2024 Enhanced Locational Information Report

June 2024

Please note that this meeting will be recorded for the purpose of compiling minutes.

We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture.

We pay respect to Elders past and present.

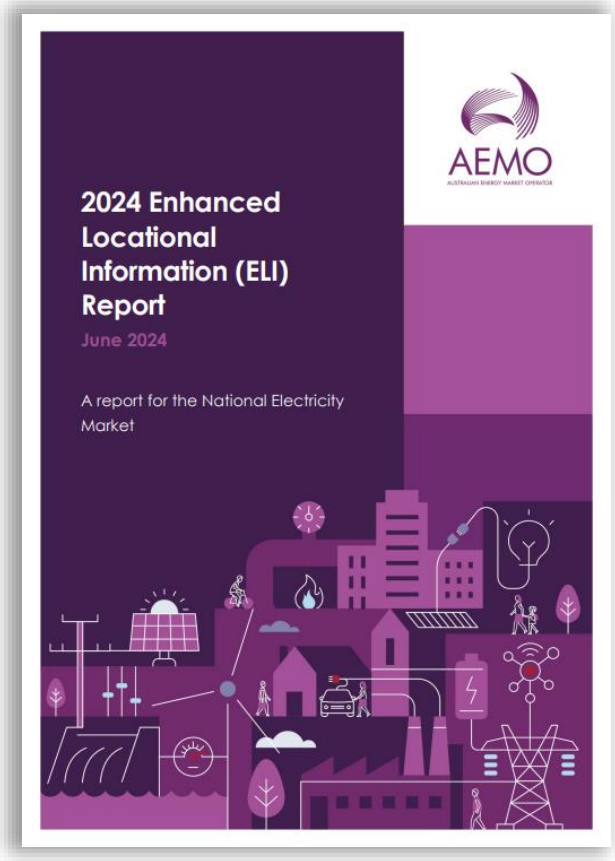
Agenda

1. Welcome
2. Introducing the ELI Report
   To increase the transparency and accessibility of NEM locational investment signals
3. Key Takeaways
   Opportunities await the savvy investor – but careful consideration of competing locational signals is critical.
4. Content Highlights
5. Next Steps
   Publication > Consultation > Improvement > 2025 ELI Report
6. Q&A

Today's objectives

Present key insights from the *2024 Enhanced Locational Information* (ELI) Report, which is now open for consultation.

After the presentation, you will have the opportunity to ask AEMO questions.



Read the report and associated material

Introduction

Eli Pack

Group Manager - System Planning

Introduction

The NEM provides a diverse set of signals and mechanisms to help guide investment decisions.

These signals aim to incentivise new services and infrastructure in the most efficient and cost-effective locations.

However, their effectiveness can be reduced when they are difficult to access, difficult to interpret, or difficult to compare across competing locations.

In February 2023, Energy Ministers agreed to implement enhanced information reforms to provide participants in the NEM with better information on the optimal location for new investments.

This inaugural ELI Report represents a key first deliverable in this process.

Overview

Nathan White
Manager System Security Planning

Introducing the 'ELI' report

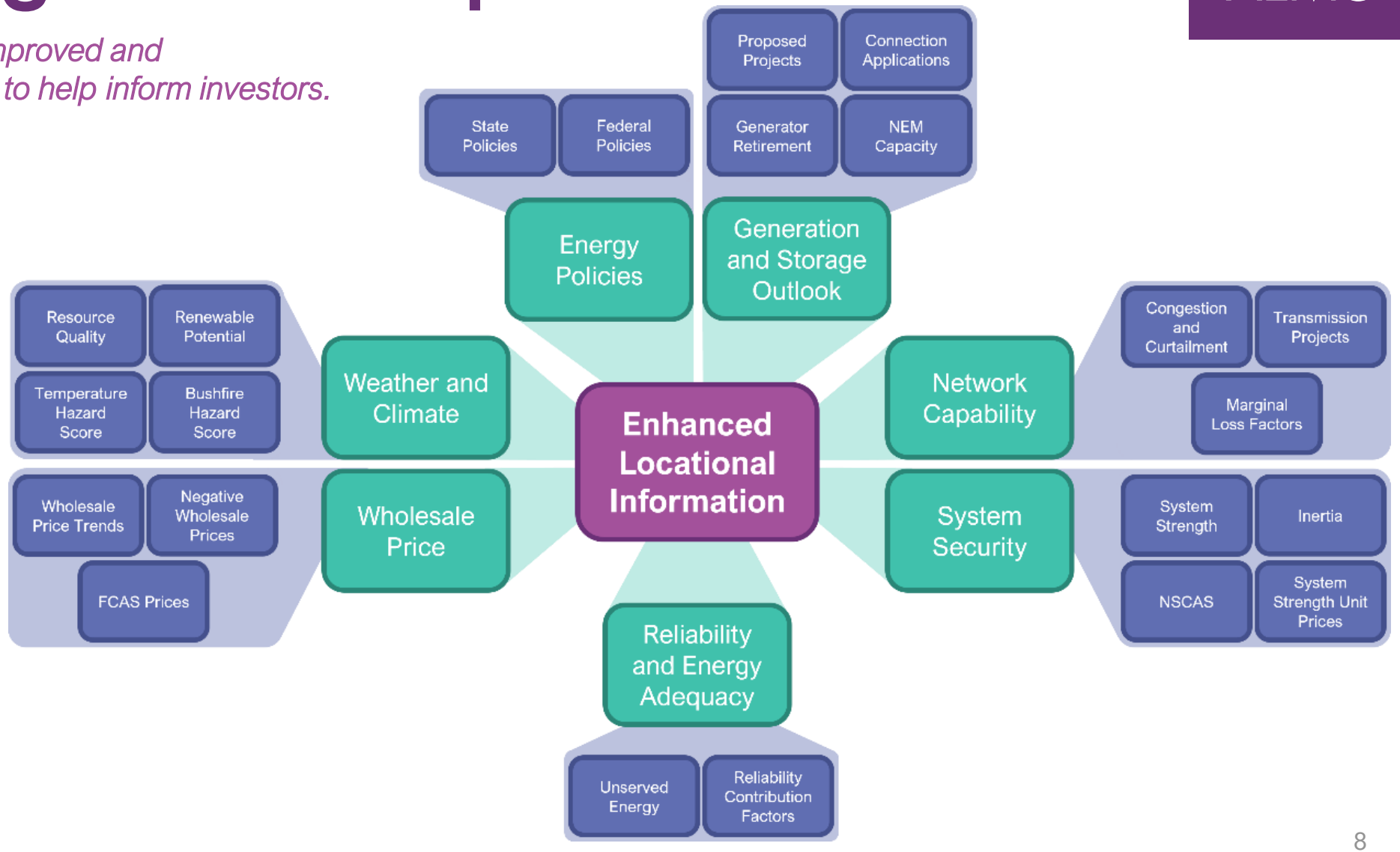
Answers ESB request for improved and consolidated locational info to help inform investors.

2024 ELI report:

- Draws on existing locational info.
- Consolidates, compares, and contrasts this in new graphical and geographic ways.

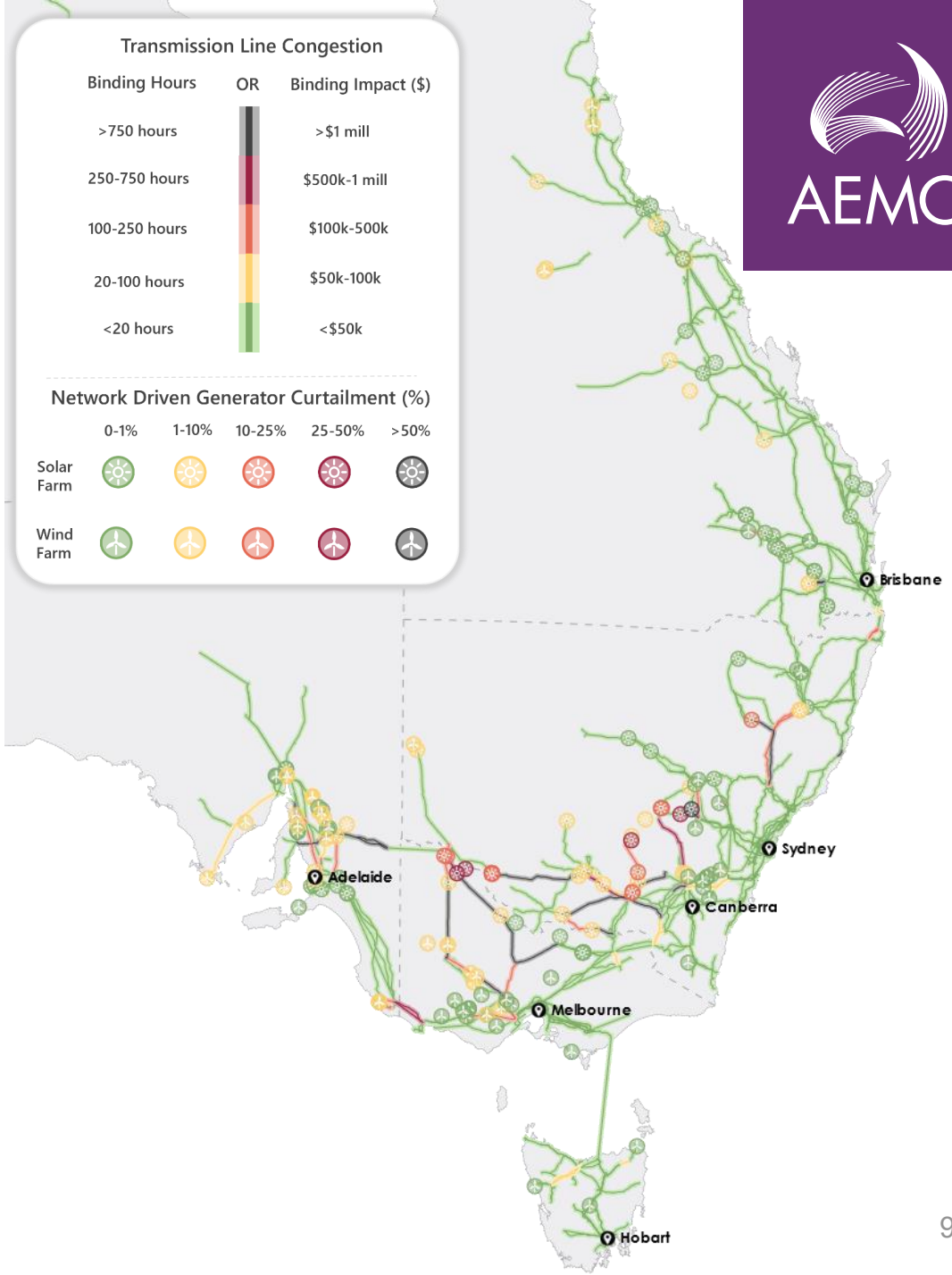
2025 ELI report:

- May add new analysis, insights, or visualisations in line with stakeholder feedback.



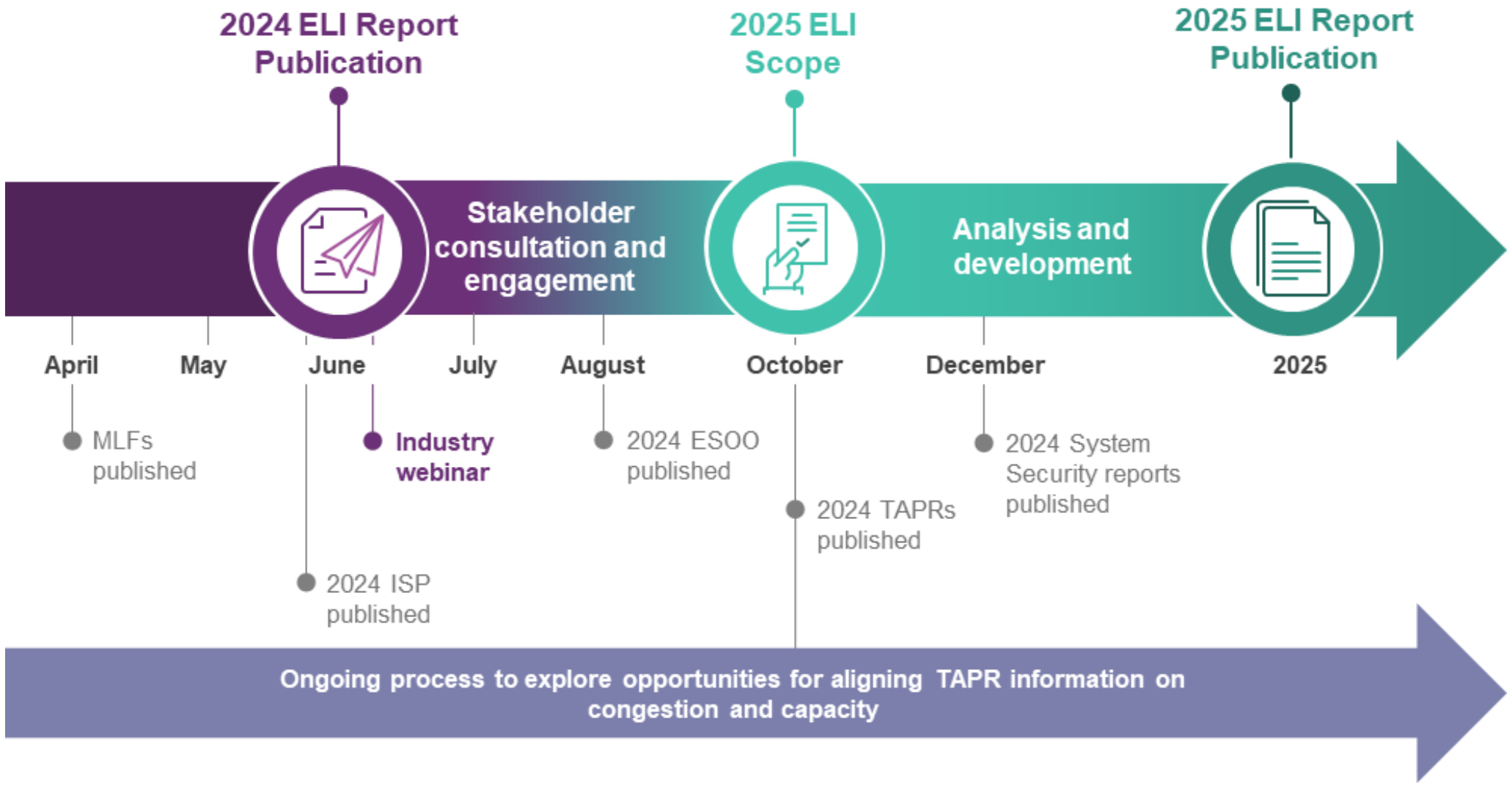
Key Takeaways

- **Investment opportunities are available** in all regions for capacity, energy, and security services, however proponents must carefully consider competing investment signals.
- **Key factors to consider** include resource availability, network congestion, marginal loss factors, and security requirements, and competing connection projects.
- **Committed and actionable network projects will provide relief** in some locations – while others present opportunities for investment in firming tech, or system support services.
- The ELI report makes these competing signals more accessible and transparent – but is **not a substitute for detailed case-by-case analysis.**



Process Timeline

Indicative timeline of activities and publications



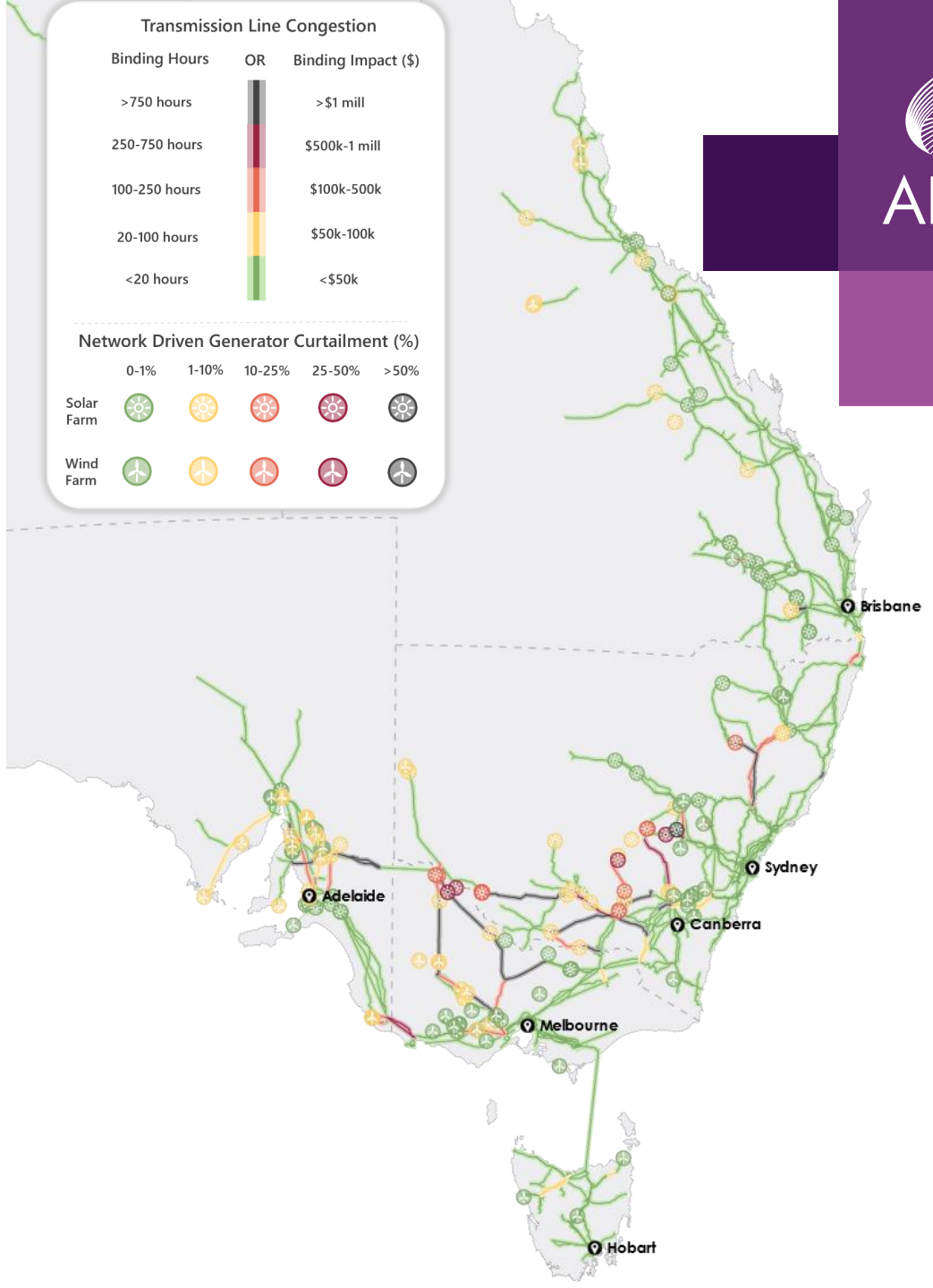
Content Highlights

Cathy Tang
System Security Planning

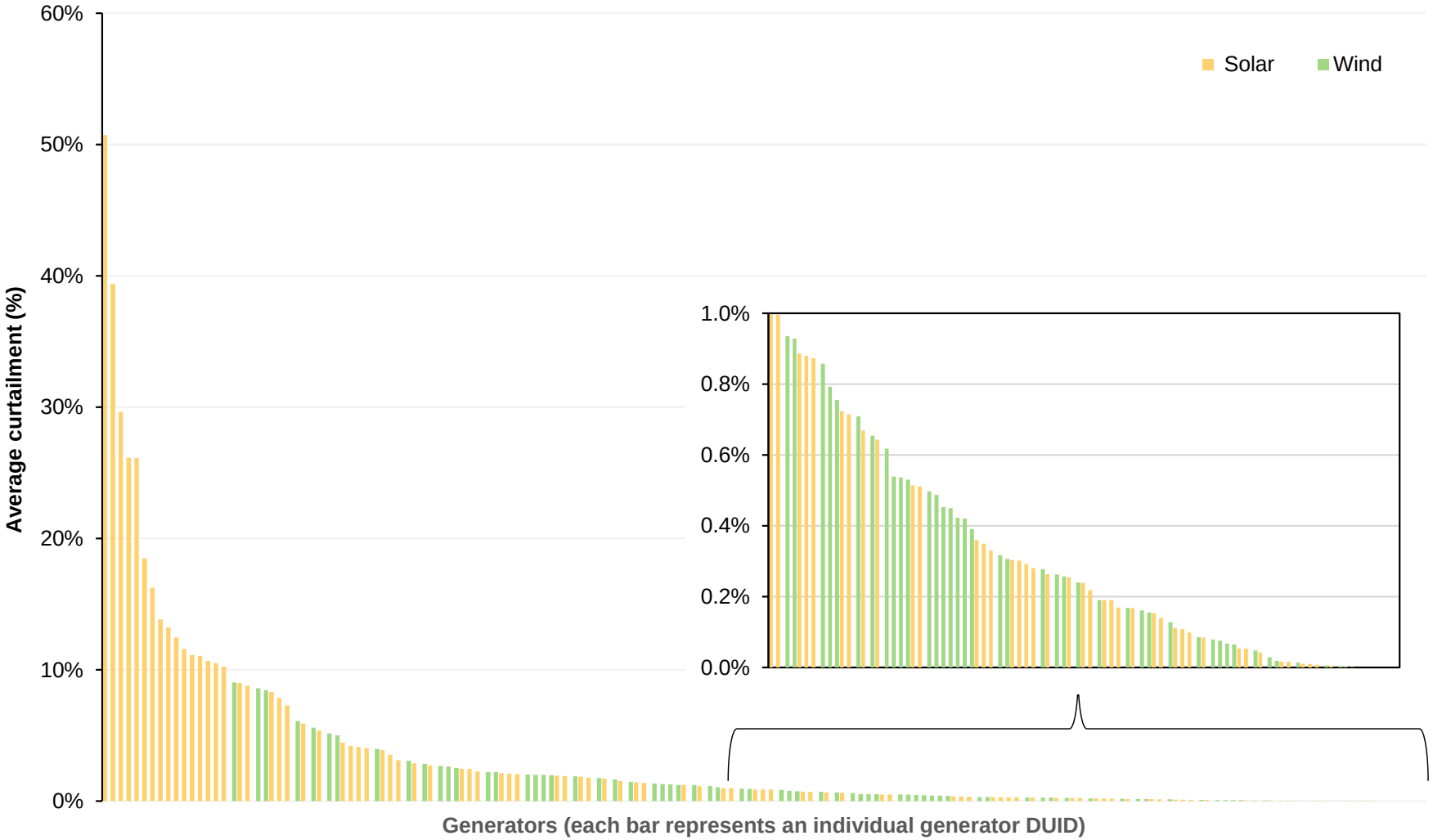
Network capability
Congestion and curtailment

In the past 12 months, high levels of congestion and curtailment were experienced in several specific pockets of network, primarily in parts of New South Wales and Victoria.

However, most transmission lines and locations across the NEM, including in these regions, did not experience significant congestion.



Network capability
Congestion and curtailment

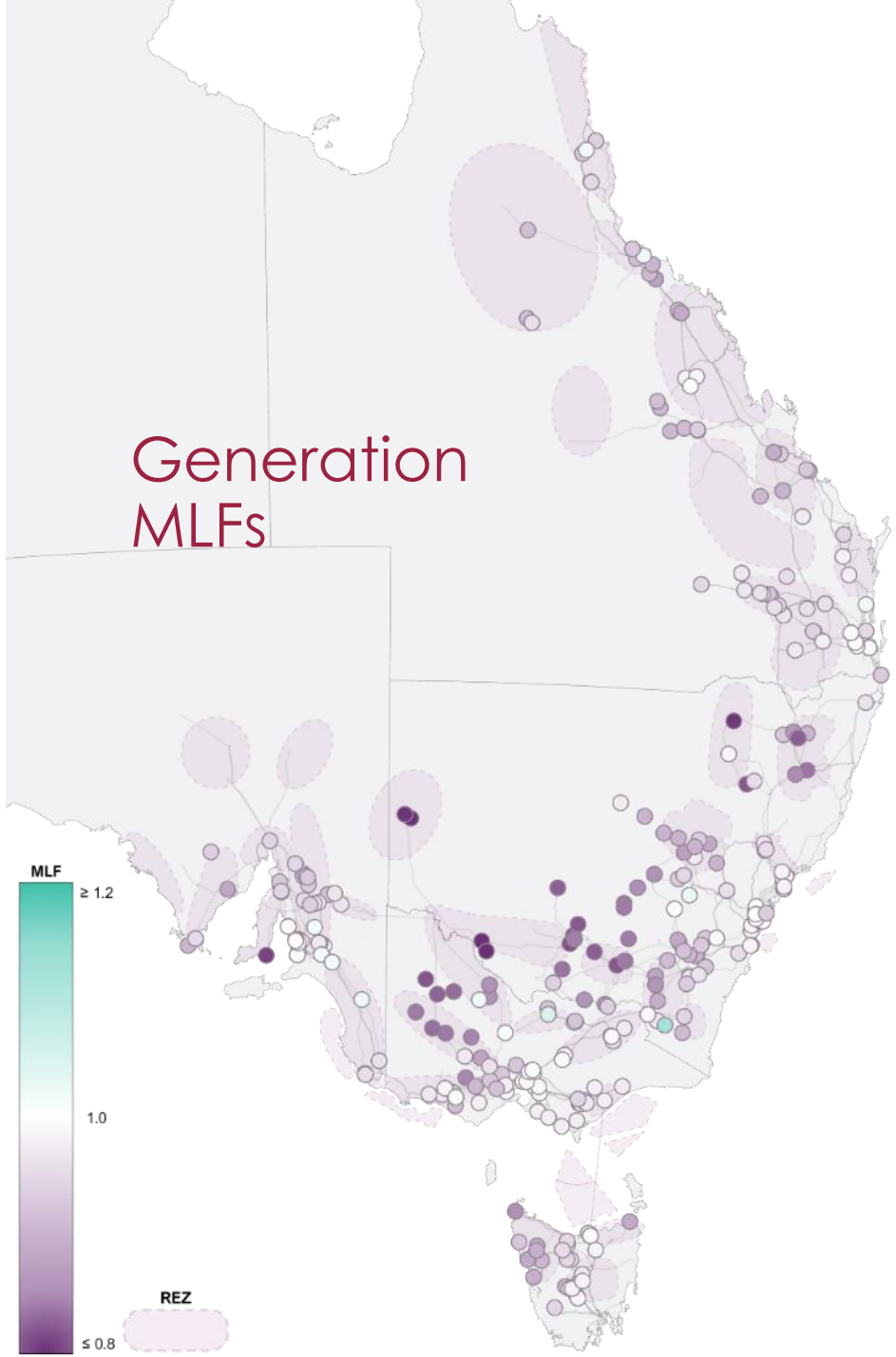


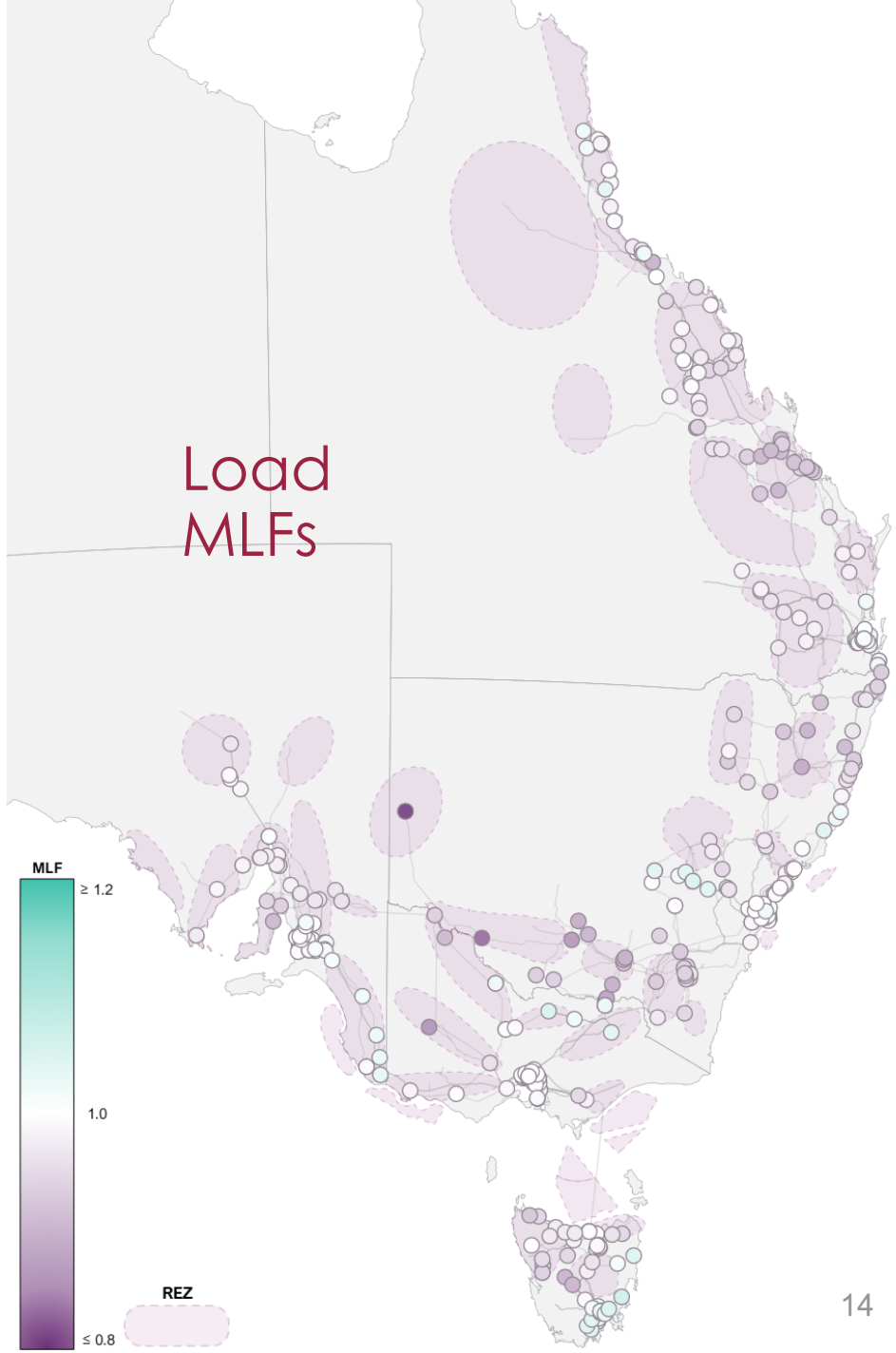
Over 50% of VRE projects experienced less than 1% curtailment over the past 12 months.

- Wind ranged from 0.0% to 9.0% and **averaged 1.4%**.
- Solar ranged from 0.0% to 50.7% and **averaged 4.6%**.

Network Losses

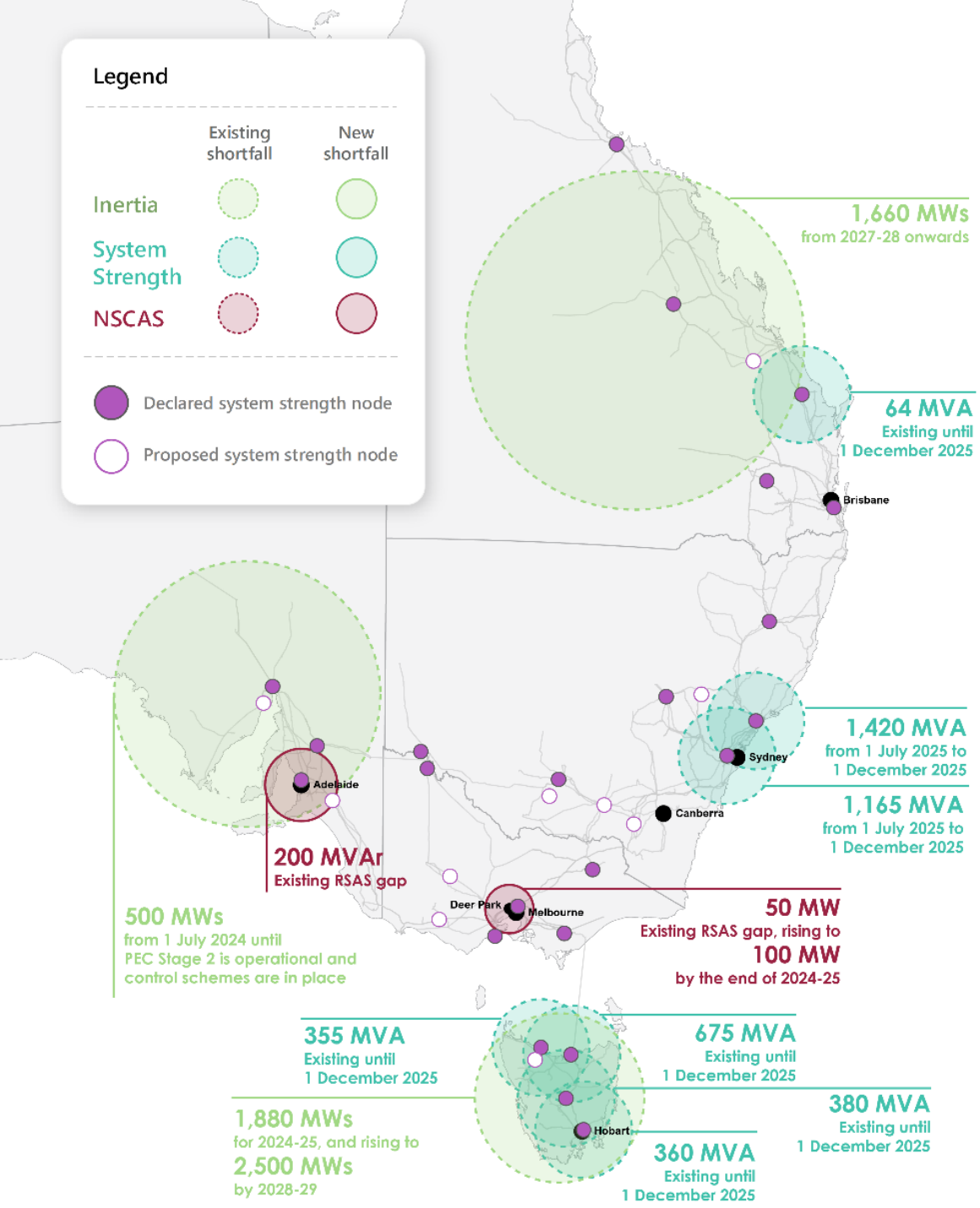
Loss factors for 2024-25 range from over 1.0 to as low as 0.85, in the most electrically remote or congested locations.





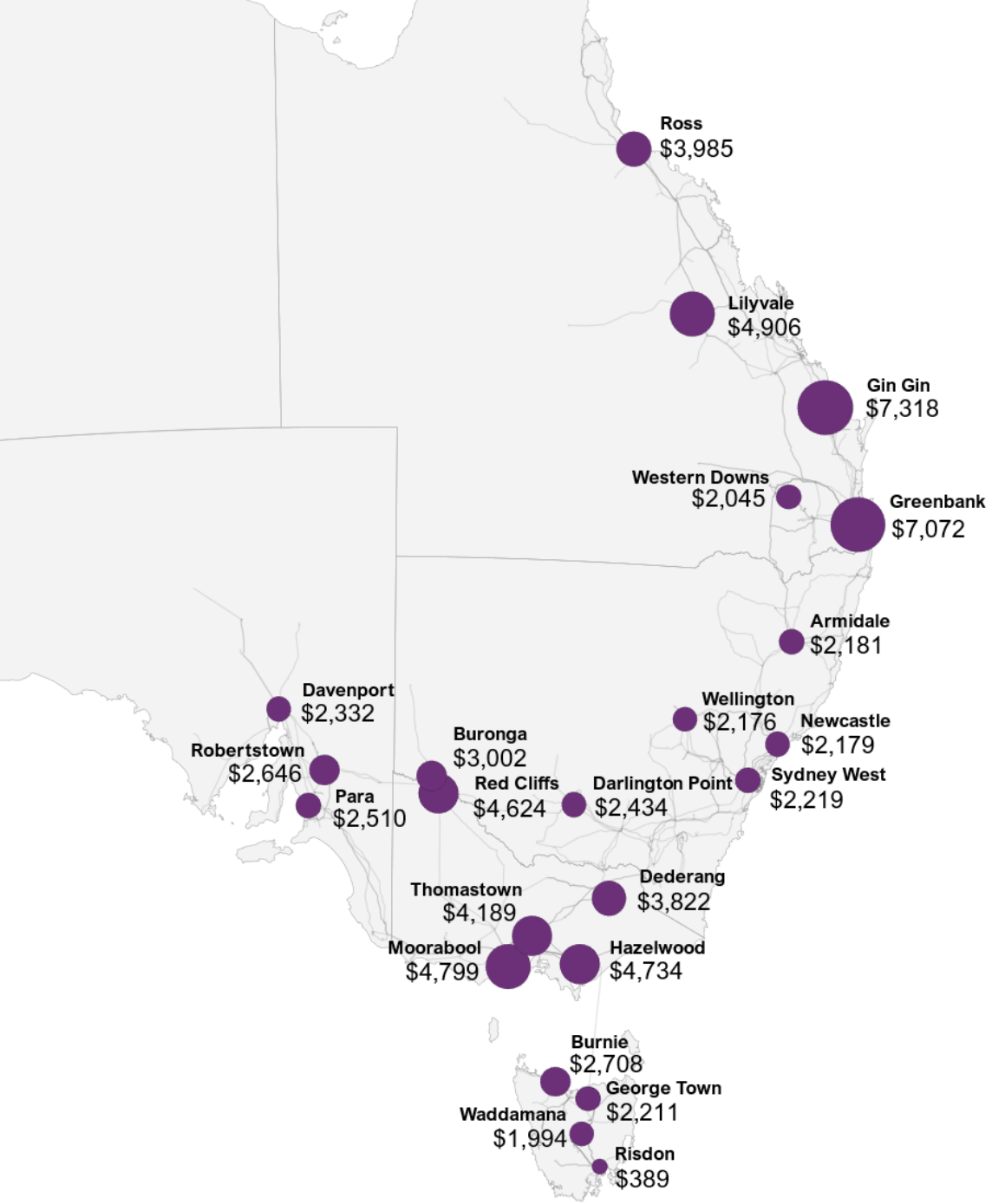
System security shortfalls

Overview



The need for new investment in system strength, inertia, and voltage control services is expected to grow rapidly over the the coming decade.

Twelve distinct shortfalls have already been declared, and maintaining system requirements will present new opportunities and risks for investors as existing thermal plant withdraw.



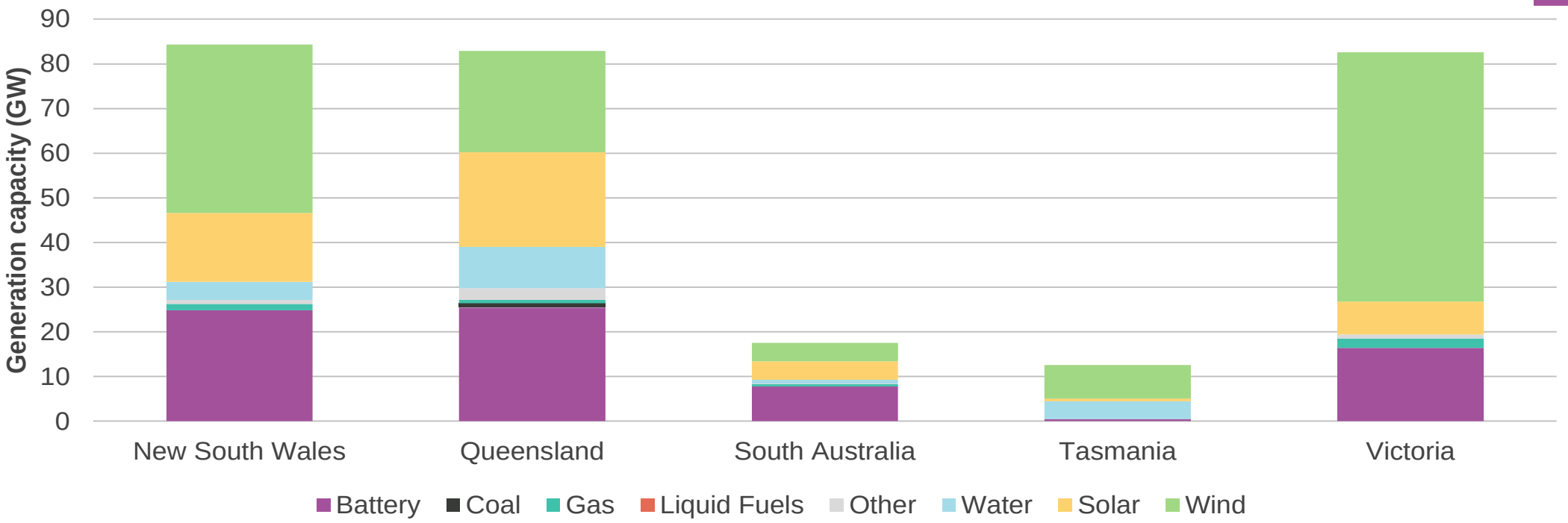
System security

System Strength Unit Prices

From 15 March 2023, proponents can elect to self remediate, or to pay to access services from the closest available system strength node.

While these costs can vary across the NEM for many reasons - the latest updates in March and April 2024 saw unit prices fall by 20-25% across multiple regions.

Generation and storage outlook



Substantial volumes of proposed projects are in early development across the NEM.

Of the 280 GW of proposed projects as of April:

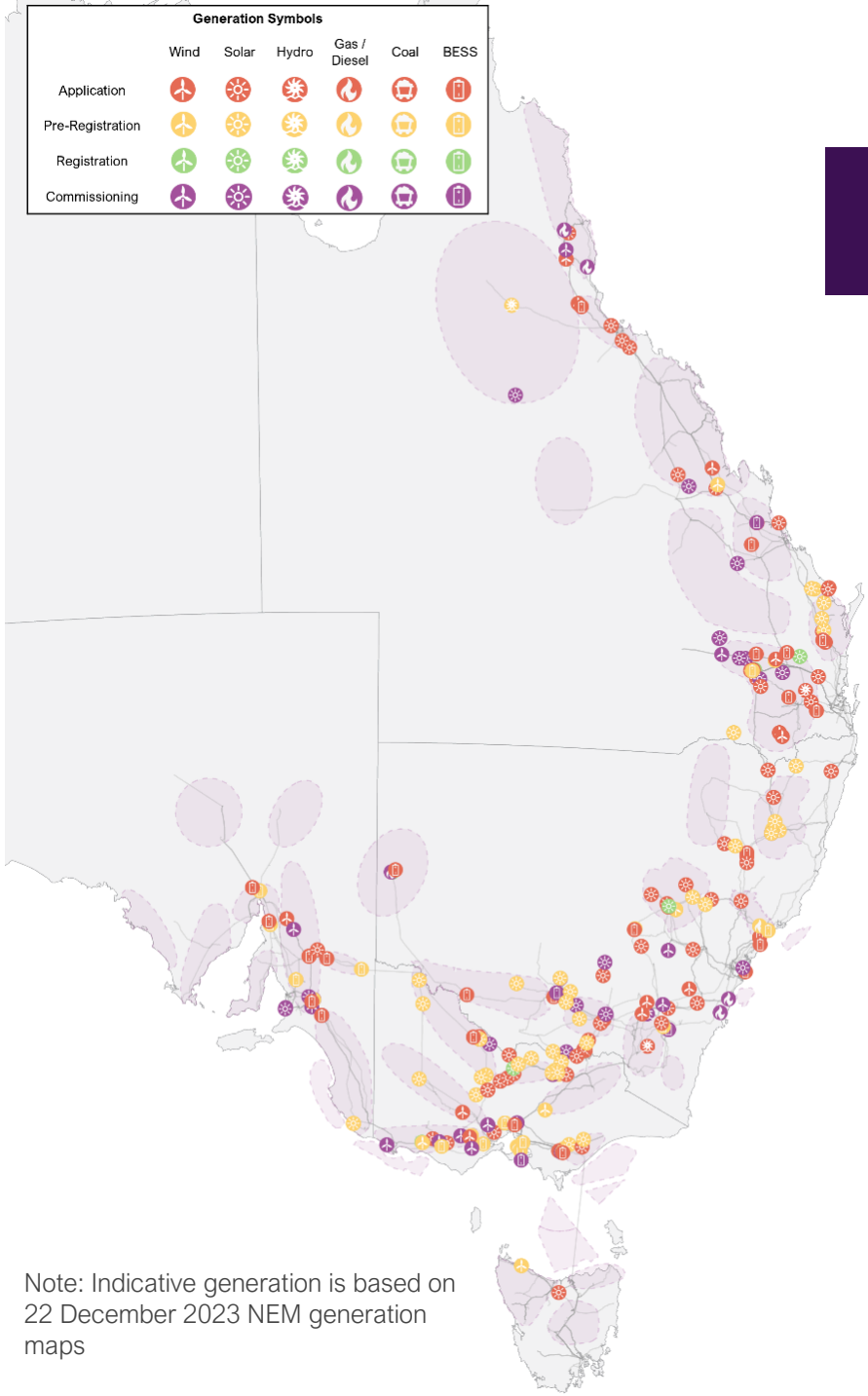
- 63% are VRE generation projects.
- 33% are storage (battery or pumped hydro).

Generation and storage outlook

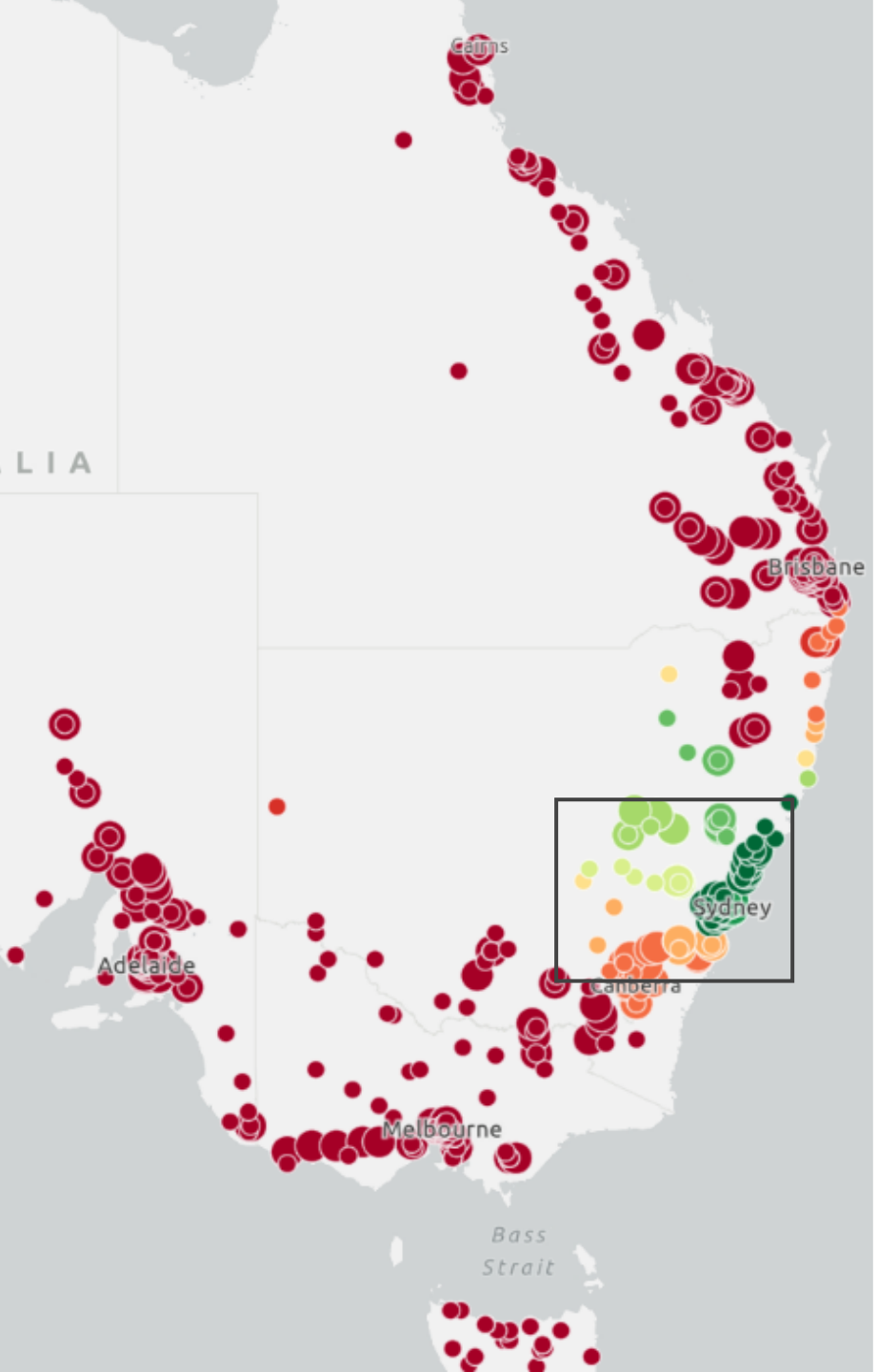
Connection pipeline

As of February 2024, AEMO is assisting:

- 20 GW of connection projects in the application stage,
- 19 GW in the pre-registration or registration stages, and
- 2 GW currently undergoing commissioning.

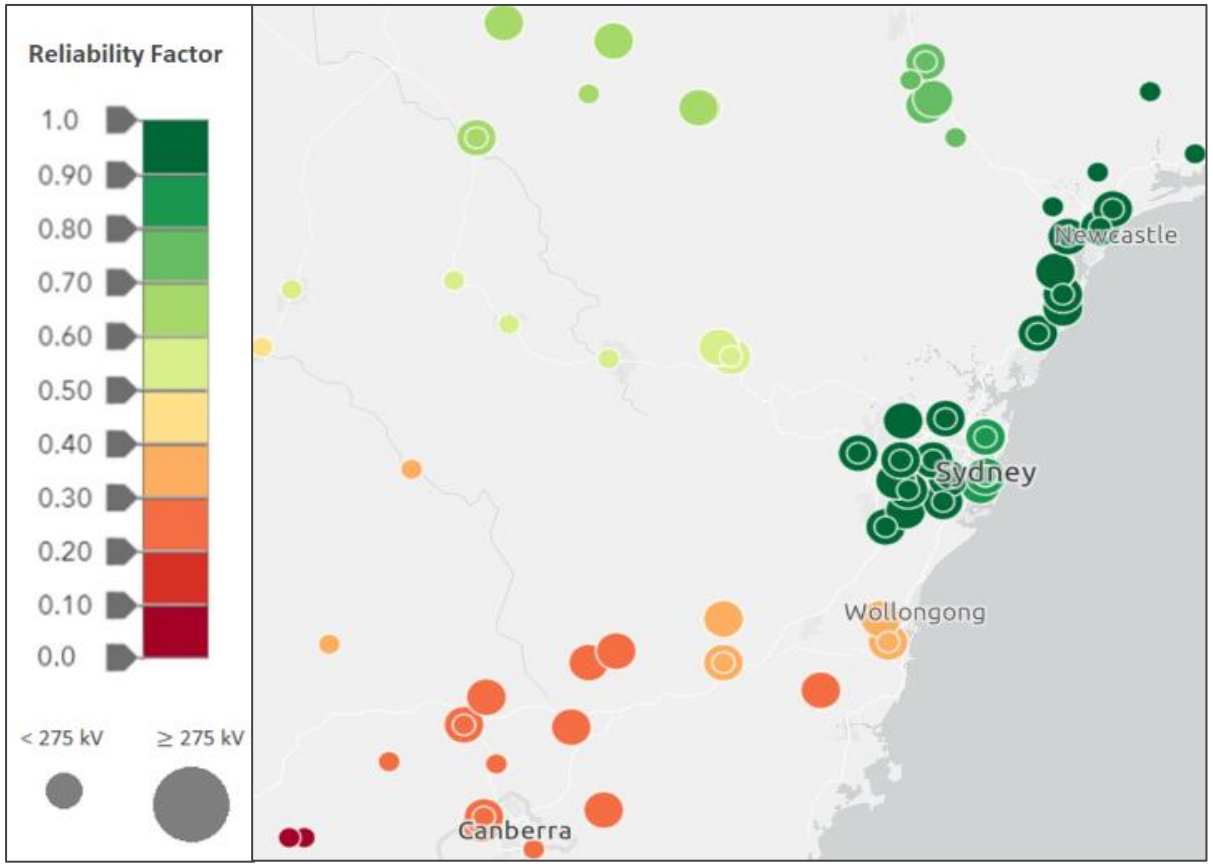


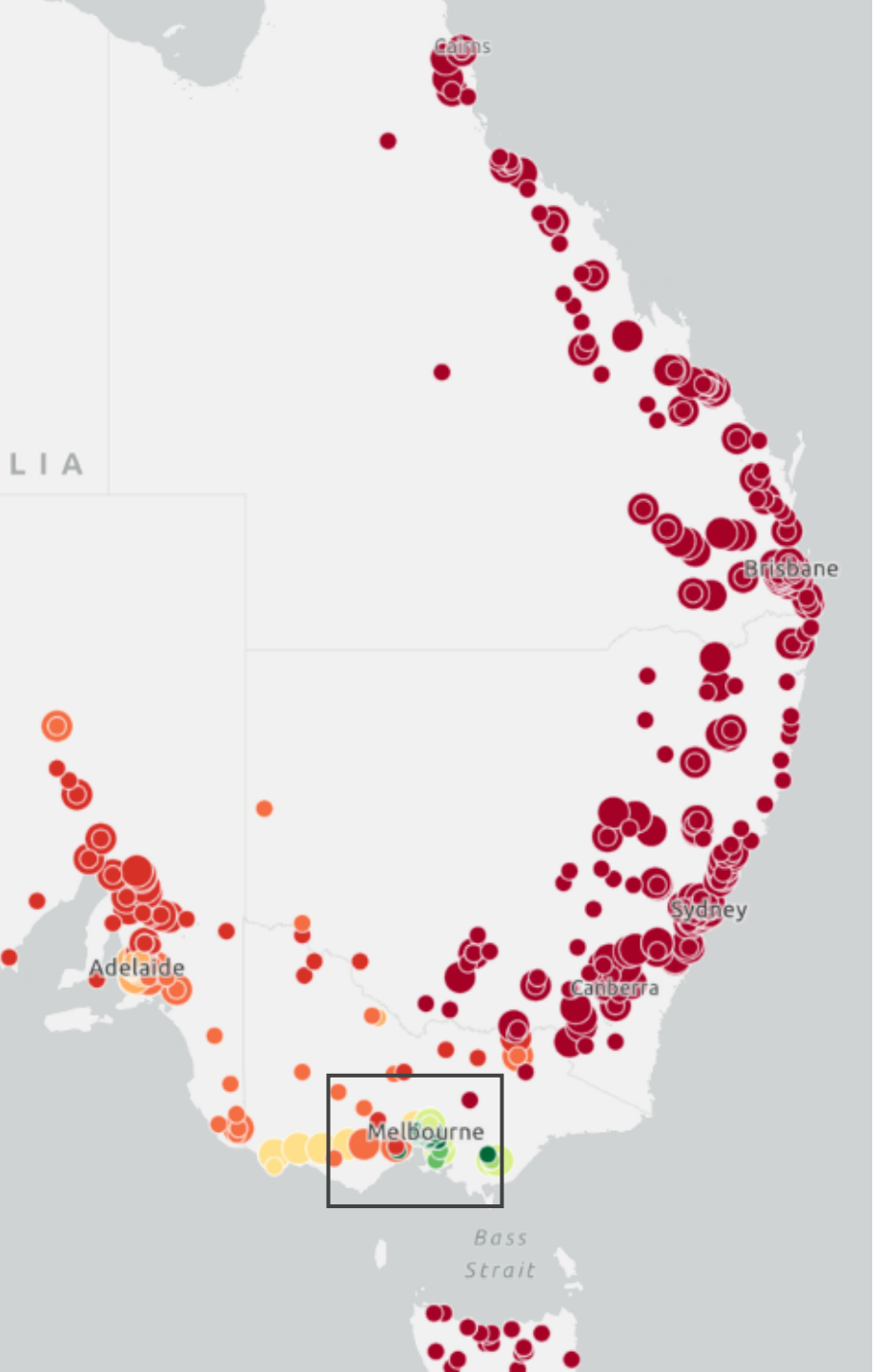
Note: Indicative generation is based on 22 December 2023 NEM generation maps



Reliability Factors
New South Wales

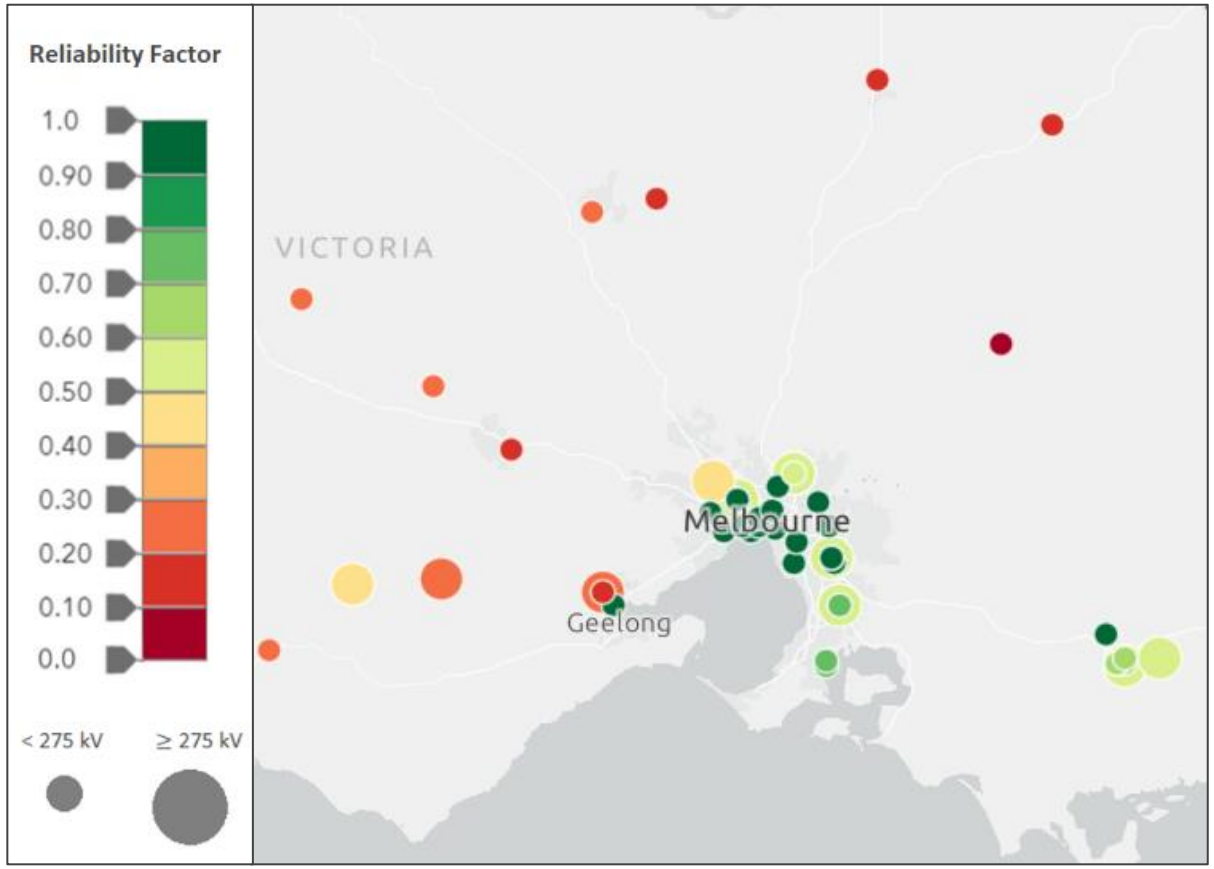
ESOO Central scenario, locational reliability factors for New South Wales USE, 2029-30





Reliability Factors
Victoria

ESOO Central scenario, locational reliability factors for Victorian USE, 2029-30



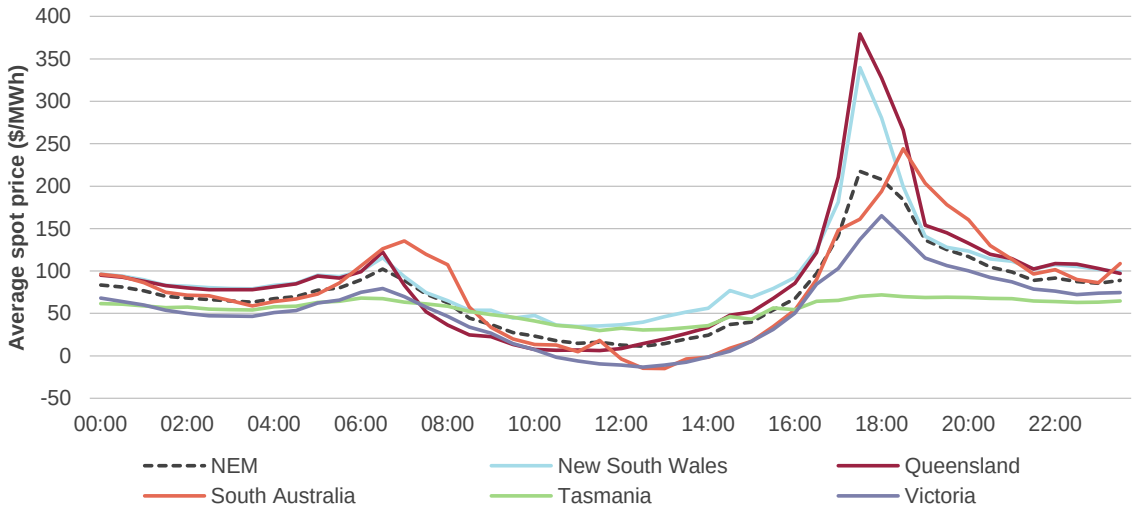
Wholesale price indicators

For renewable generators and storage proponents, time-of-day spot price trends may be more important than average prices.

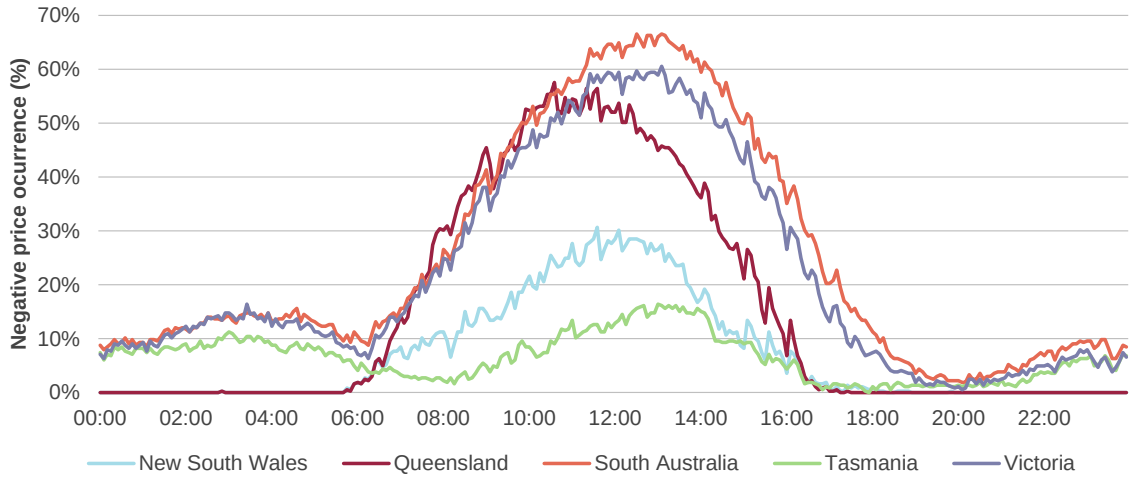
All regional energy prices now show low or negative prices during peak daylight hours, before rising sharply into the evening peak demands after sunset.

All regions (except Tasmania) are now experiencing increasingly frequent negative prices during daylight hours.

Half-hourly average spot prices in the NEM for calendar year 2023 by time of day ($/MWh)



Negative price occurrence in the NEM for calendar year 2023 by time of day



Energy policies

State and federal governments have each committed to strong transition targets that will shape the energy landscape.

These policy are an important consideration for new transmission, generation, and storage projects – and the ELI report summarises all key:

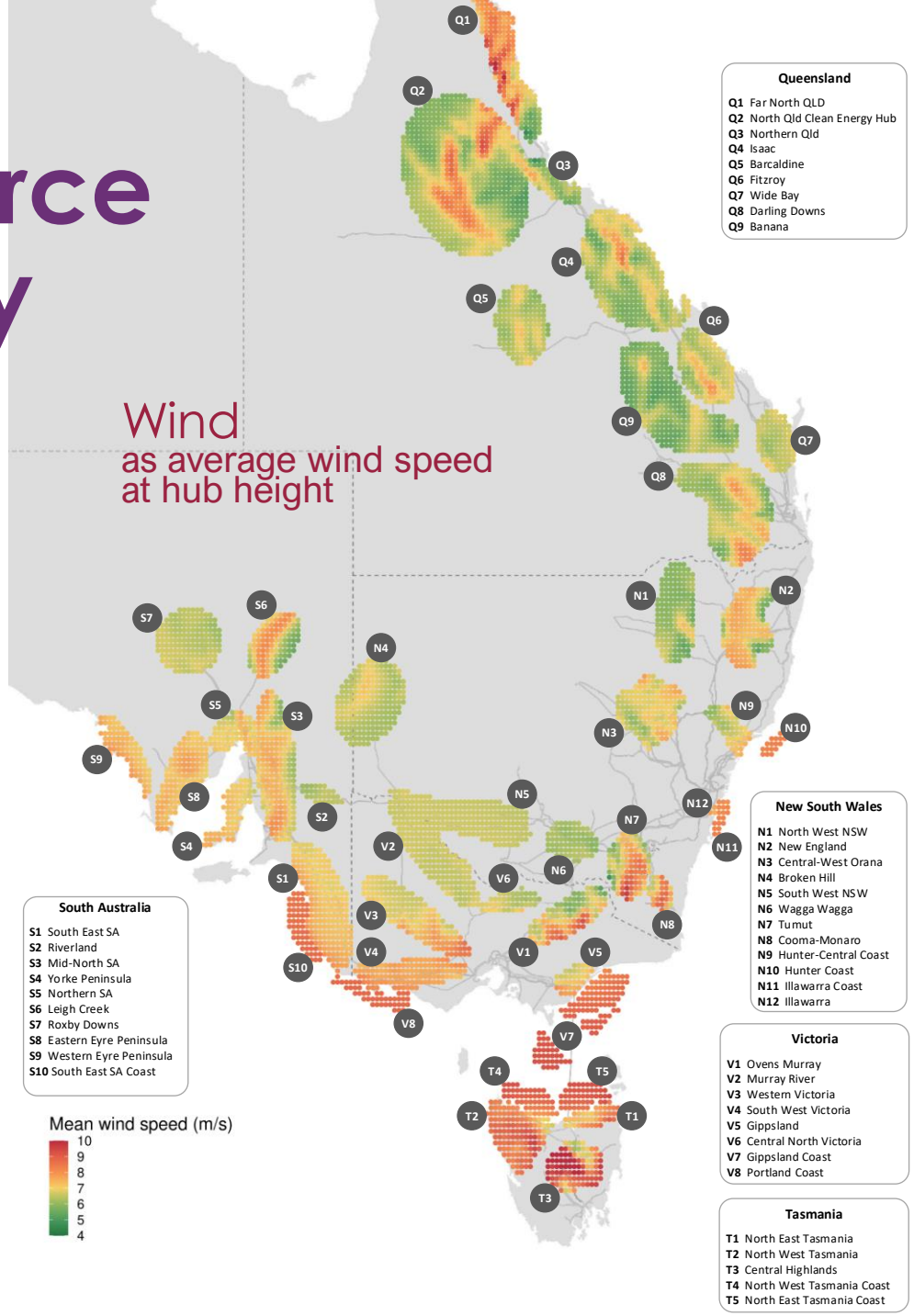
- Energy targets
- Emissions reduction targets.
- Incentive or investment schemes.
- Support for major transmission projects.
- REZ declarations including offshore REZs.

Nationwide emission reduction of 43% below 2005 levels by 2030 and net zero by 2050.

Commitment to achieve an 82% share of renewable generation by 2030.

Resource quality

Wind
as average wind speed at hub height



Queensland
- **Q1** Far North QLD
- **Q2** North Qld Clean Energy Hub
- **Q3** Northern Qld
- **Q4** Isaac
- **Q5** Barcaldine
- **Q6** Fitzroy
- **Q7** Wide Bay
- **Q8** Darling Downs
- **Q9** Banana

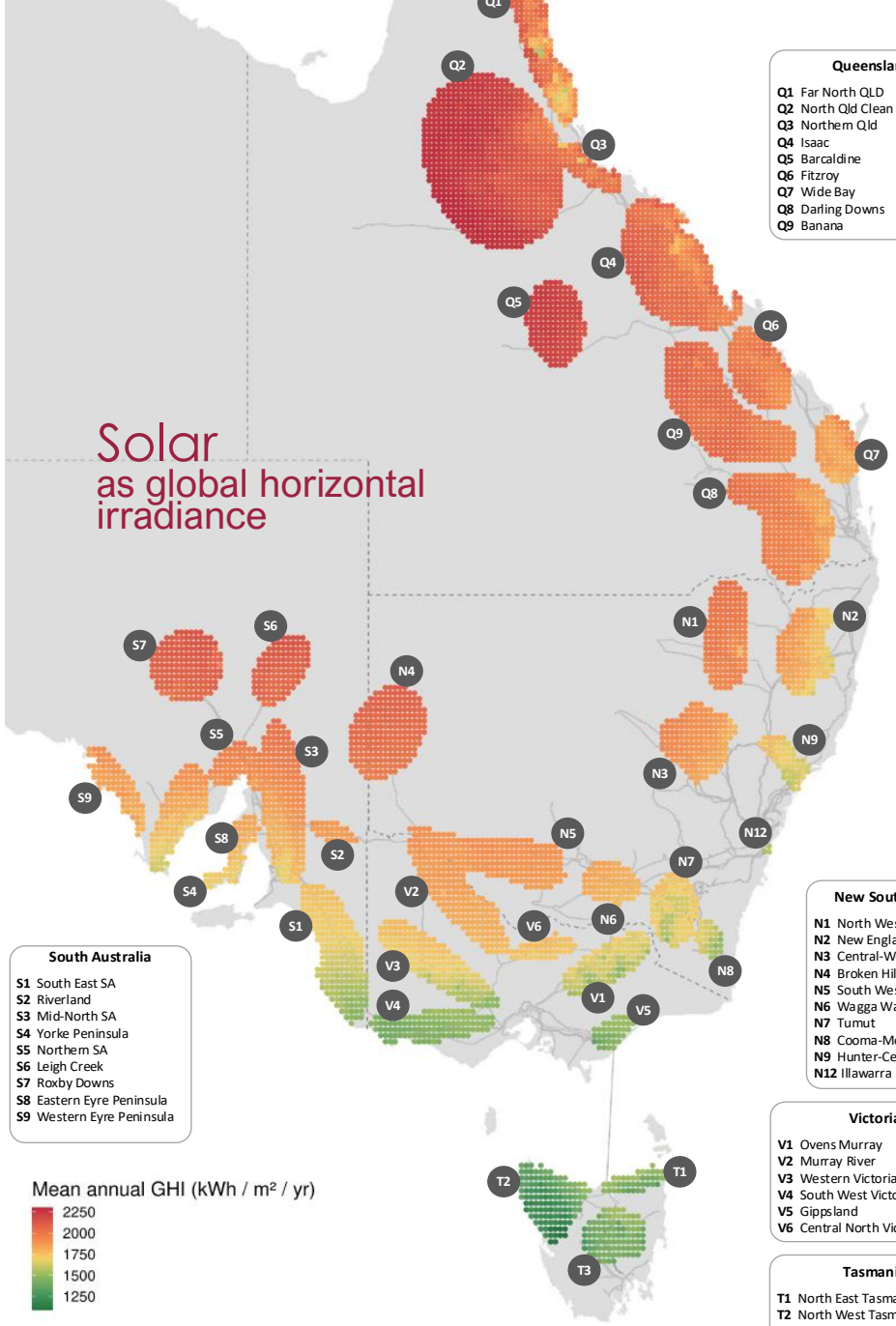
New South Wales
- **N1** North West NSW
- **N2** New England
- **N3** Central-West Orana
- **N4** Broken Hill
- **N5** South West NSW
- **N6** Wagga Wagga
- **N7** Tumut
- **N8** Cooma-Monaro
- **N9** Hunter-Central Coast
- **N10** Hunter Coast
- **N11** Illawarra Coast
- **N12** Illawarra

South Australia
- **S1** South East SA
- **S2** Riverland
- **S3** Mid-North SA
- **S4** Yorke Peninsula
- **S5** Northern SA
- **S6** Leigh Creek
- **S7** Roxby Downs
- **S8** Eastern Eyre Peninsula
- **S9** Western Eyre Peninsula
- **S10** South East SA Coast

Victoria
- **V1** Ovens Murray
- **V2** Murray River
- **V3** Western Victoria
- **V4** South West Victoria
- **V5** Gippsland
- **V6** Central North Victoria
- **V7** Gippsland Coast
- **V8** Portland Coast

Tasmania
- **T1** North East Tasmania
- **T2** North West Tasmania
- **T3** Central Highlands
- **T4** North West Tasmania Coast
- **T5** North East Tasmania Coast

Solar
as global horizontal irradiance



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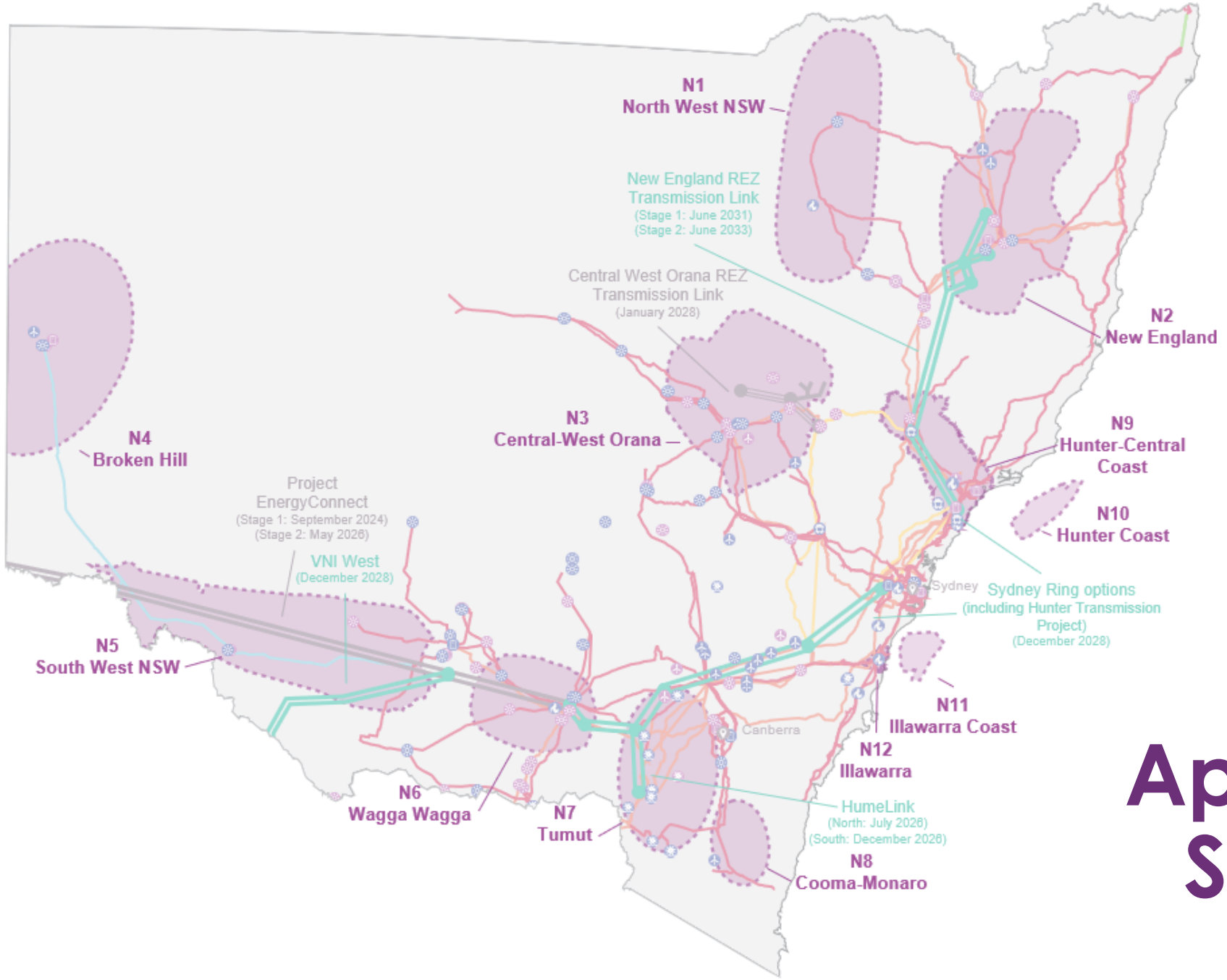
- **T3** Central Highlands

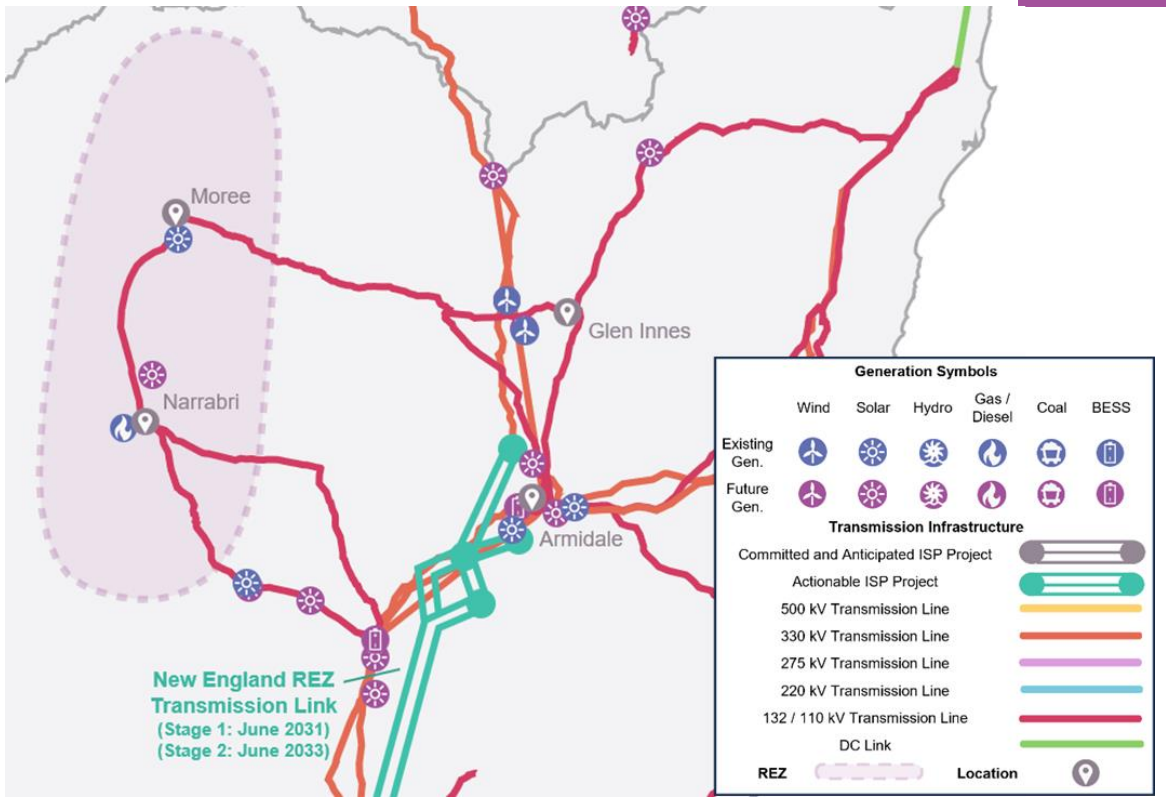


REZ Appendices & Scorecards

REZ Appendices & Scorecards

The appendices provide detailed locational indicators and metrics for each REZ, including:

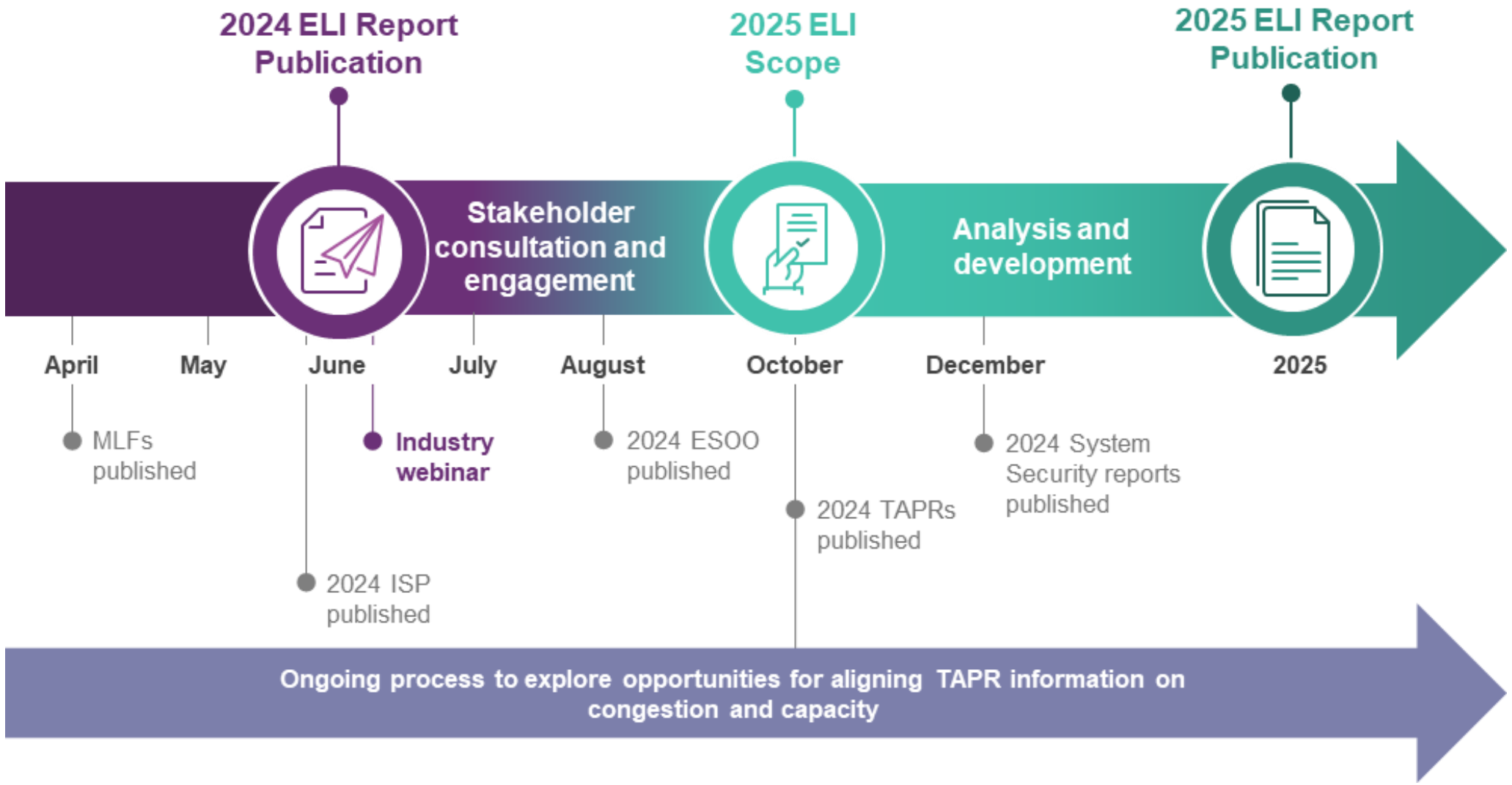
- REZ information
- Marginal loss factors
- Congestion and curtailment
- ISP forecast



Next Steps

Process Timeline

Indicative timeline of activities and publications



Questions and discussion

We would value your feedback

This recording and presentation will be published on the 2024 ELI webpage

2024 ELI Report consultation submissions due 12 July 2024 via planning@aemo.com.au

Thank you for attending!

For more information visit

aemo.com.au