

STATE OF THE NETWORK

Paul Simshauser
Chief Executive

#PQForum



01 Operations

02 Prices

03 Investment

04 SuperGrid

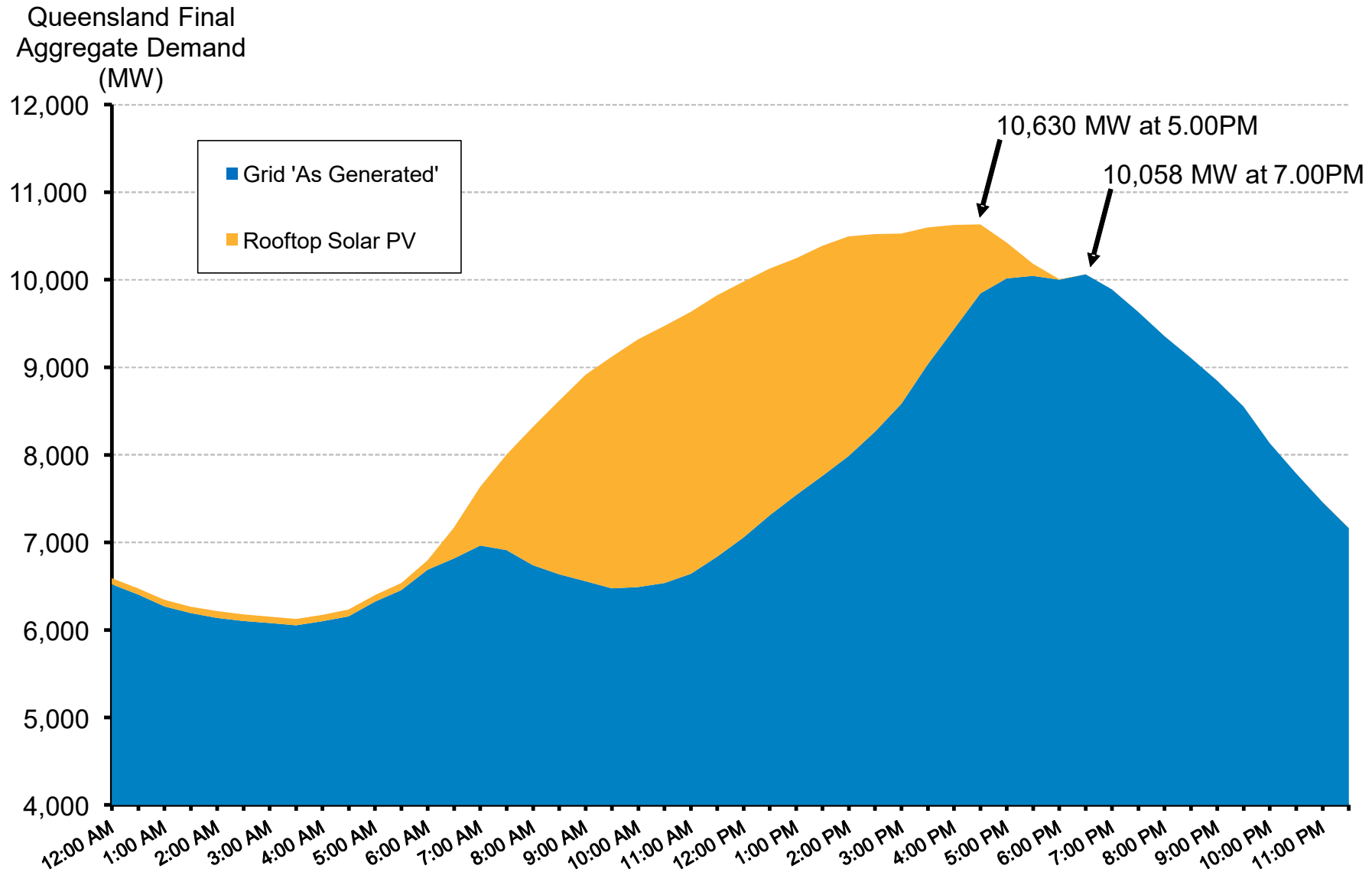
05 System operations (in 2035)



Operations

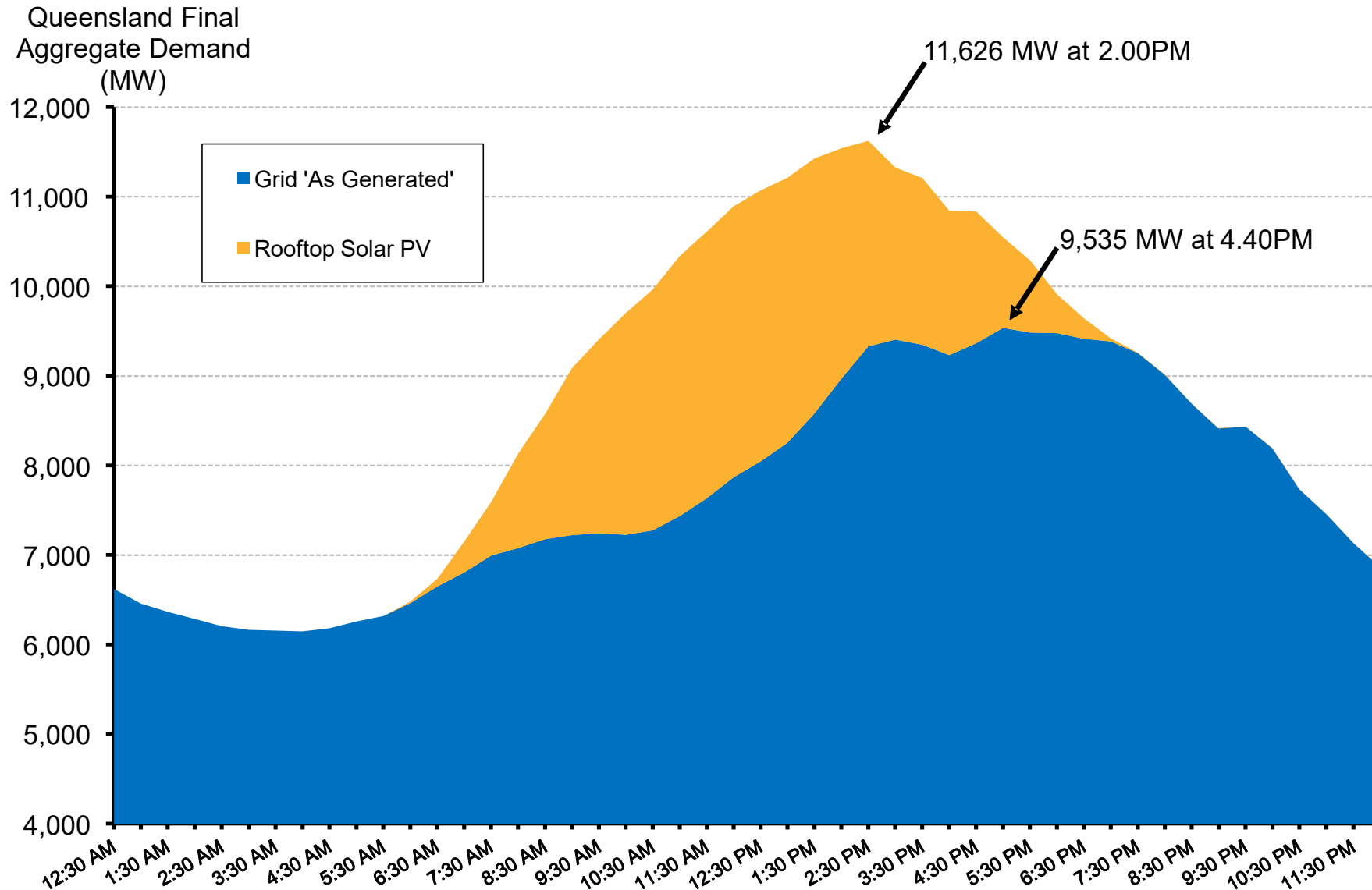
Final demand – grid maximum

8 March 2022

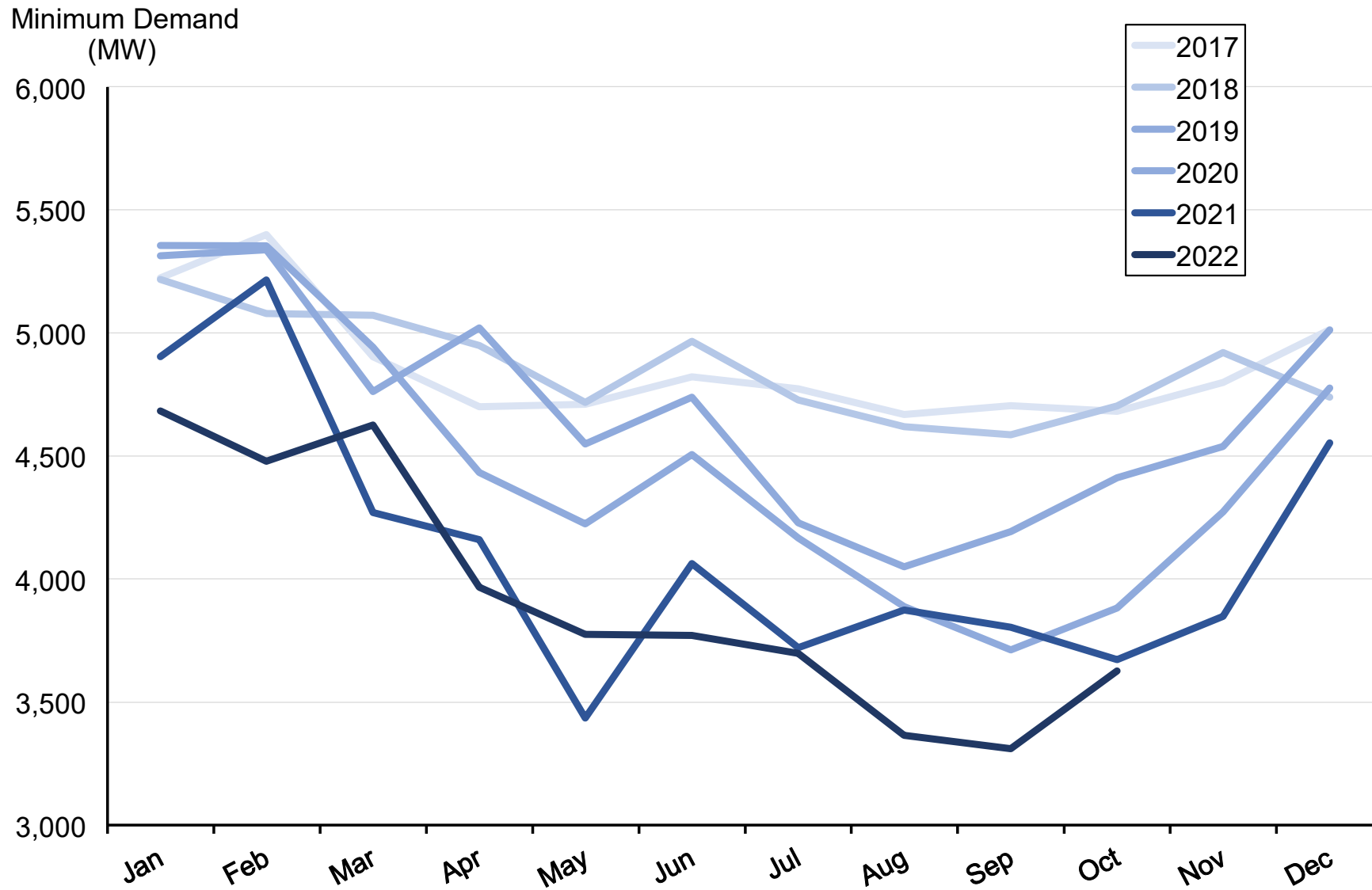


Final total demand – total maximum

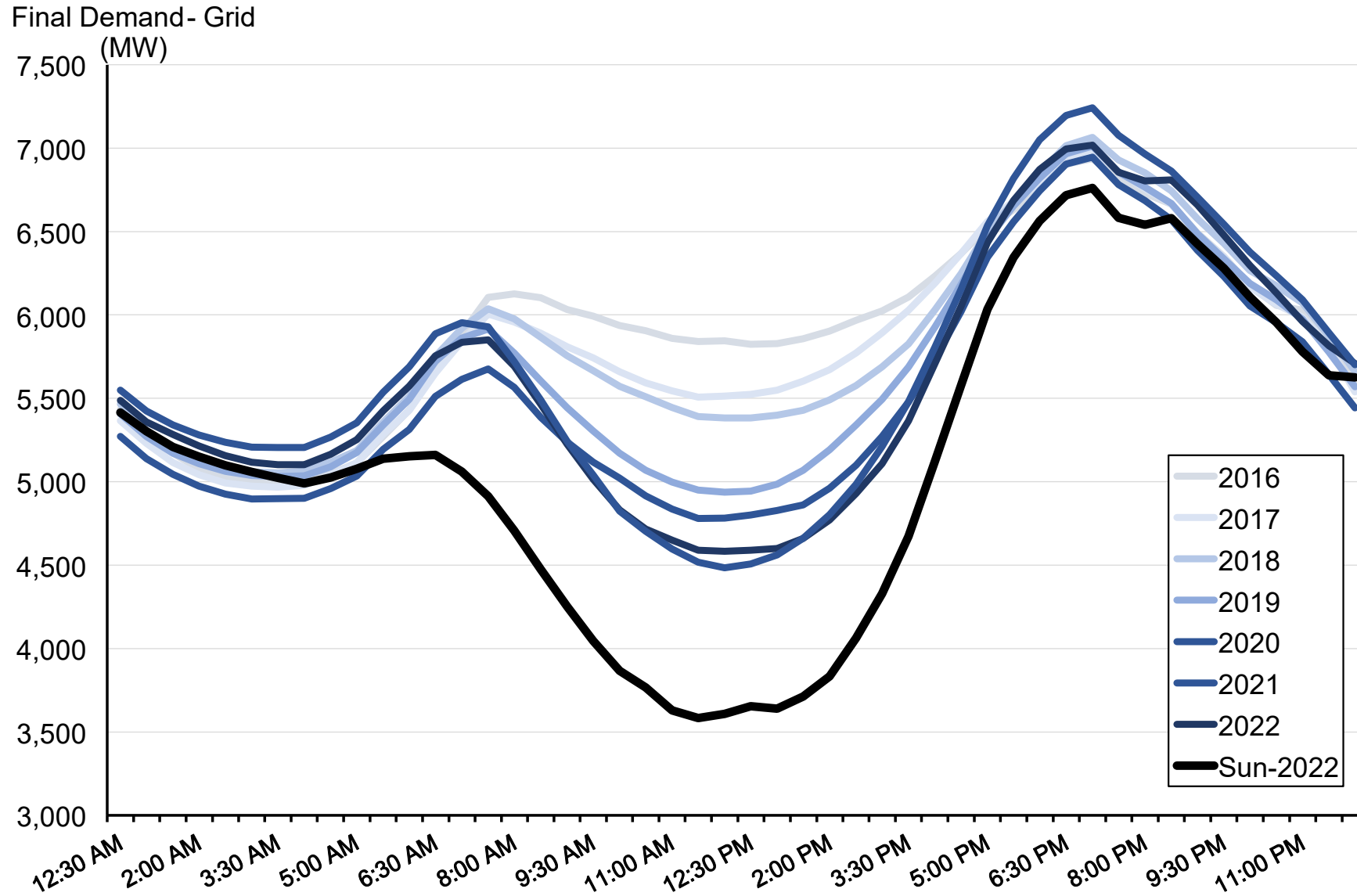
1 February 2022



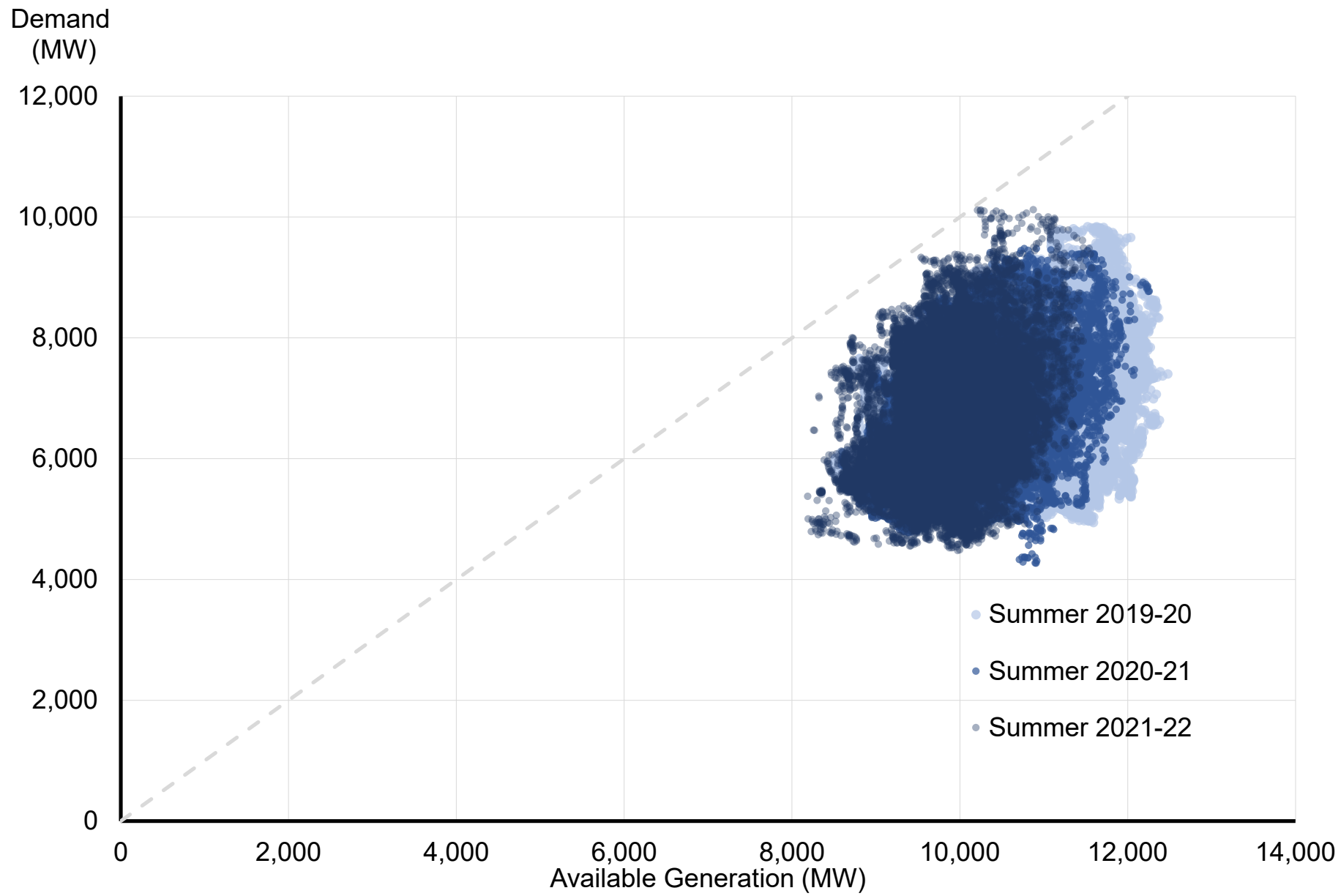
Minimum demand continues to fall



September average daily final (grid) demand



Generation plant reserve margin - falling

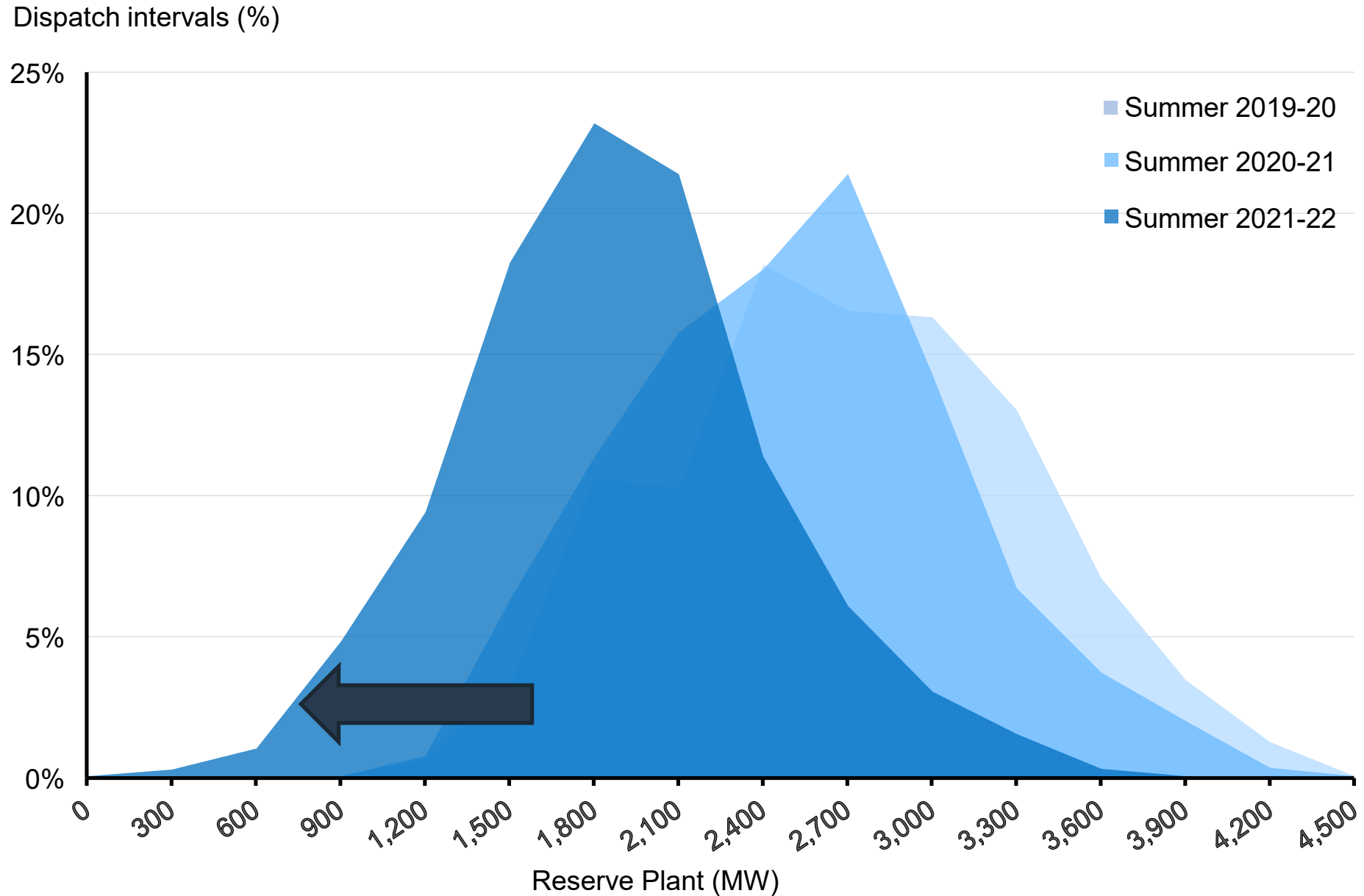


Prices

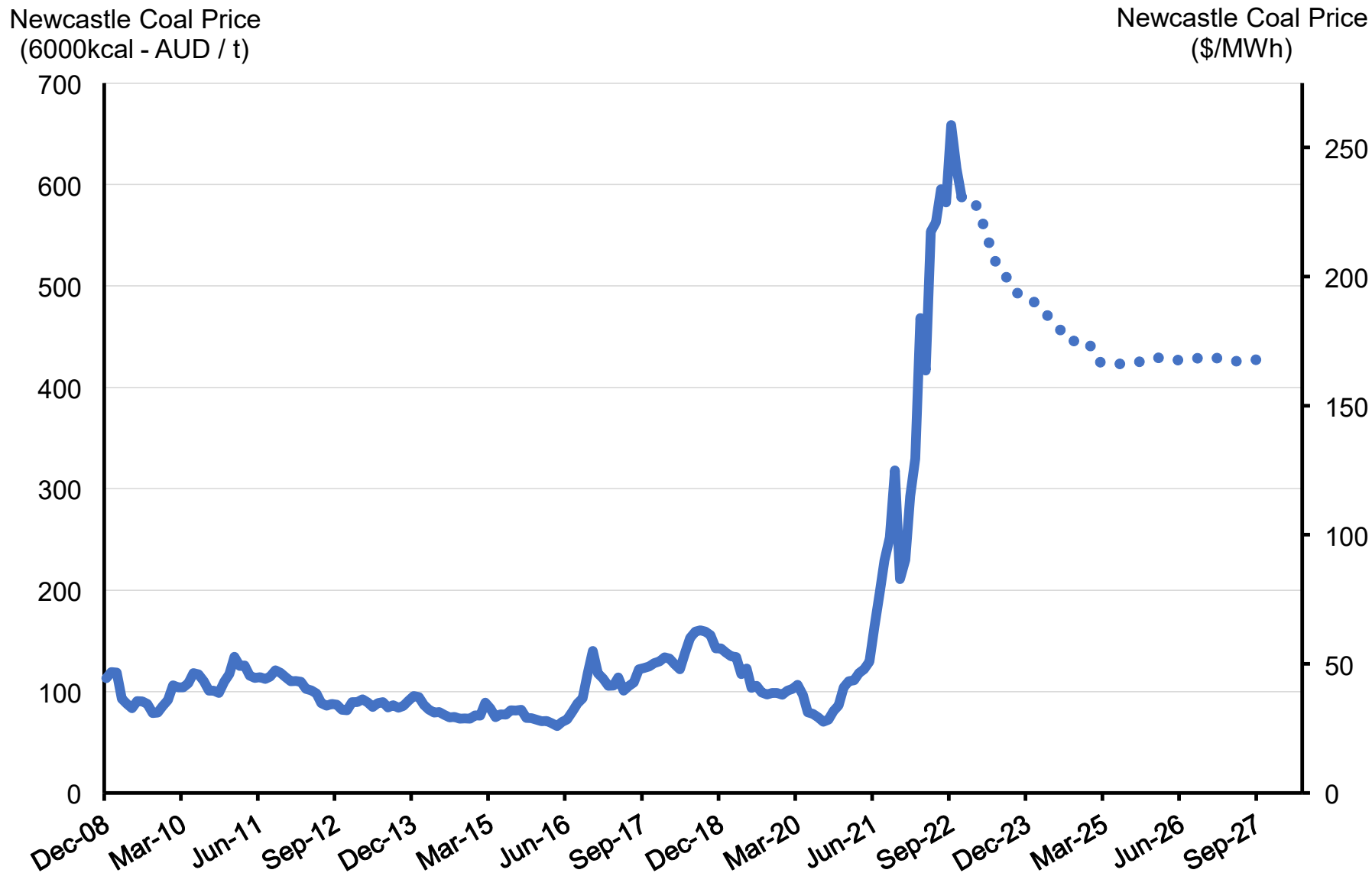
Transmission prices

- Powerlink exists to serve Queenslanders
 - Committed to minimising power system costs and prices
 - Continuously monitor & refine assumptions
 - The Queensland Energy & Jobs Plan is a point-in-time plan
 - Any transmission investment must facilitate a lowering of whole-of-system costs via Cost Benefit Analysis
 - Ongoing commitment to market-led, user-pays Renewable Energy Zone model
- Wholesale market conditions remain complex

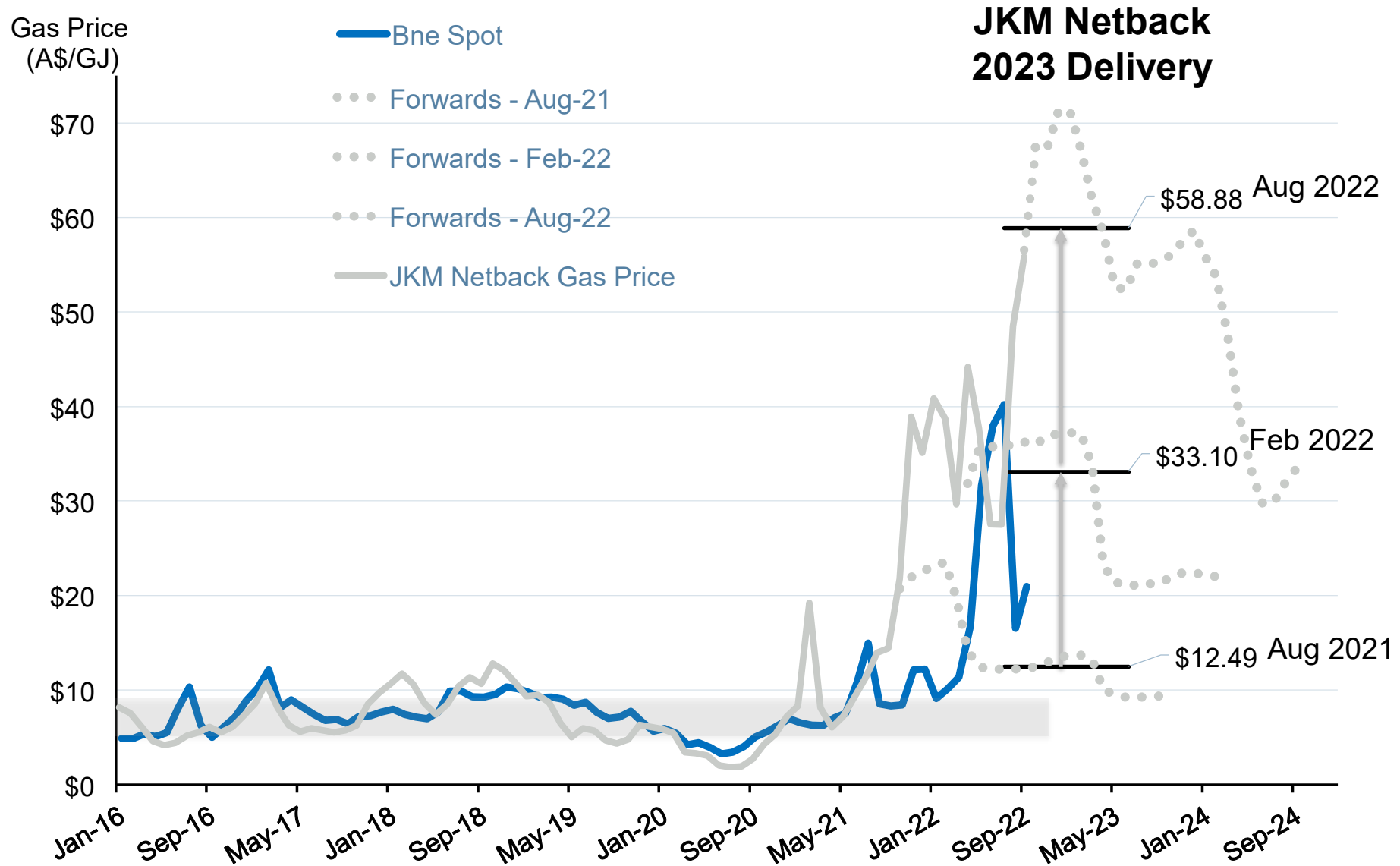
Generation reserve margins - falling



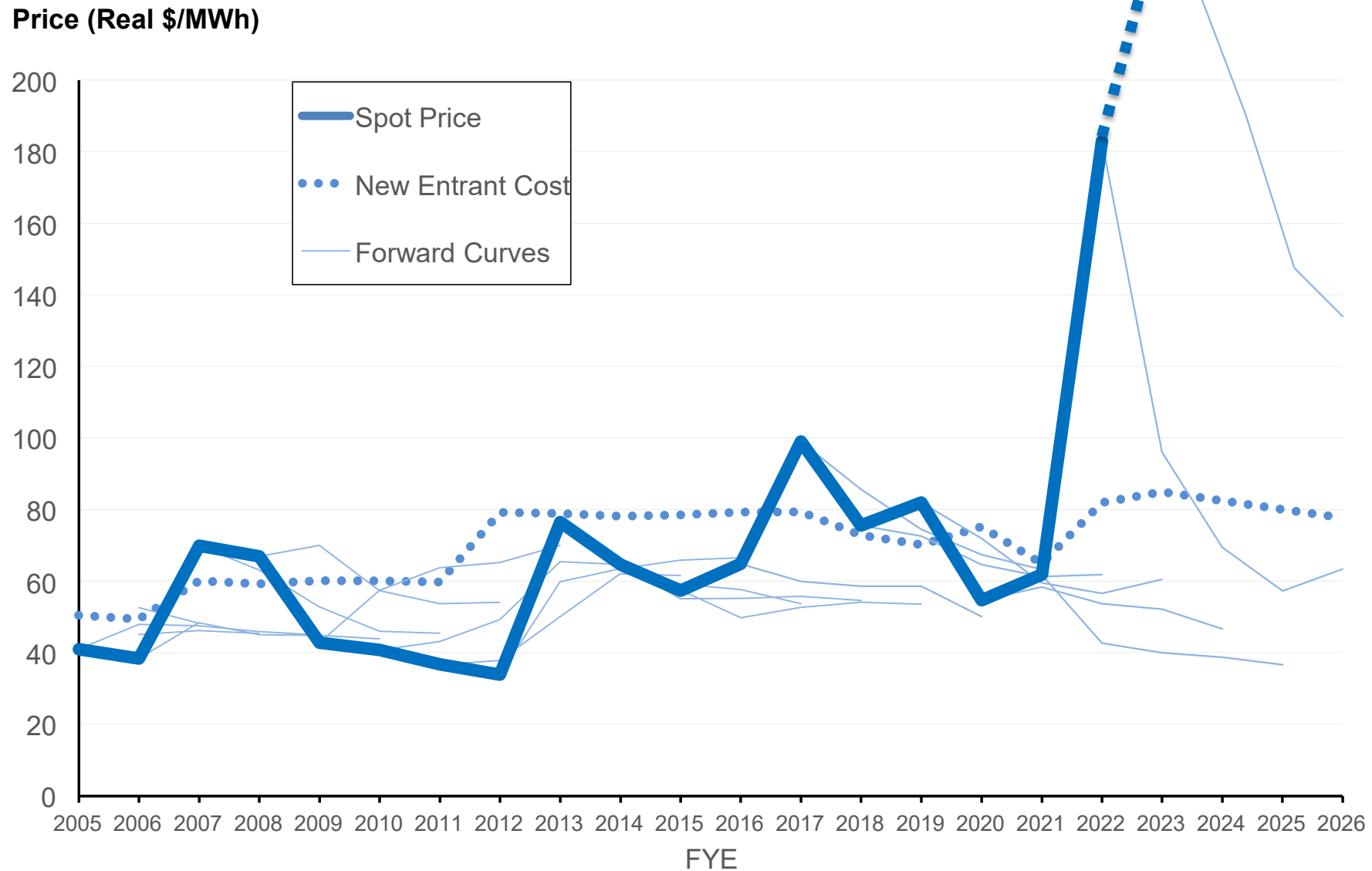
Thermal coal prices – record highs



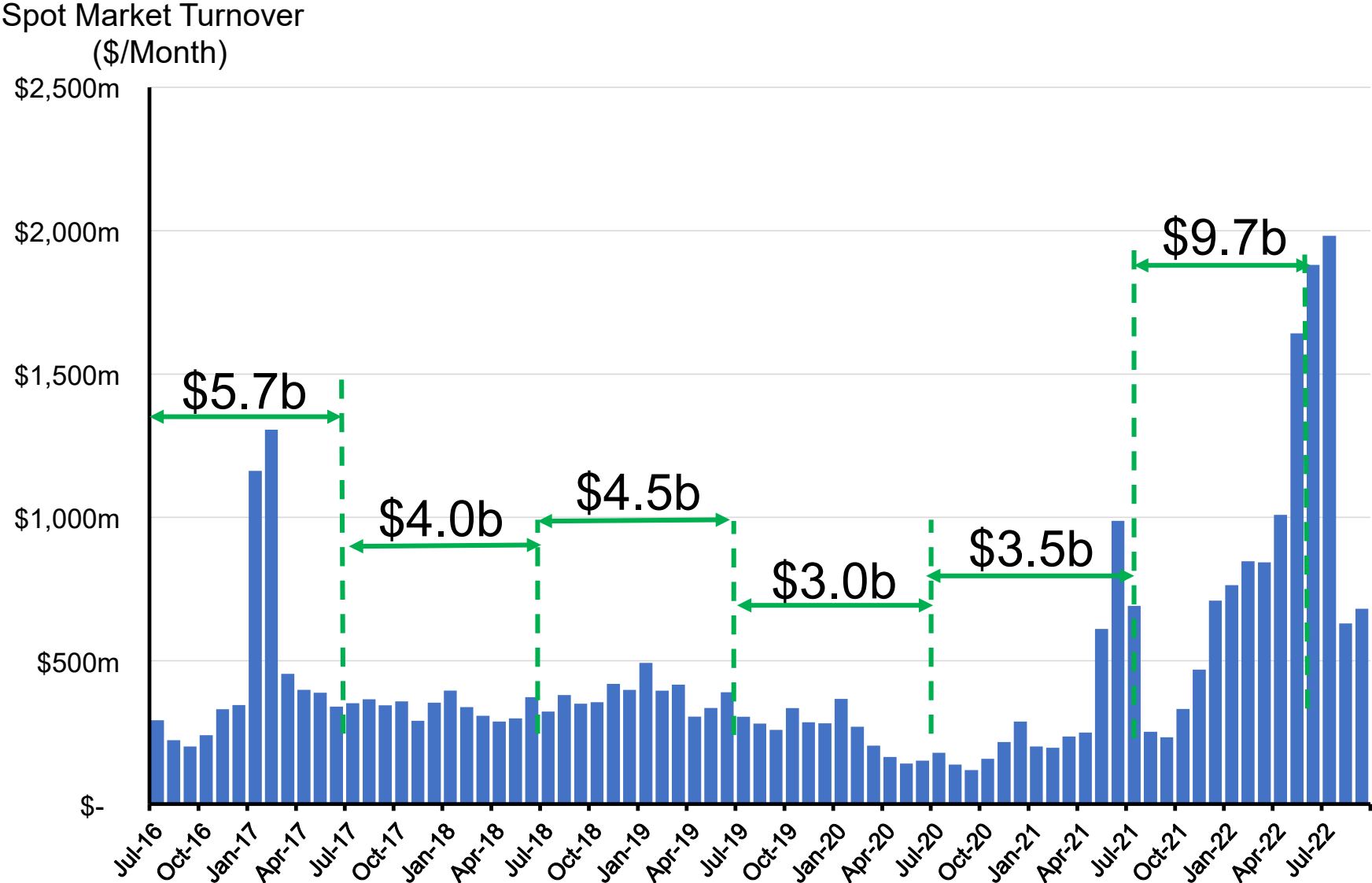
JKM Netback vs Spot Gas - high but structural break



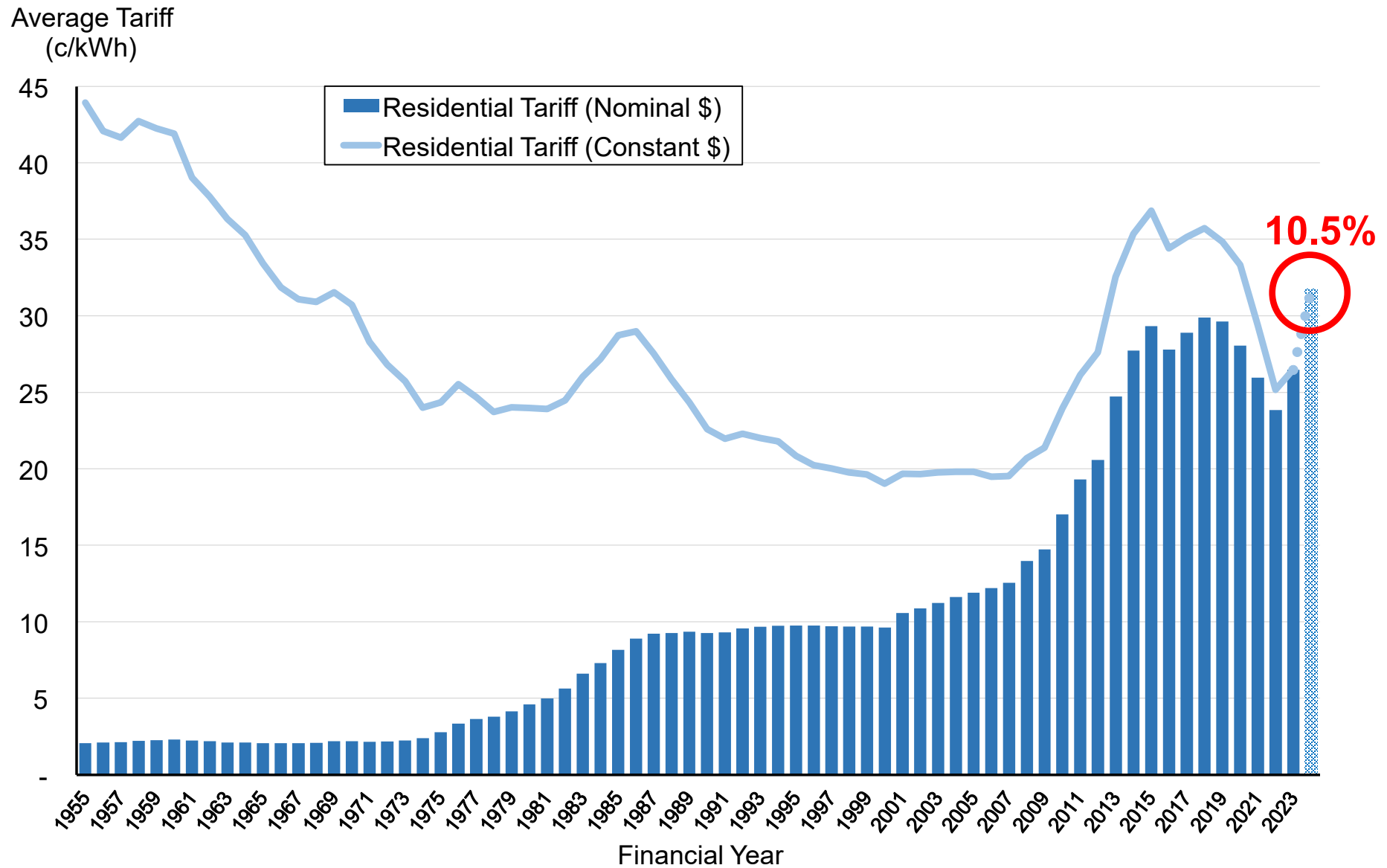
Queensland spot & forward prices – (Real 2022\$)



New highs - Queensland spot market turnover

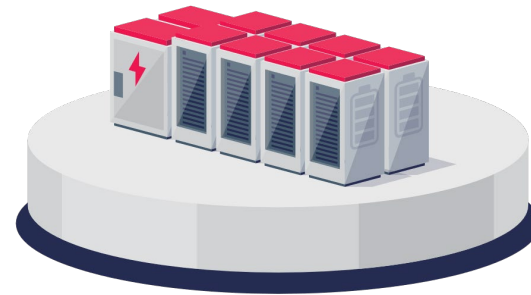
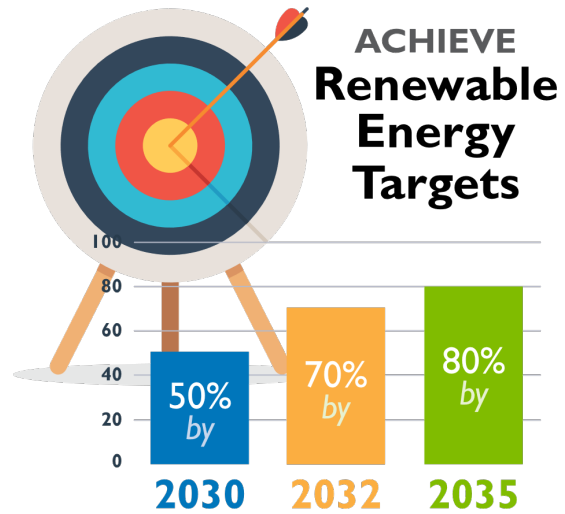


Queensland residential tariff (1955-2023 + 2024f)



Investment

QEJP key targets & objectives

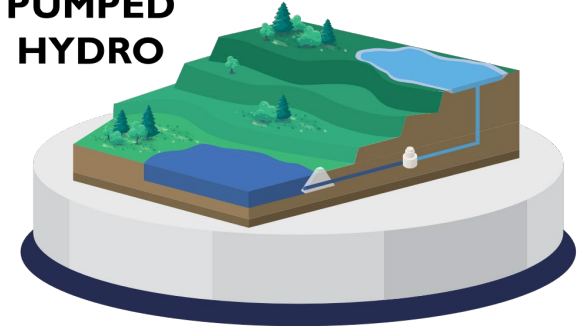


Support growth of utility scale **BATTERY STORAGE**

Develop at least

6GW

PUMPED HYDRO



Deliver a **climate positive**

Brisbane 2032

Olympic & Paralympic Games



NET ZERO Emissions
by **2050**

Connect an additional

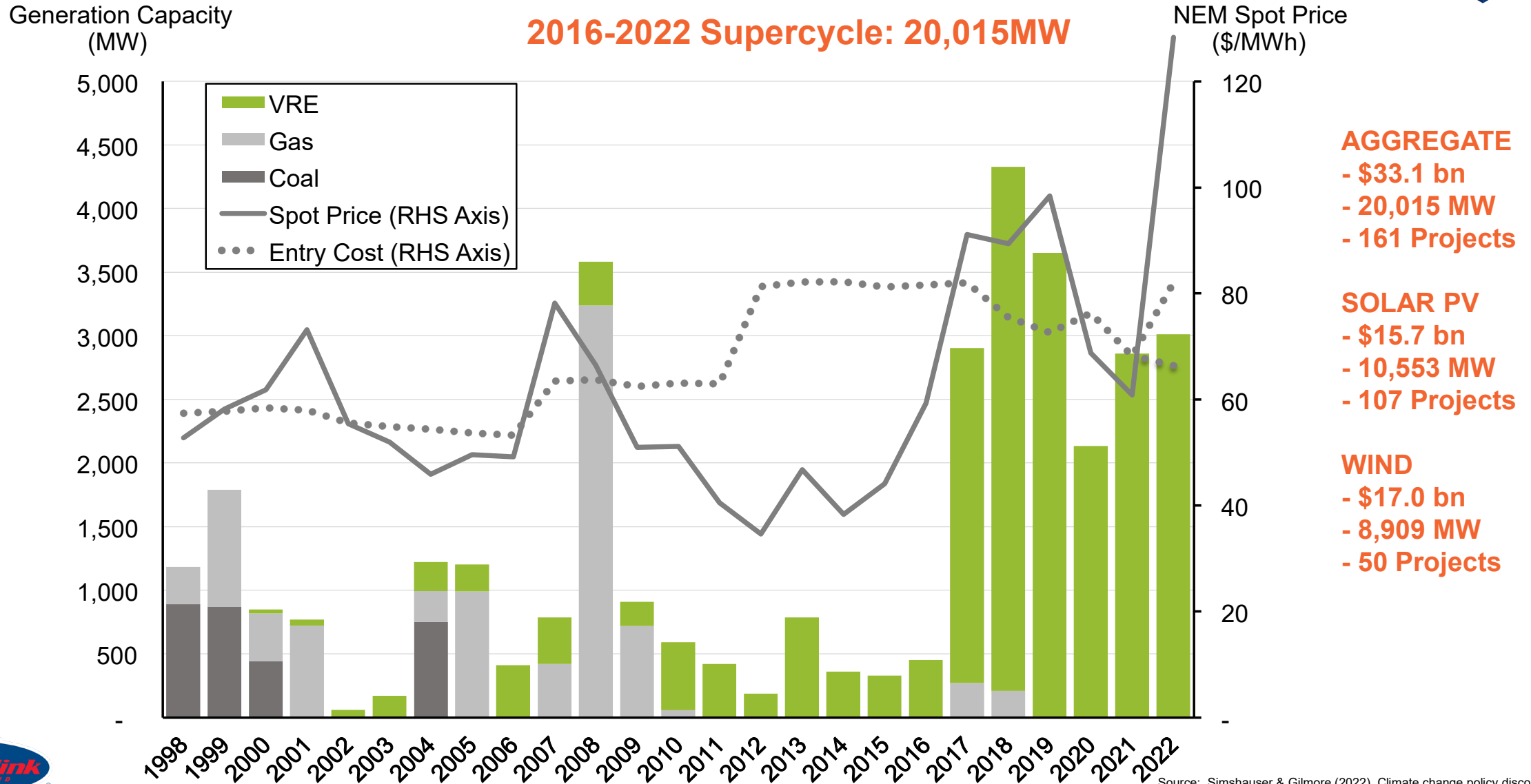
22GW

WIND & SOLAR

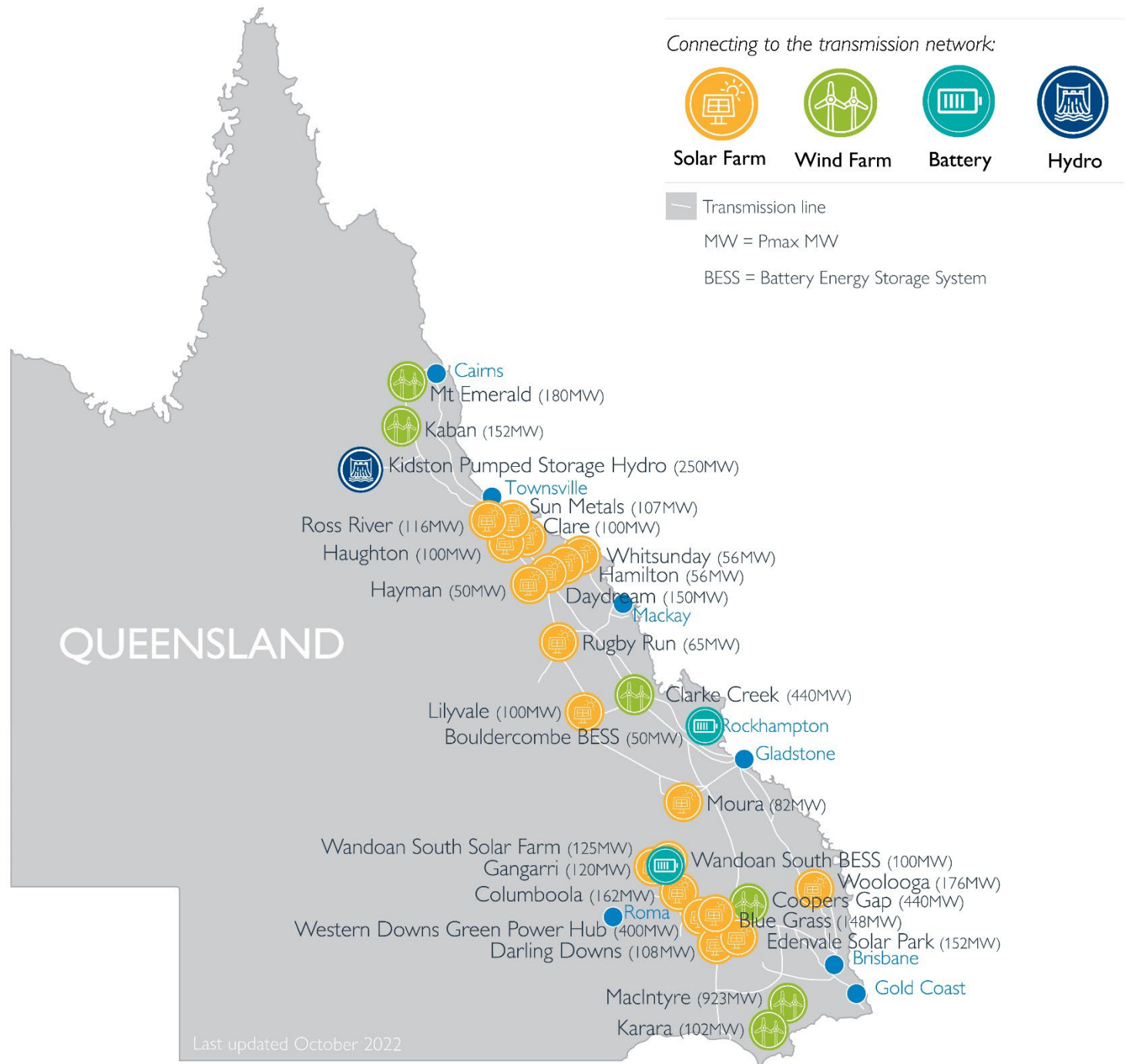
in Queensland Renewable Energy Zones by 2035



The NEM's RE Investment Supercycle continues

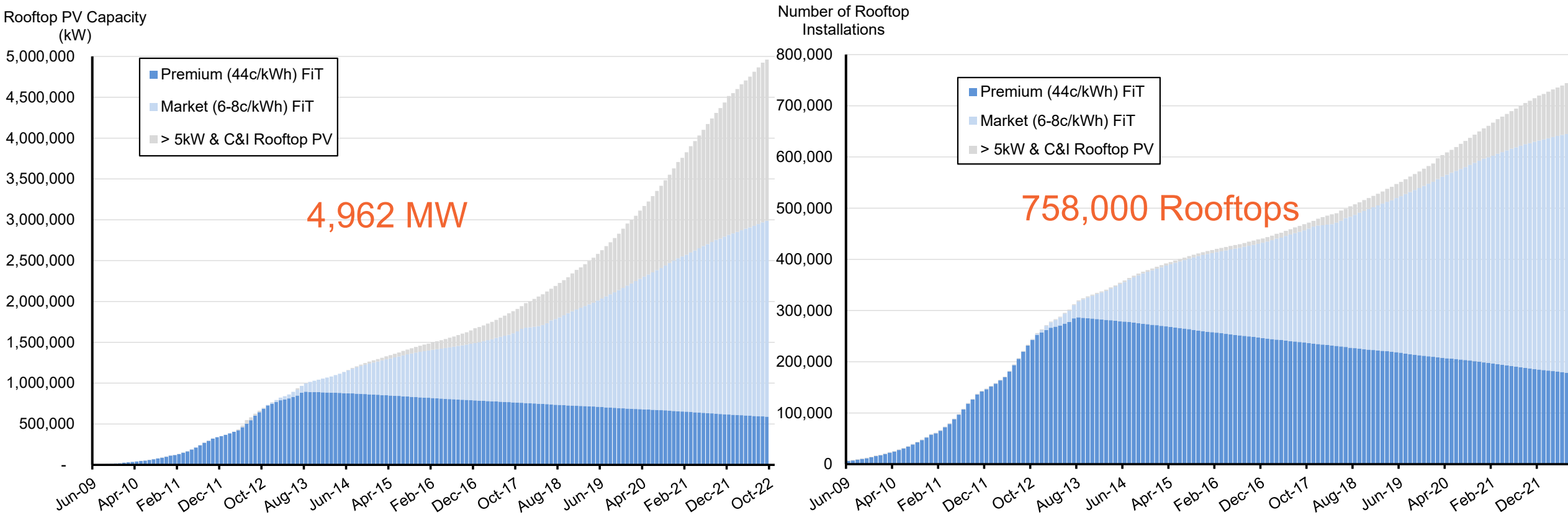


- **28 renewable projects** operational or under construction with combined maximum output of **5,020MW**
- **Projects approaching financial close in 2022** combined output 680MW
- As at September 2022, 32 renewable applications are being processed representing **~11,000MW**
- More than **30,000MW** of renewable generation projects in initial project development stage



Queensland Rooftop PV

Queensland household take-up rate = 43.5%. Highest in the world.

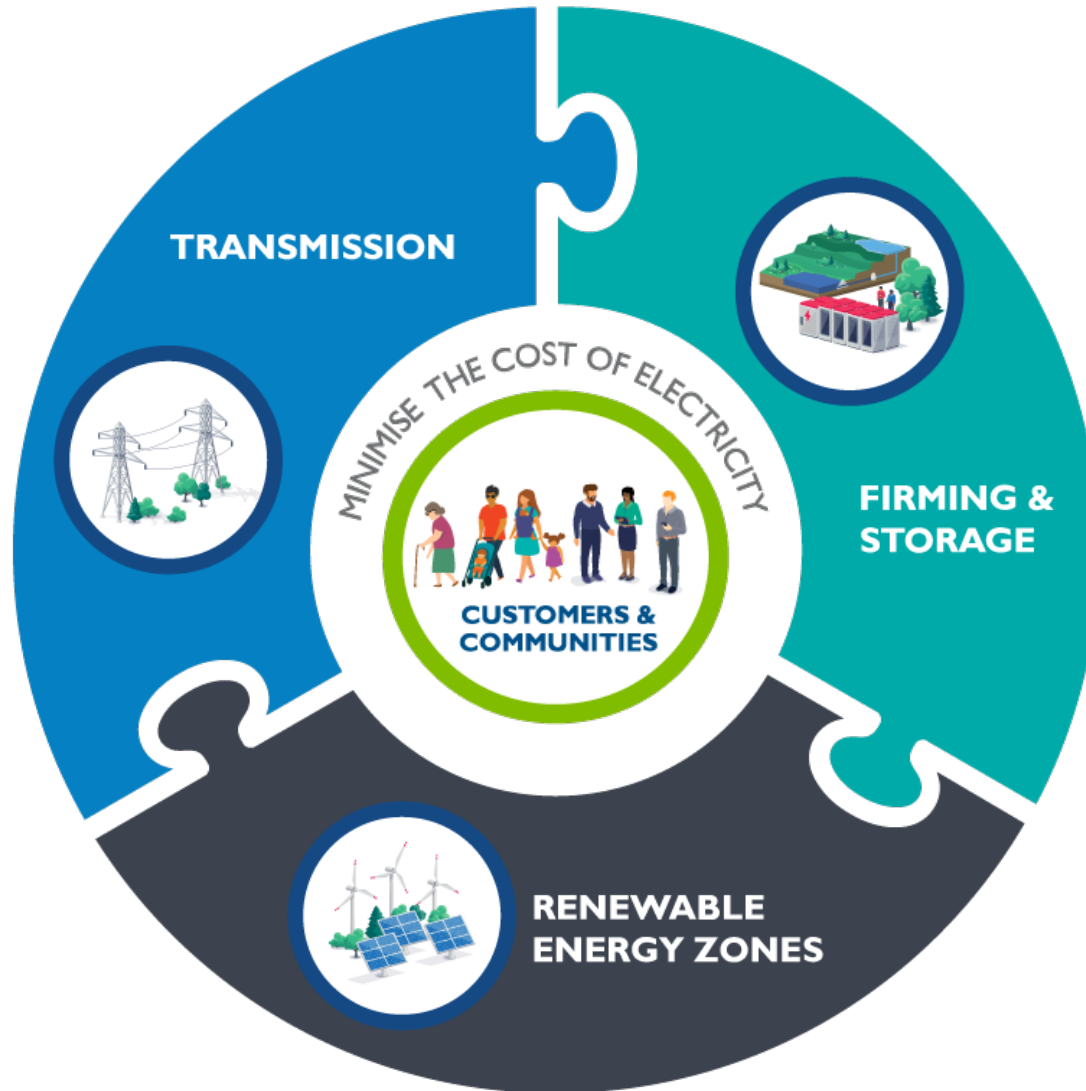


C&I = Commercial & Industrial

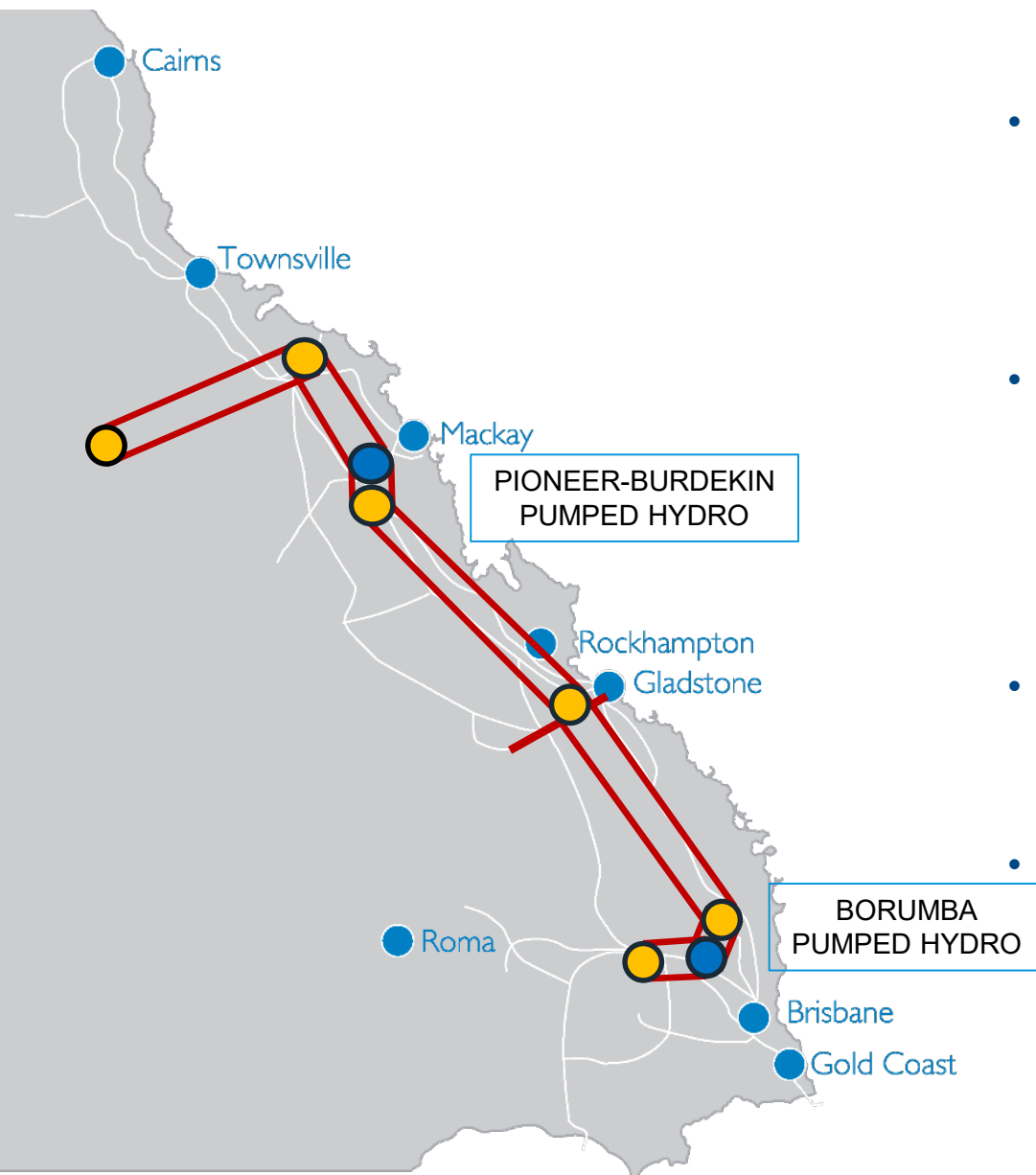


SuperGrid

Key interdependencies

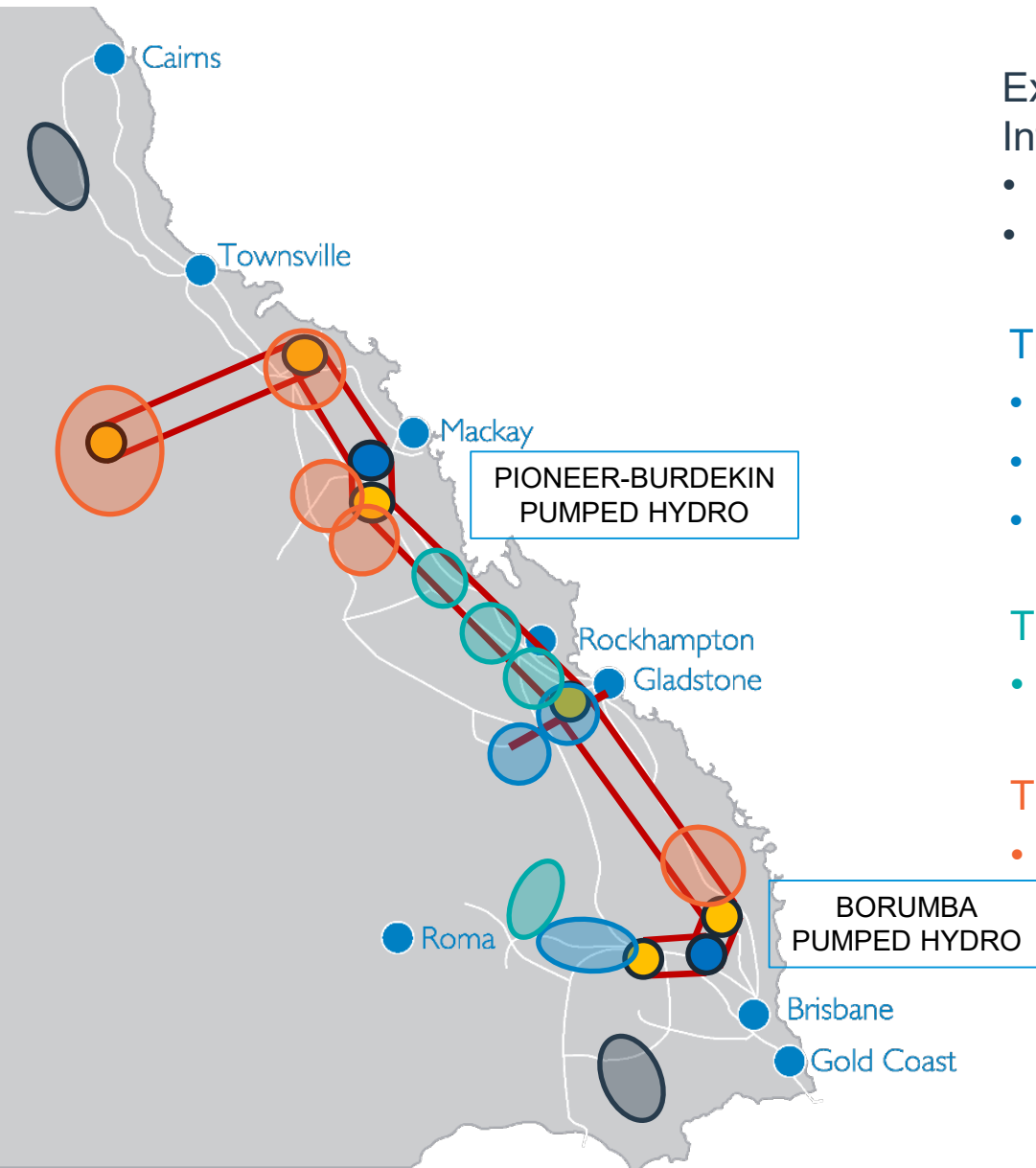


Development of Queensland's SuperGrid



- Stage 1: Borumba Pumped Hydro transmission connection
 - Planned capacity of up to 2GW
 - Two connection points ~\$800M
 - Commissioning works in 2029
- Stage 2: Central Queensland Connection
 - 290 kilometre connection
 - Support Central Queensland REZ renewable generation developments
 - Commissioning planned in 2031
- Stage 3: Pioneer-Burdekin Pumped Hydro and North Queensland connection
 - Operational date in 2032
- Stage 4: Connection to Hughenden Area (Clean Energy Hub)
 - Commissioning planned in 2036

Queensland REZs - Market Led!



Existing Renewables ~3,000MW

Inflight REZ

- North Queensland REZ ~500MW
- Southern Downs REZ ~2,000MW

The first horizon of REZs – 2022 to 2024

- Western Downs REZ ~1,850MW
- Banana Range REZ ~1,500MW
- Fitzroy REZ ~1,800MW

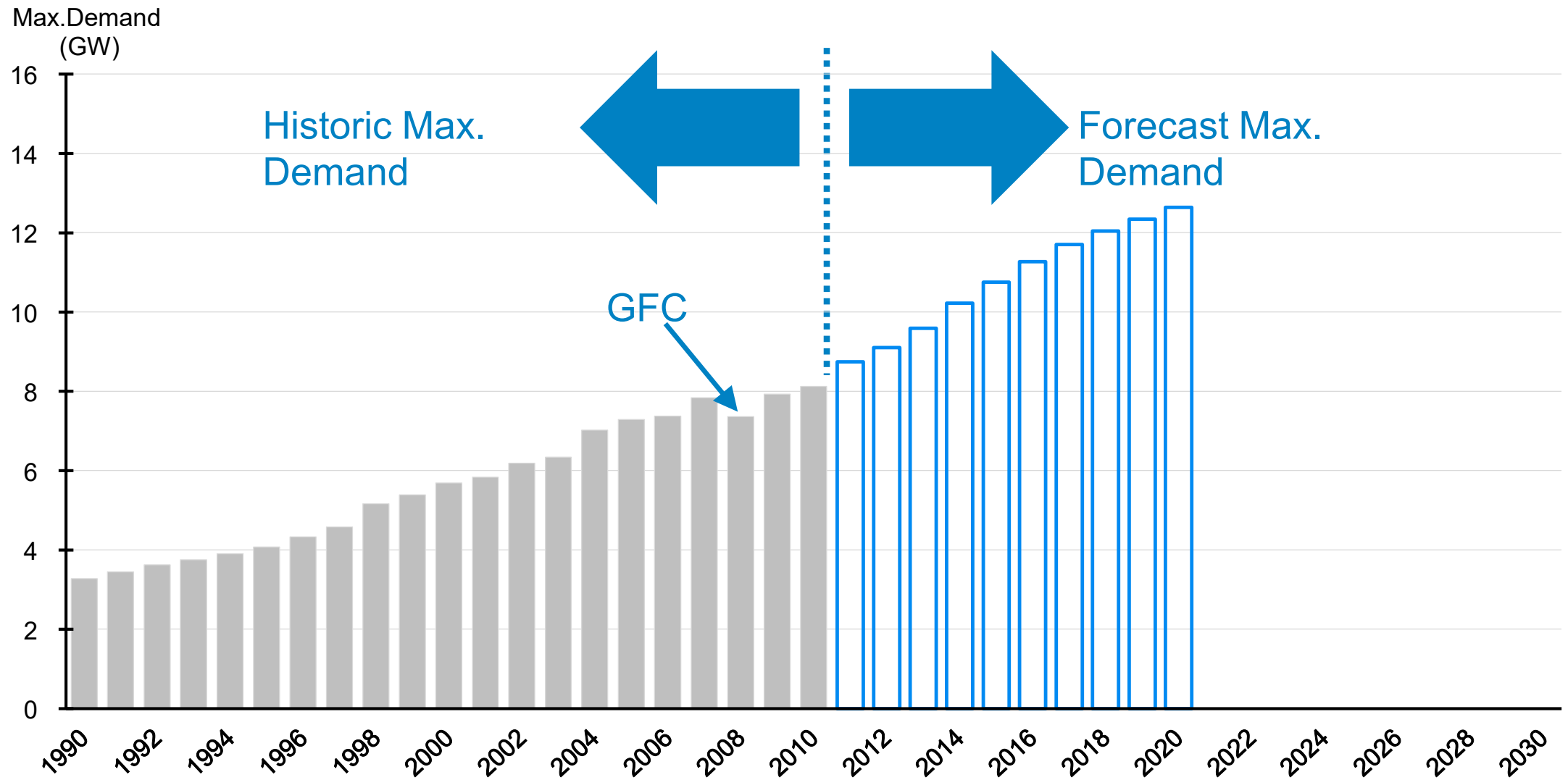
The second horizon of REZs – 2025 to 2029

- Total ~5,700MW

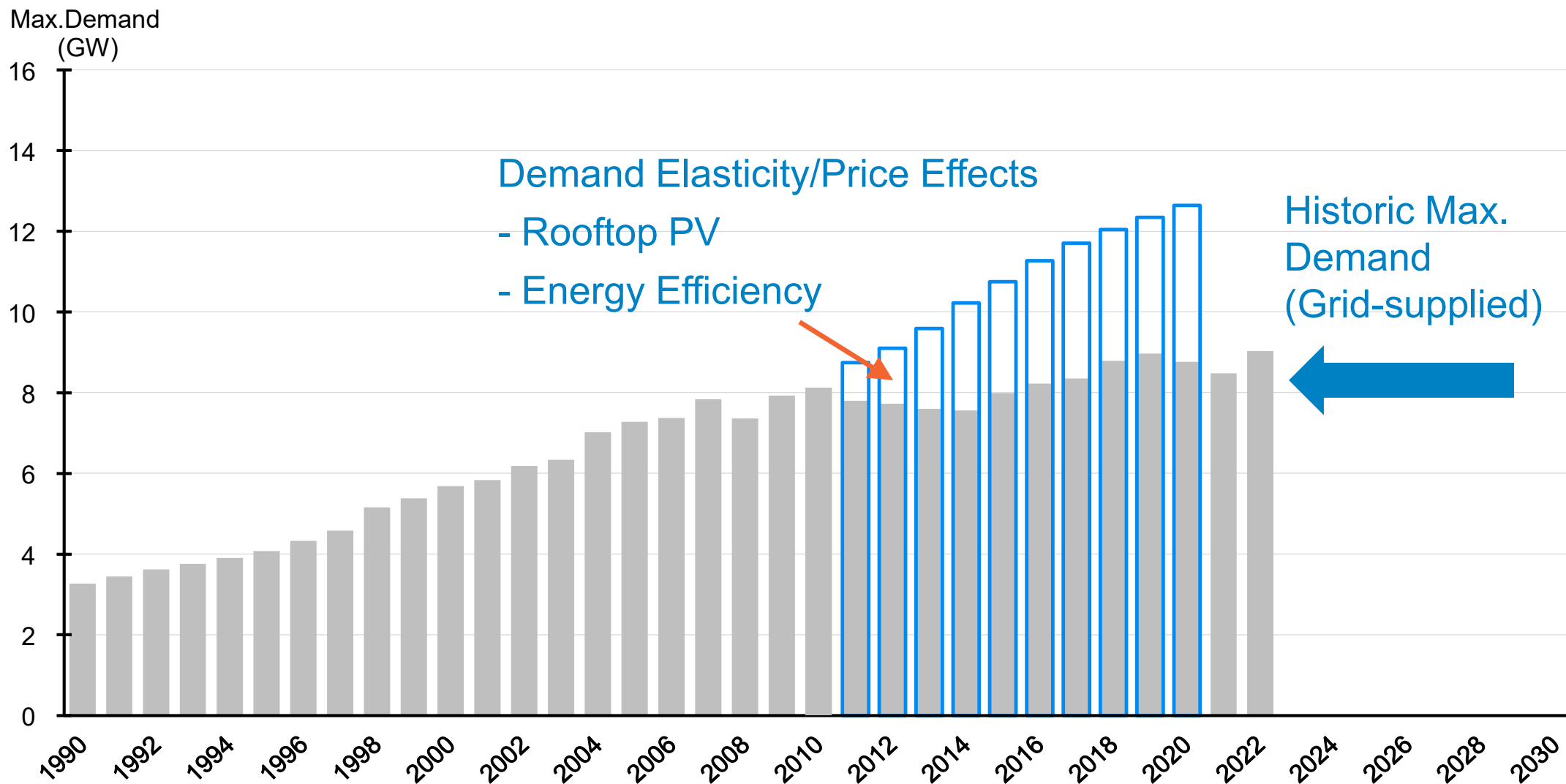
The third horizon of REZs – 2030 to 2035

- Total ~9,200MW

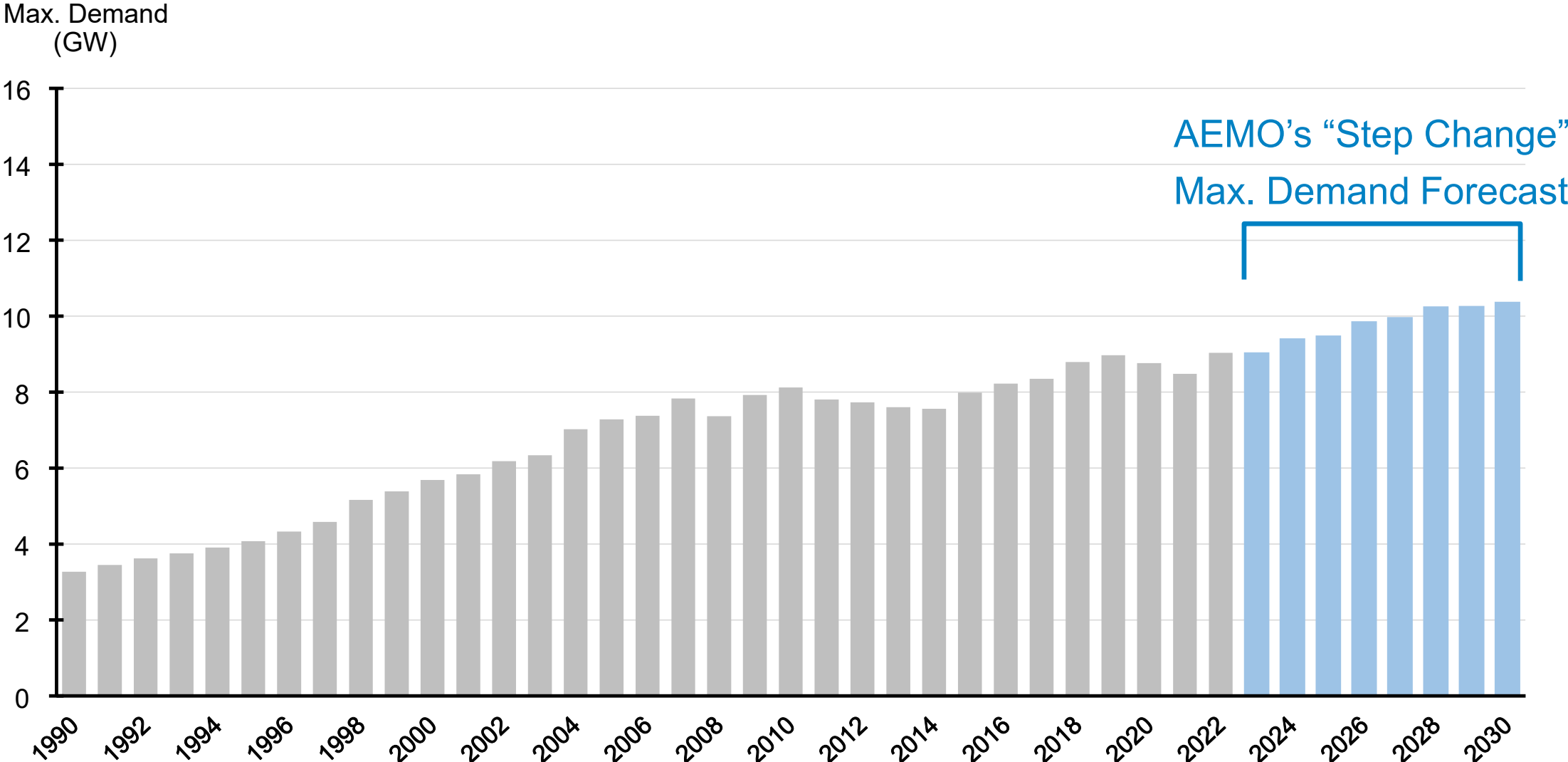
Challenges of load forecasting (2010 TAPR)



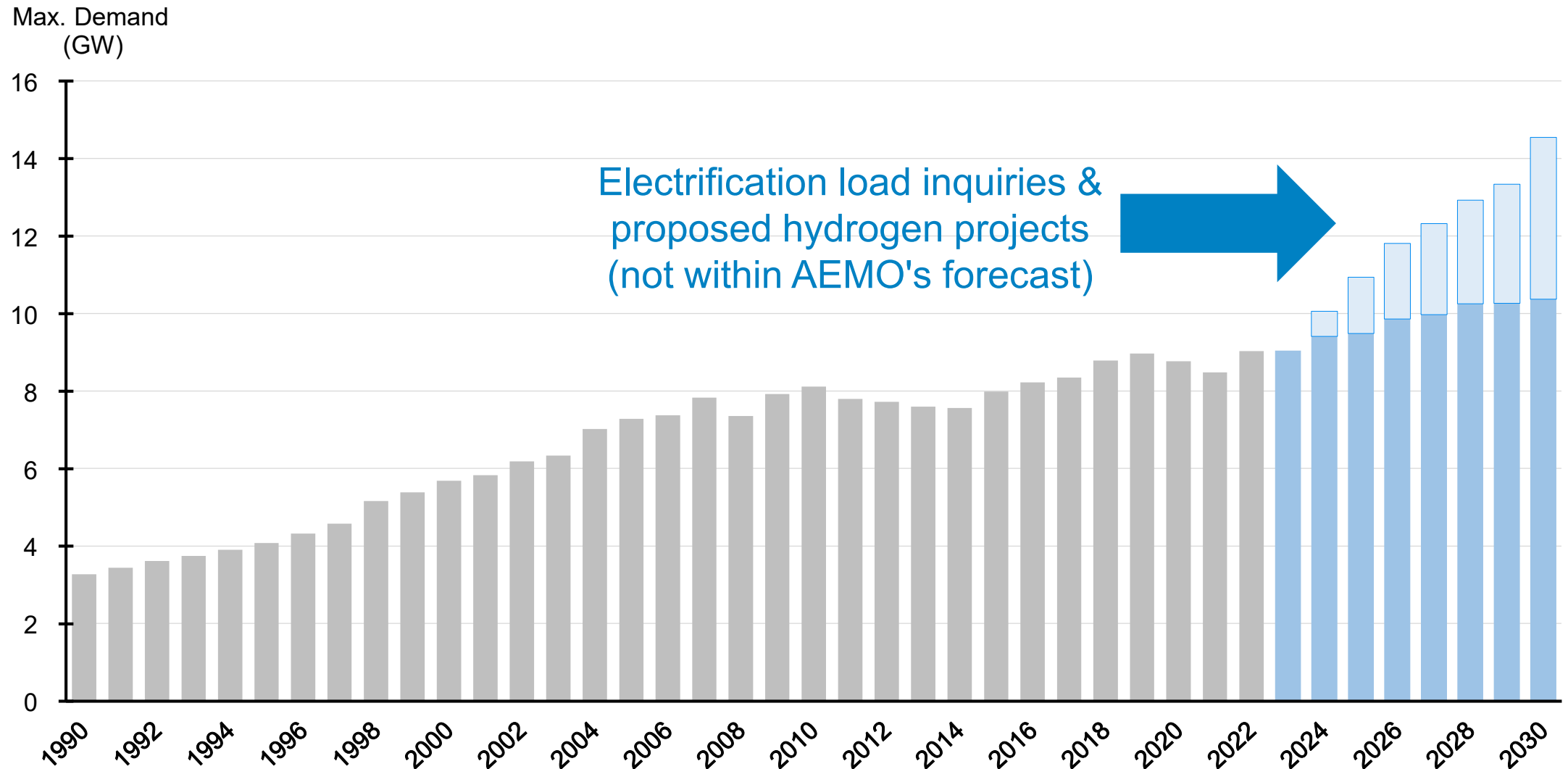
Actuals



2022 TAPR maximum demand forecast (grid-supplied)

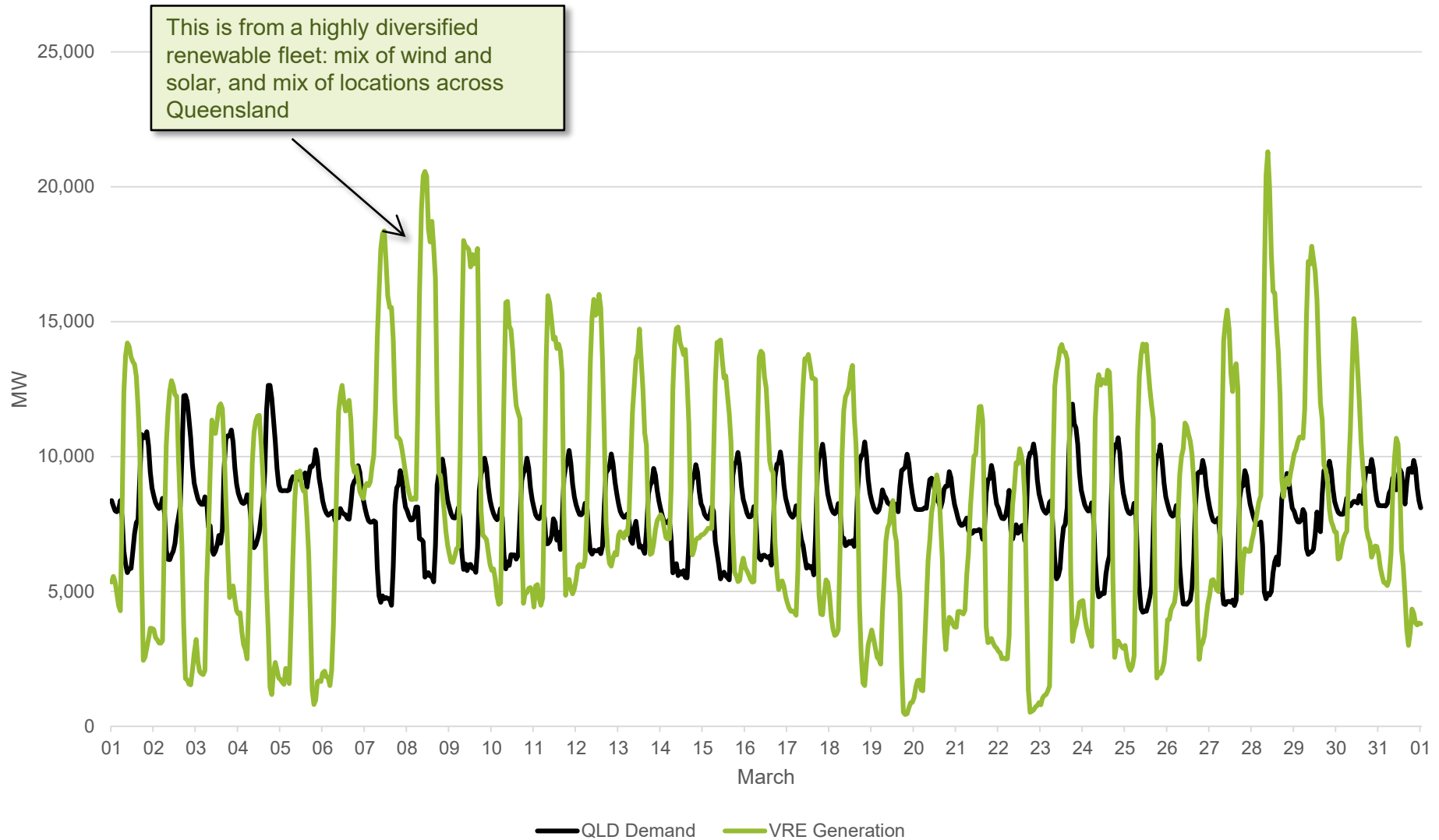


Electrification inquiries & hydrogen projects

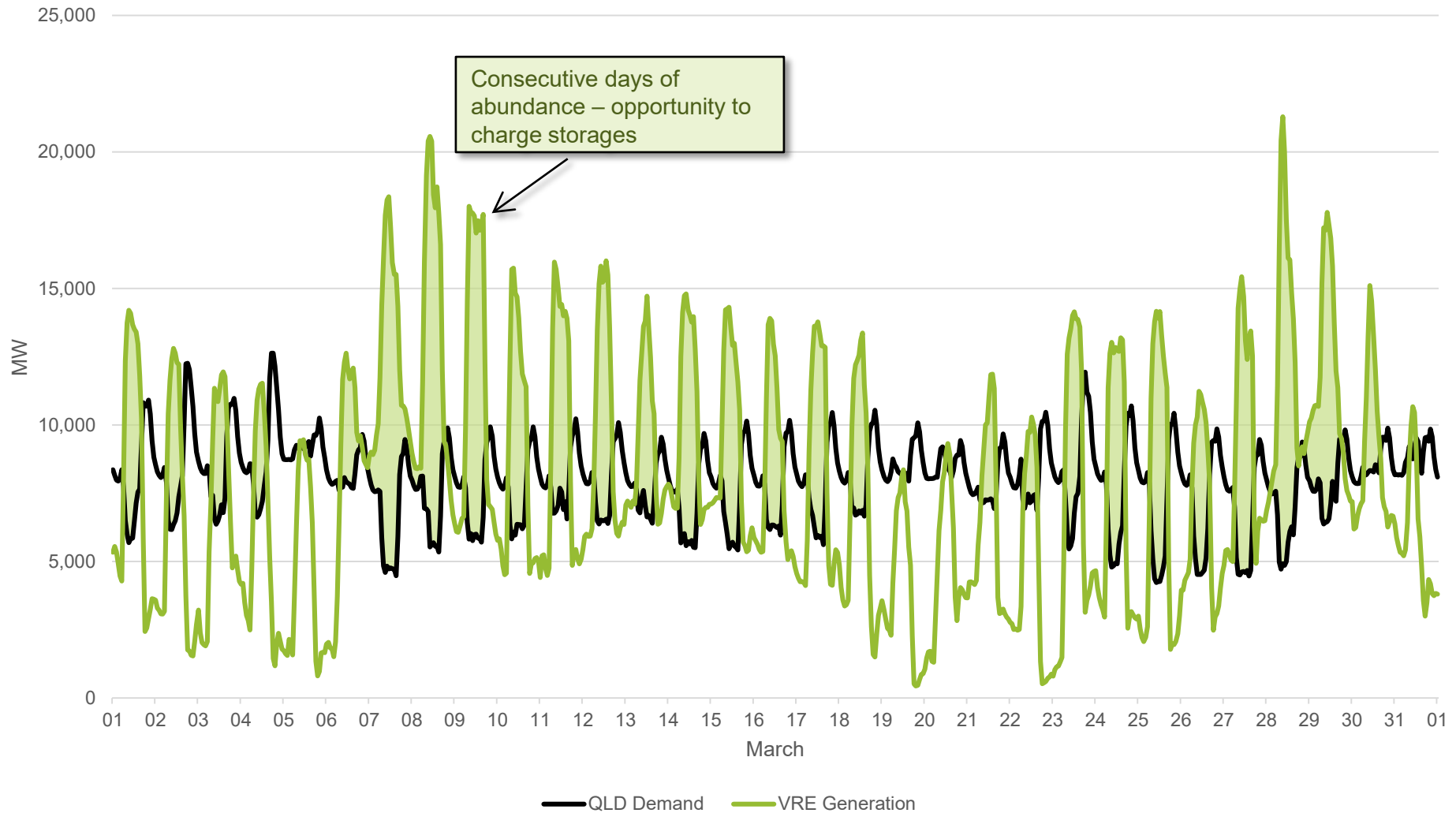


System operations in 2035

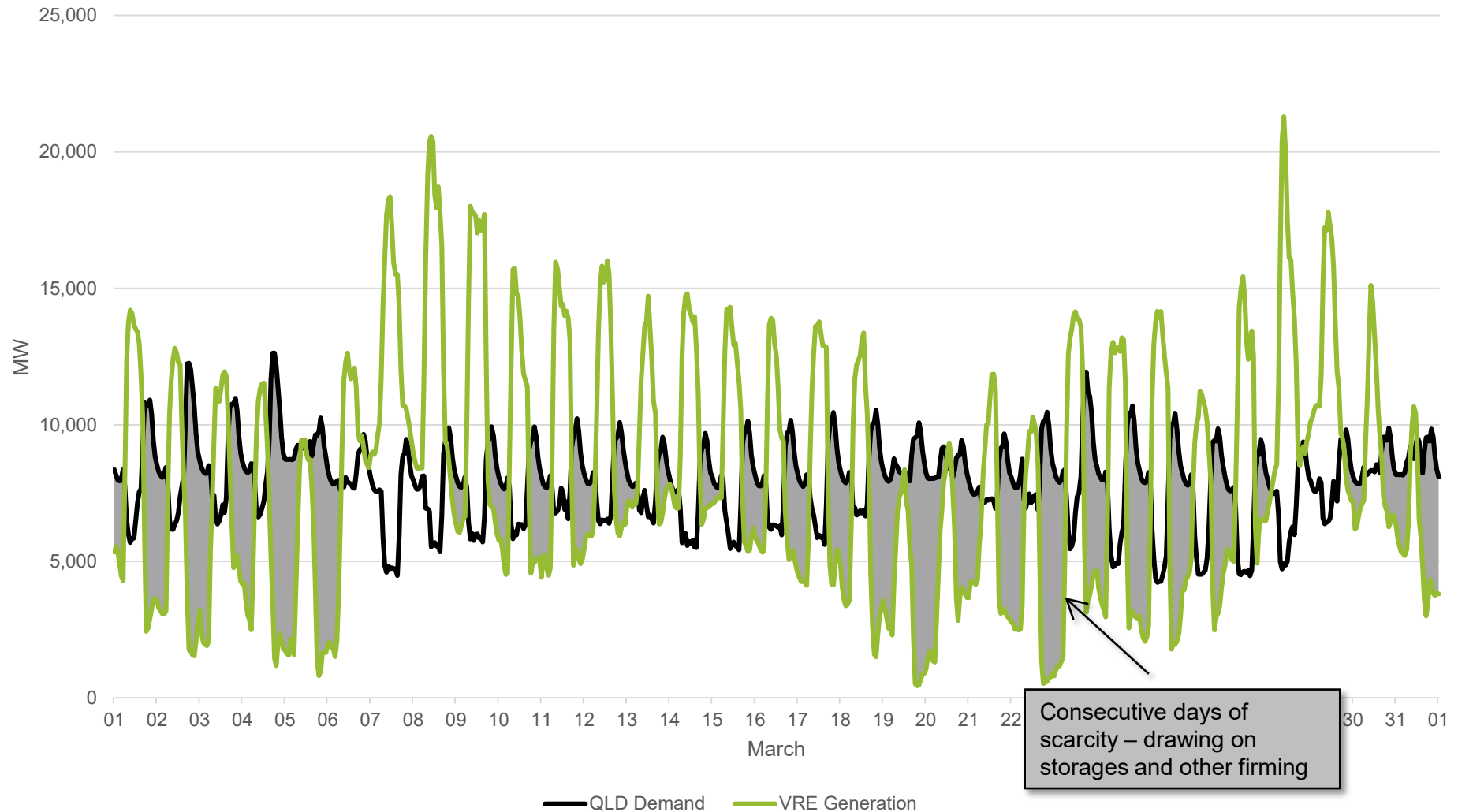
Queensland system operation: Effect of variability in supply (simulation of March circa 2035)



Queensland system operation: Effect of variability in supply (simulation of March circa 2035)

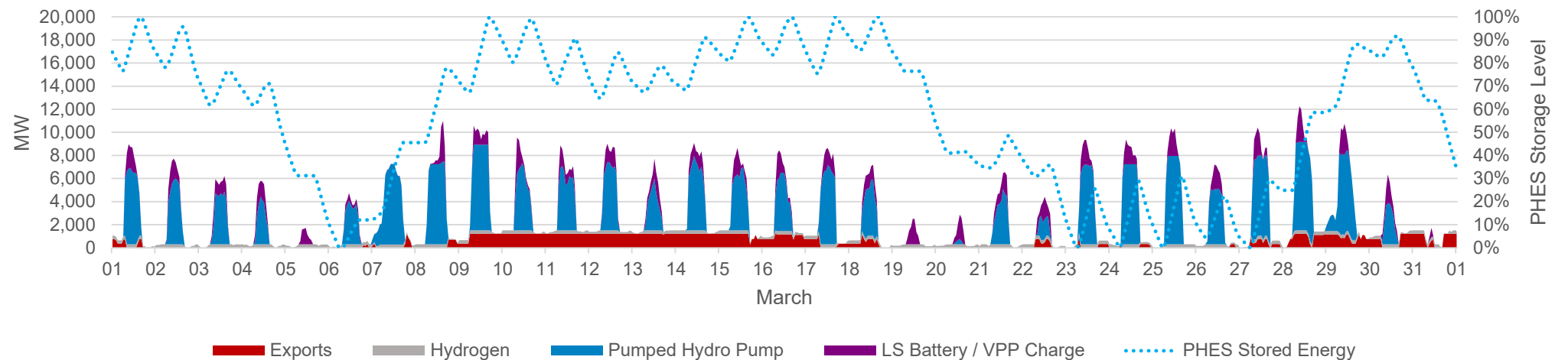
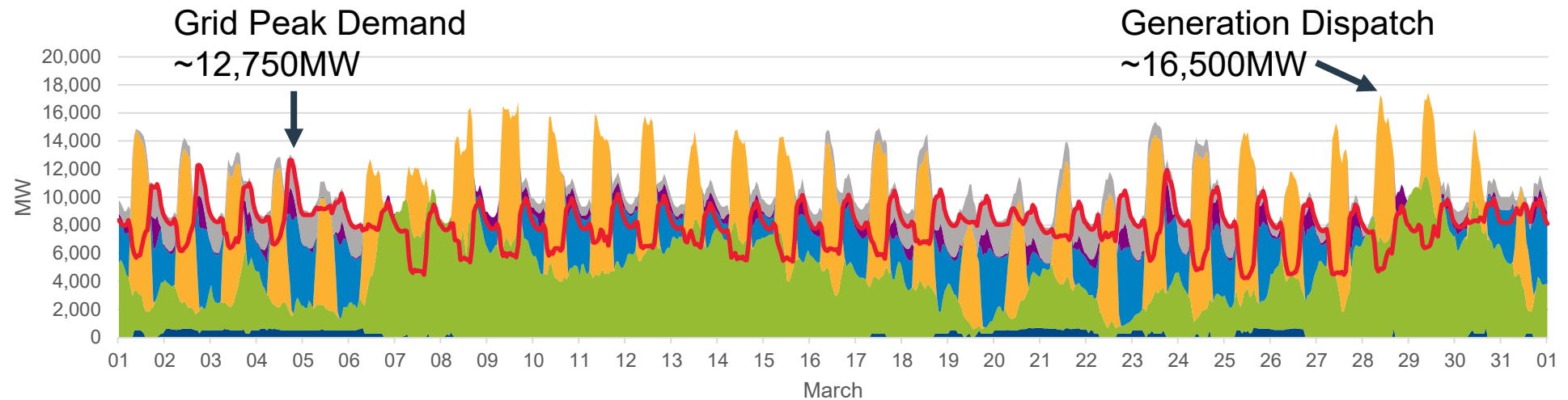


Queensland system operation: Effect of variability in supply (simulation of March circa 2035)



Queensland system operation:

Firming the supply to meet demand (simulation of March circa 2035)



Greenbank BESS 200MW – 2 hrs

Genex K2 PHES 250MW – 8 hrs

Wivenhoe PHES 500MW – 10 hrs

Borumba PHES

2,000MW – 24 hrs

Pioneer PHES

2 x 2,500MW – 24 hrs