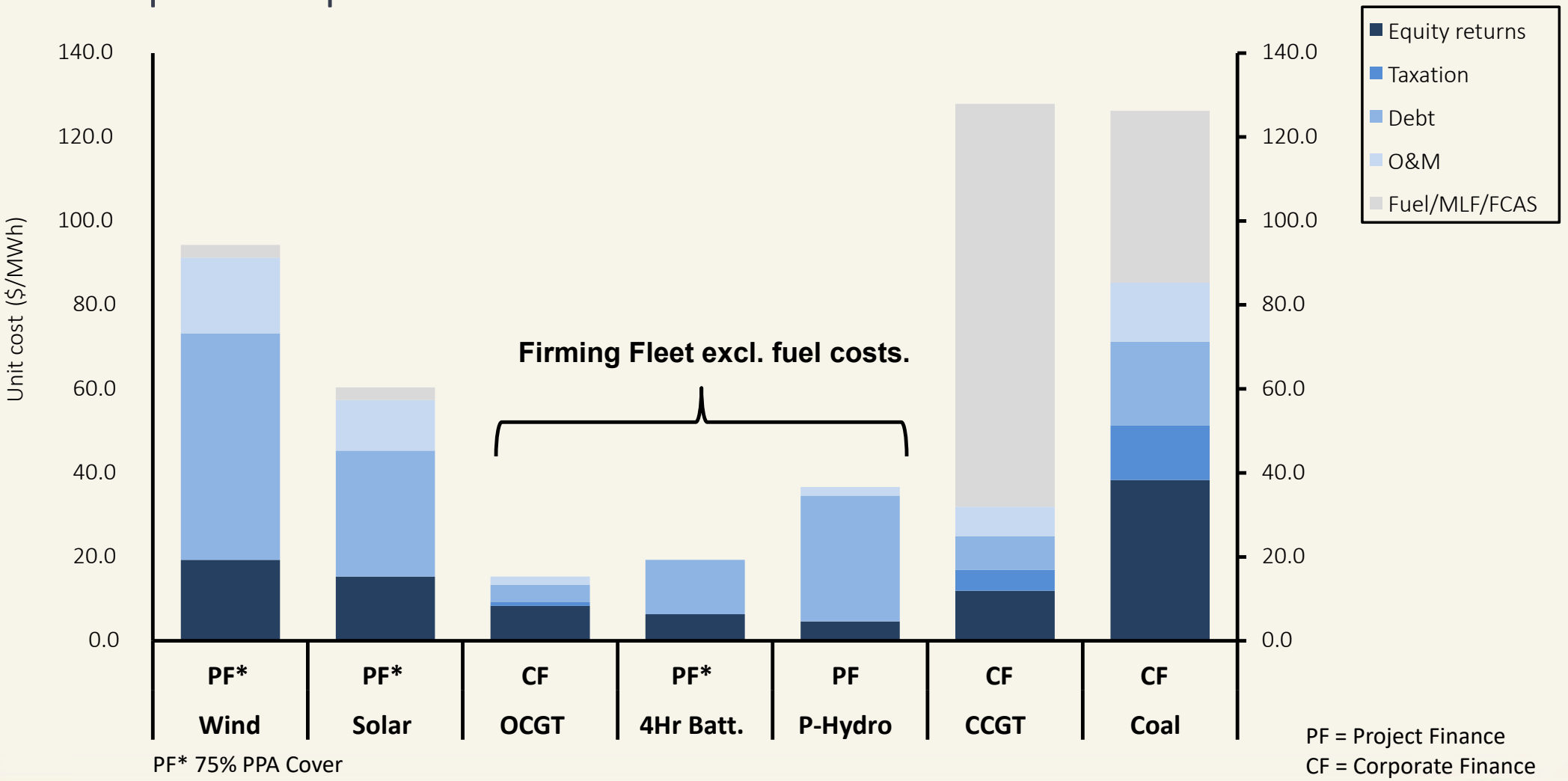
"Two shifting" a coal plant grinds against its technical design, adds to outage risk and maintenance costs, and is uneconomic.



Given the NEM's current cost dynamics, power system planning requires *'everything in balance'*.

- Right now, our incumbent coal fleet remains critical re: price stability, system services and reliability and security of supply
- Marginal coal plant are exposed to export coal prices and realities of aged-based reliability
- Lowest cost replacement *at pace* requires
    - RE (i.e. wind and solar); and
    - dispatchable fleet (GTs, batteries and pumped hydros).

2025 plant options



Source: Simshauser & Gilmore (2023), "The Counterfactual Scenario: are renewables cheaper?", CAEEPR Working Paper, Griffith University.

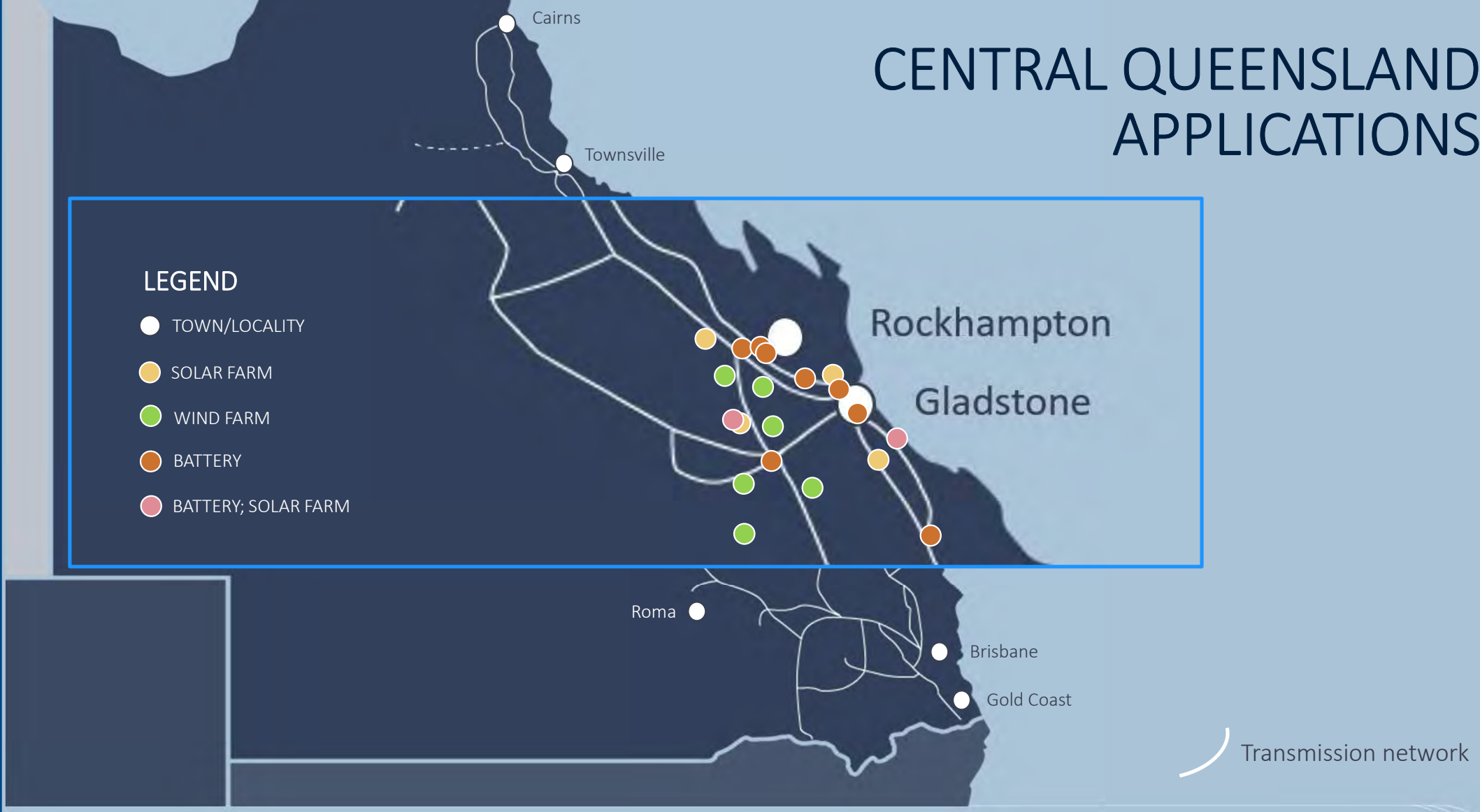
Queensland connections

44 renewable and storage projects operational or under construction with combined maximum output of 9,610 MW

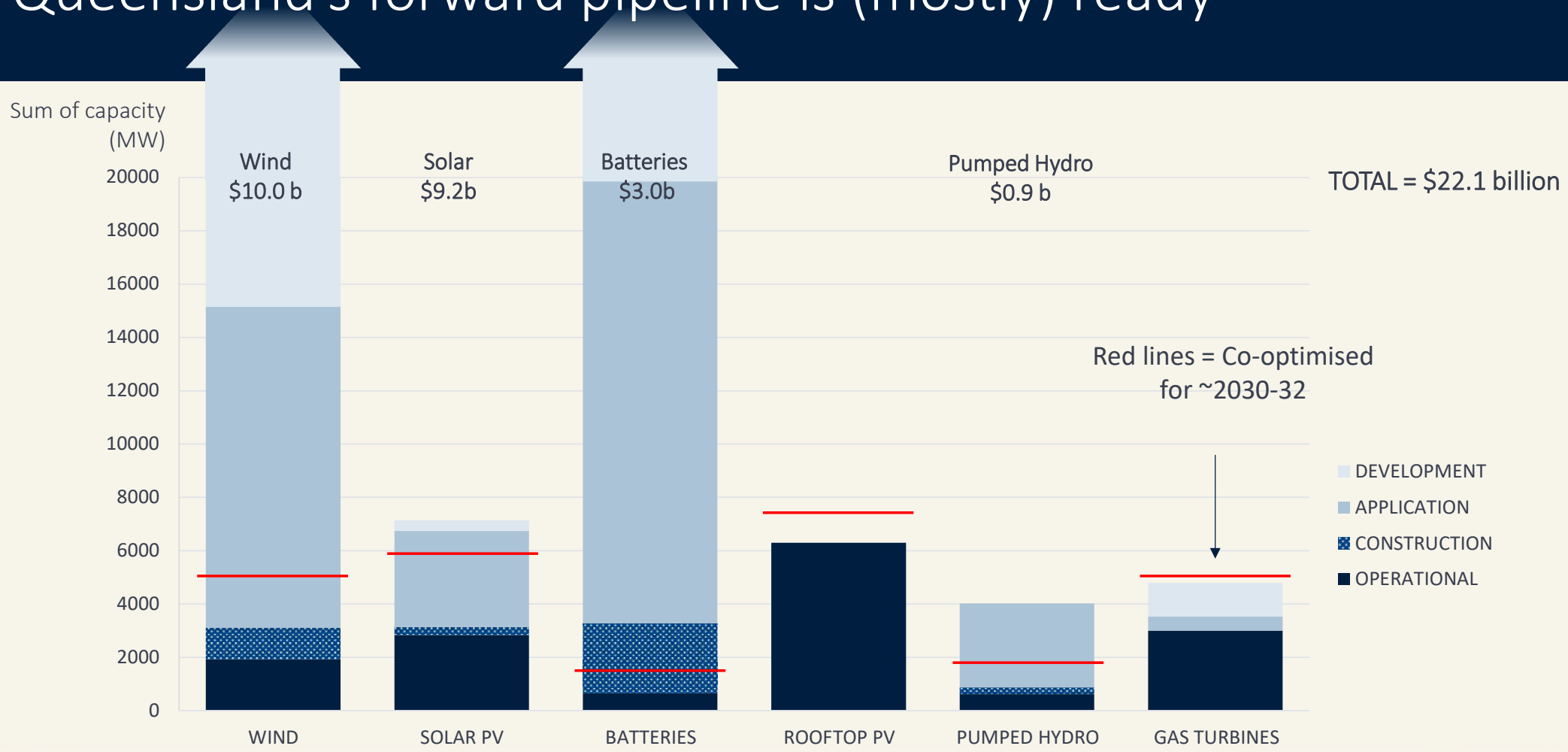
As at July 2025, 103 RE and gas applications being processed representing 42,442MW

73 projects at the enquiry stage with combined max output of ~36,000MW

CENTRAL QUEENSLAND APPLICATIONS



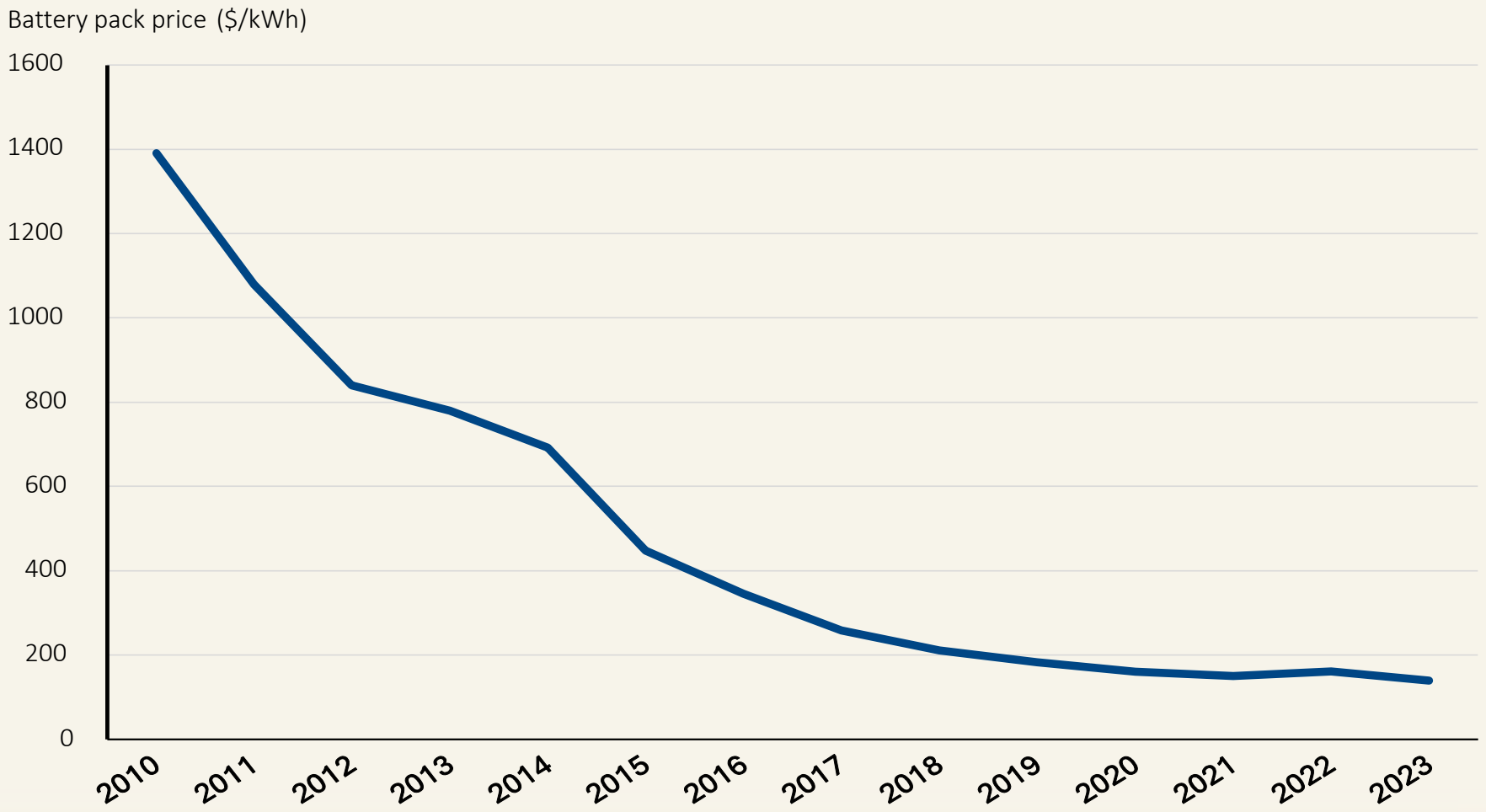
Queensland's forward pipeline is (mostly) ready



Power system planning and investment is tough and complex in the current environment.

Given recent National Electricity Market (NEM) cost dynamics, power system planning requires *'everything in balance'.*

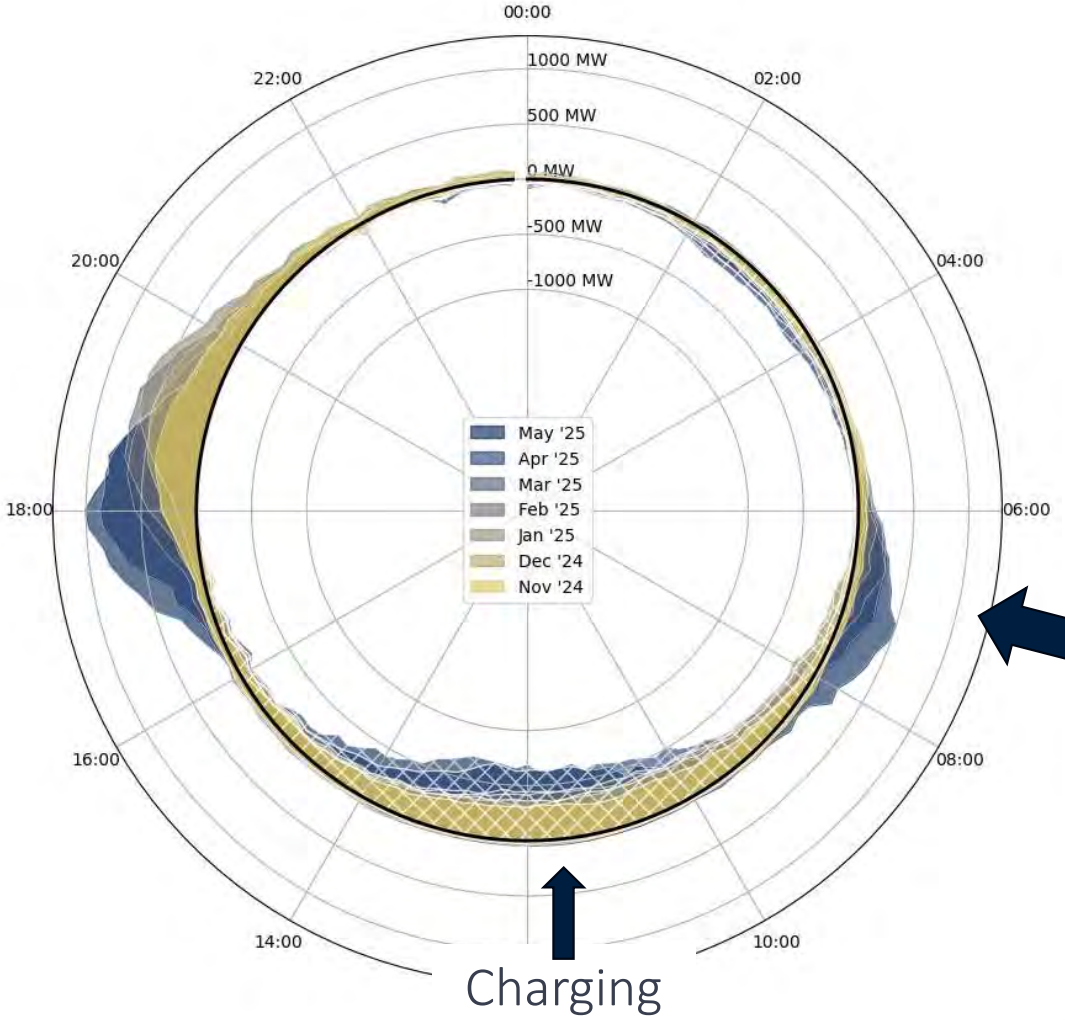
Lithium-ion battery pack prices ($/kWh)



Source: Aurecon

Queensland battery duties

Generating

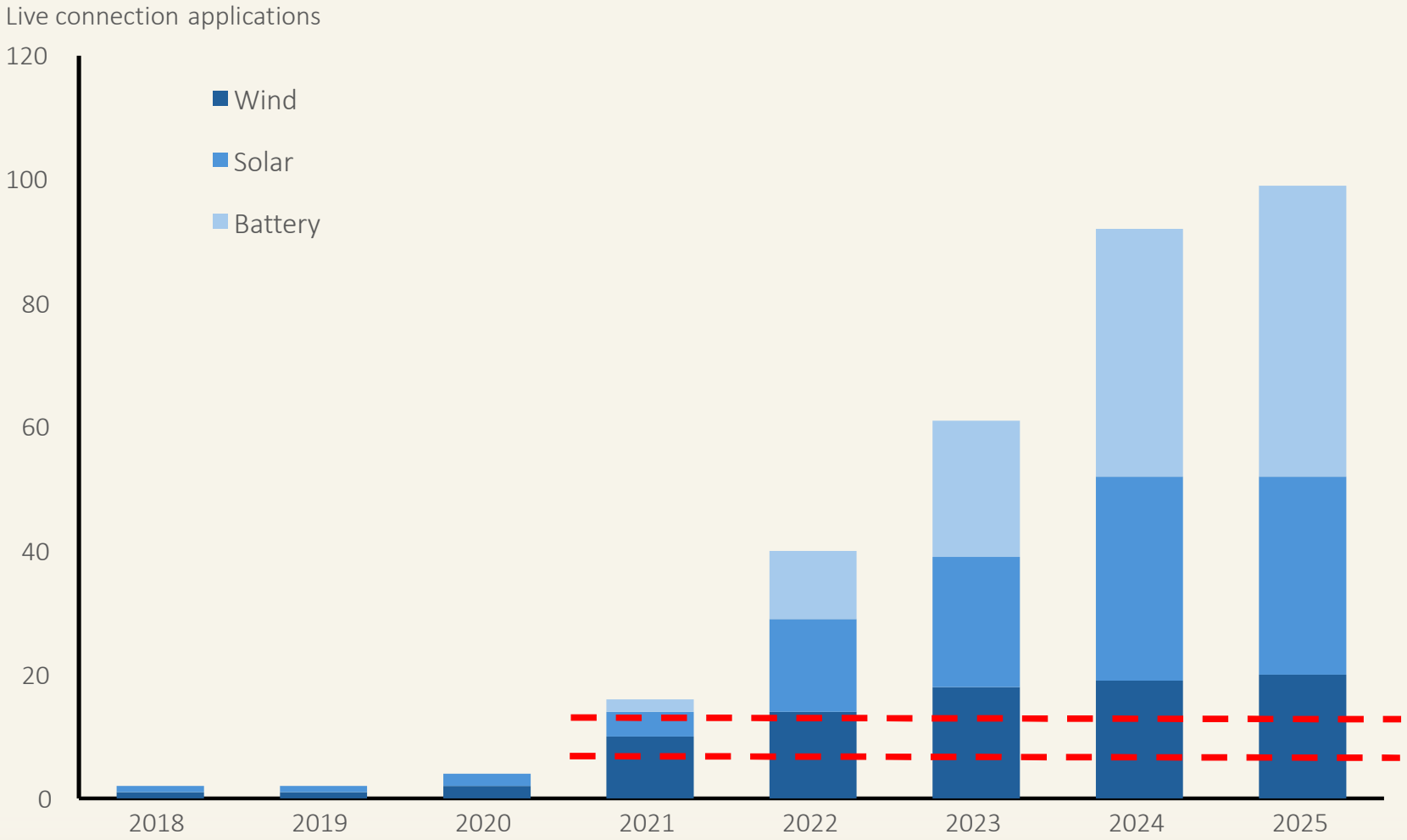


Generating

Charging

Source: Aurecon

Queensland connection applications



Innovation


Live lines and live substations


Real-time line ratings


Wide Area Monitoring Protection and Control

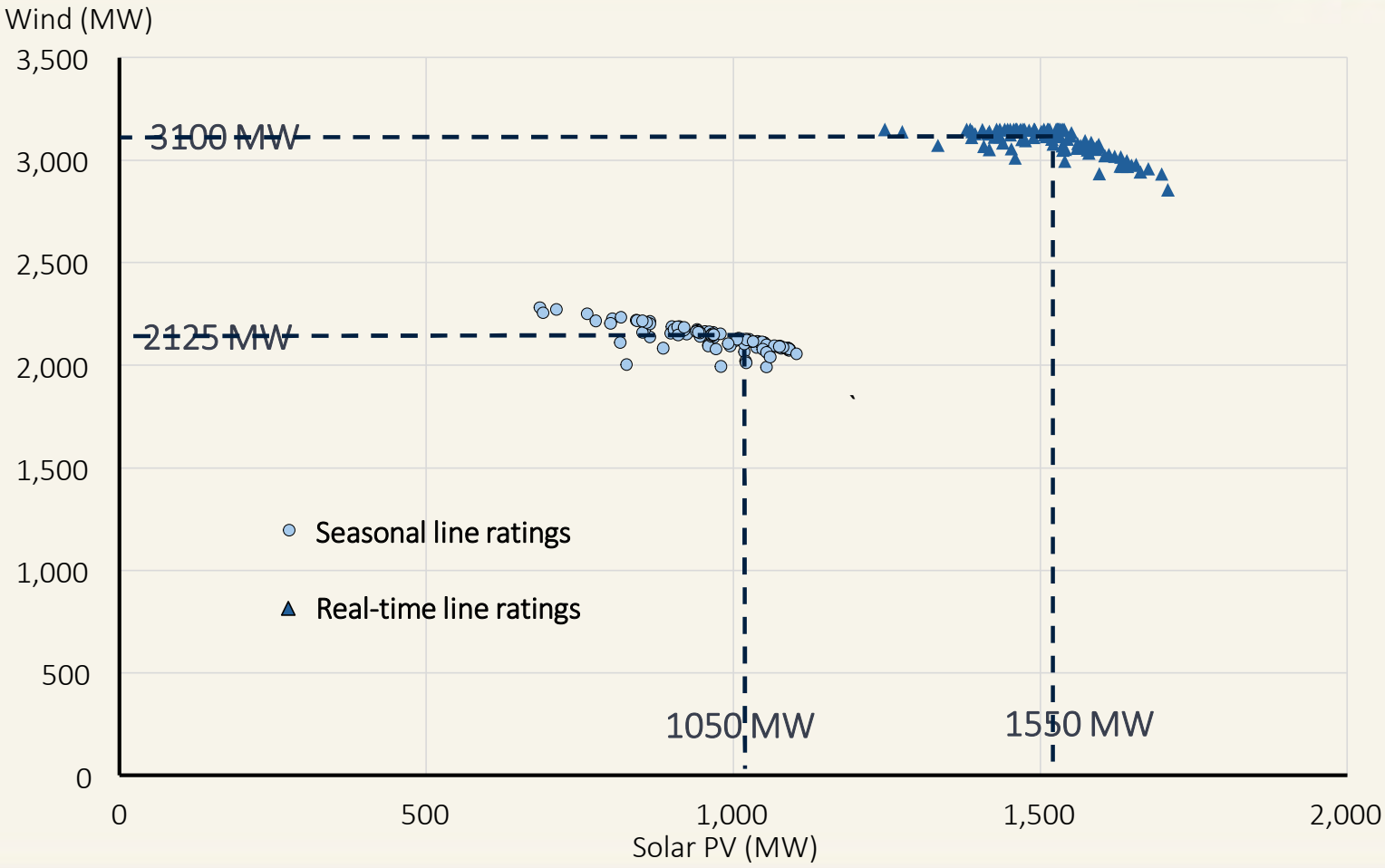

Line phase lifter


Line stringing


Robotic space installer


Concrete sensor strength maturity

Real-time line ratings



Looking through the lens of the Trilemma, policy change is quite predictable.