Integrated System Plan: Renewable Energy Zones

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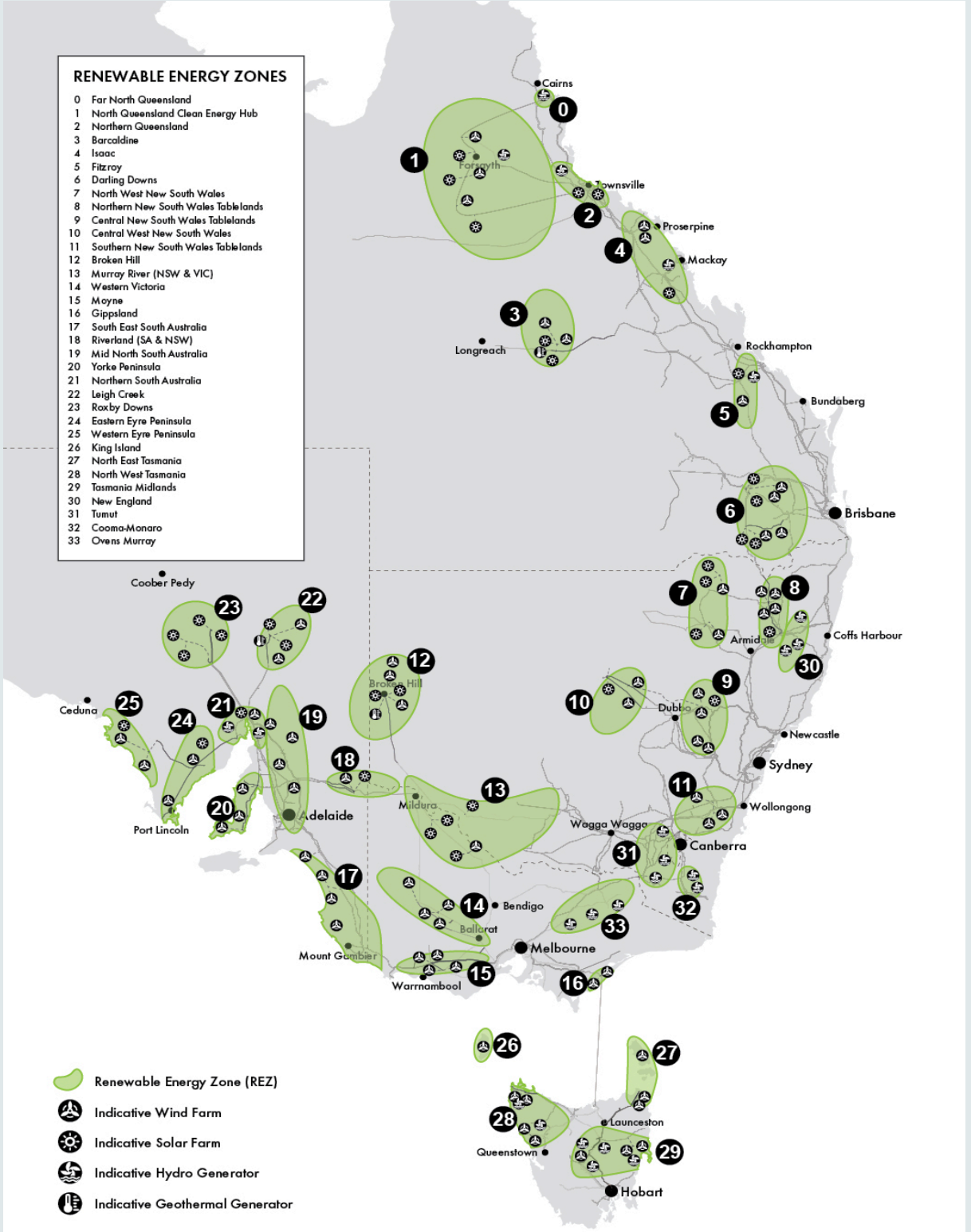
Agenda

1. Approach
2. Renewable energy zones
3. Considerations for REZ
4. Key requirements for REZ
5. Wider considerations

Renewable energy zones studied in 2018 ISP



Considerations

Benchmarking the attributes of potential REZ in the ISP

REZ Report Card Details

Priority Level

Based on ISP modelling, indicates areas where generator connections are most likely to proceed over the coming 10 years. A number of factors unknown to AEMO, such as local community support, may affect this priority.

1	2	3	Low
Immediate priority	High priority	Medium priority	Low priority

Renewable Resources

Map Legend

Indicative generation is shown based on connection interest in the REZ.

Wind	Solar	Hydro	Geothermal
			

Resource Quality

Solar Global Horizontal Irradiance (kw/m²) annual average, median value within REZ

≥ 2000	≥ 1900	≥ 1800	≥ 1700	< 1700
A	B	C	D	E

Wind Speed (m/s) at 150m from ground level modelled by DNV GL, 10% PoE within REZ.

≥ 8.4	≥ 7.2	≥ 6.6	≥ 6.0	< 6.0
A	B	C	D	E

Potential (MW)

Estimated potential REZ size (MW) based on the geographical size and resource quality in the REZ.

Diversity

Diversity describes whether the REZ resources are available at the same time as each of the other REZs or at different times, using a statistical correlation factor. A low correlation gives a better score.

≤ 0.1	≤ 0.2	≤ 0.3	≤ 0.4	≤ 0.5	> 0.5
A	B	C	D	E	F

The diversity of wind resources with other REZs is presented by state. Solar is not charted, because there is not much diversity between REZs.

Demand Matching

Demand matching describes whether the REZ resources are available at the same time as the regional demand, using a statistical correlation factor. A high correlation gives a better score.

≥ 0.30	≥ 0.15	≥ 0.0	≥ -0.15	≥ -0.30	< -0.30
A	B	C	D	E	F

Network Limitations

Spare Network Capacity

The MW value of additional generation that can be transported from the REZ to the required load centre.

Initial Loss Factor

The average value of the current MLF at connection points inside the REZ.

≥ 1.00	≥ 0.95	≥ 0.90	≥ 0.85	≥ 0.80	< 0.80
A	B	C	D	E	F

Loss Factor Robustness

The sensitivity of MLF to additional generation inside the REZ. The measure used is the additional generation (MW) that can be added before the MLF changes by -0.05.

≥ 1000	≥ 750	≥ 500	≥ 250	< 250	None
A	B	C	D	E	F

Long-Term Market Simulation Scenarios

Generation Built (MW)

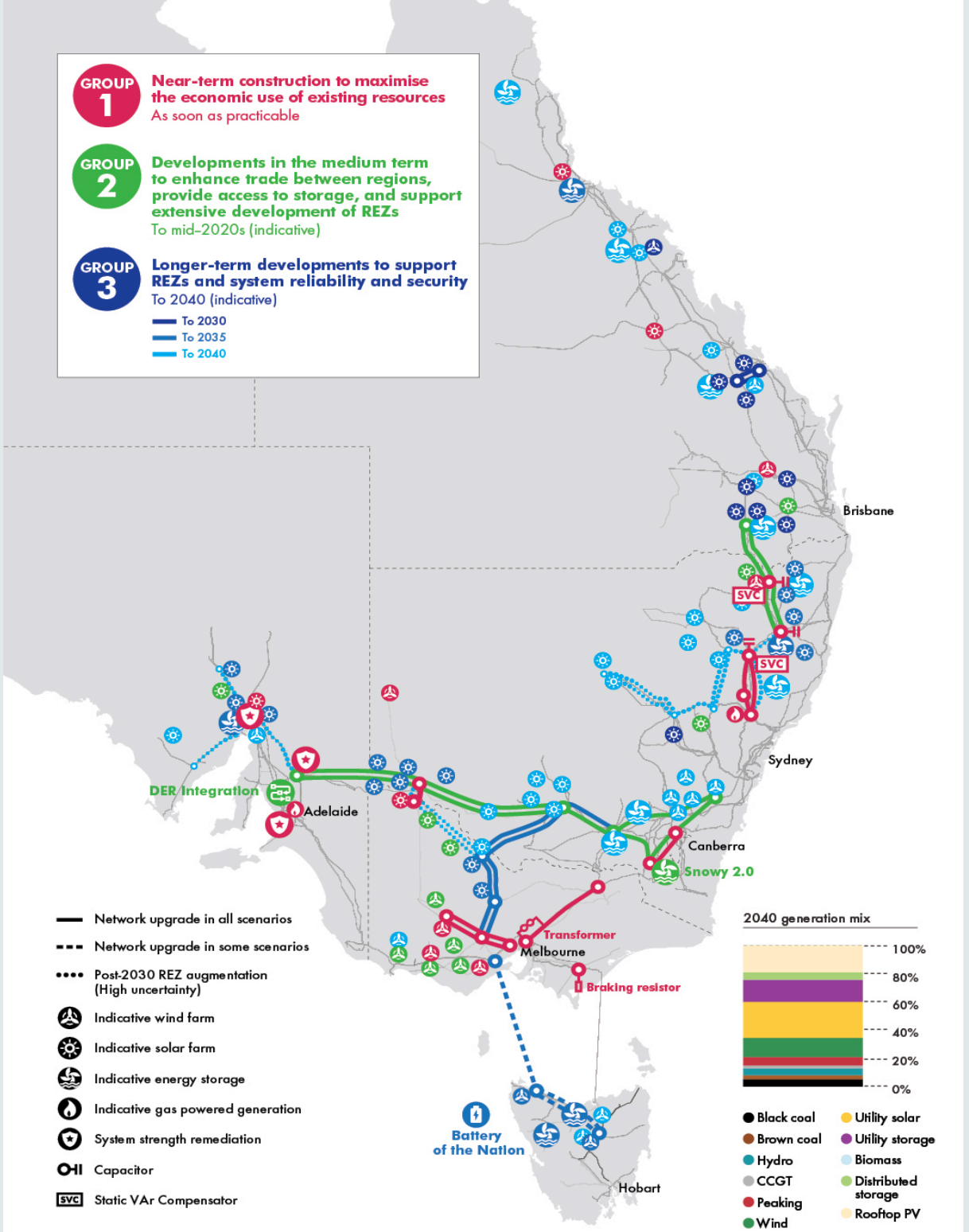
The maximum generation that is built throughout the 25-year market simulation period. If the generation built exceeds the existing network capacity, then the study has found benefit in augmenting the transmission network to the REZ.

Timing

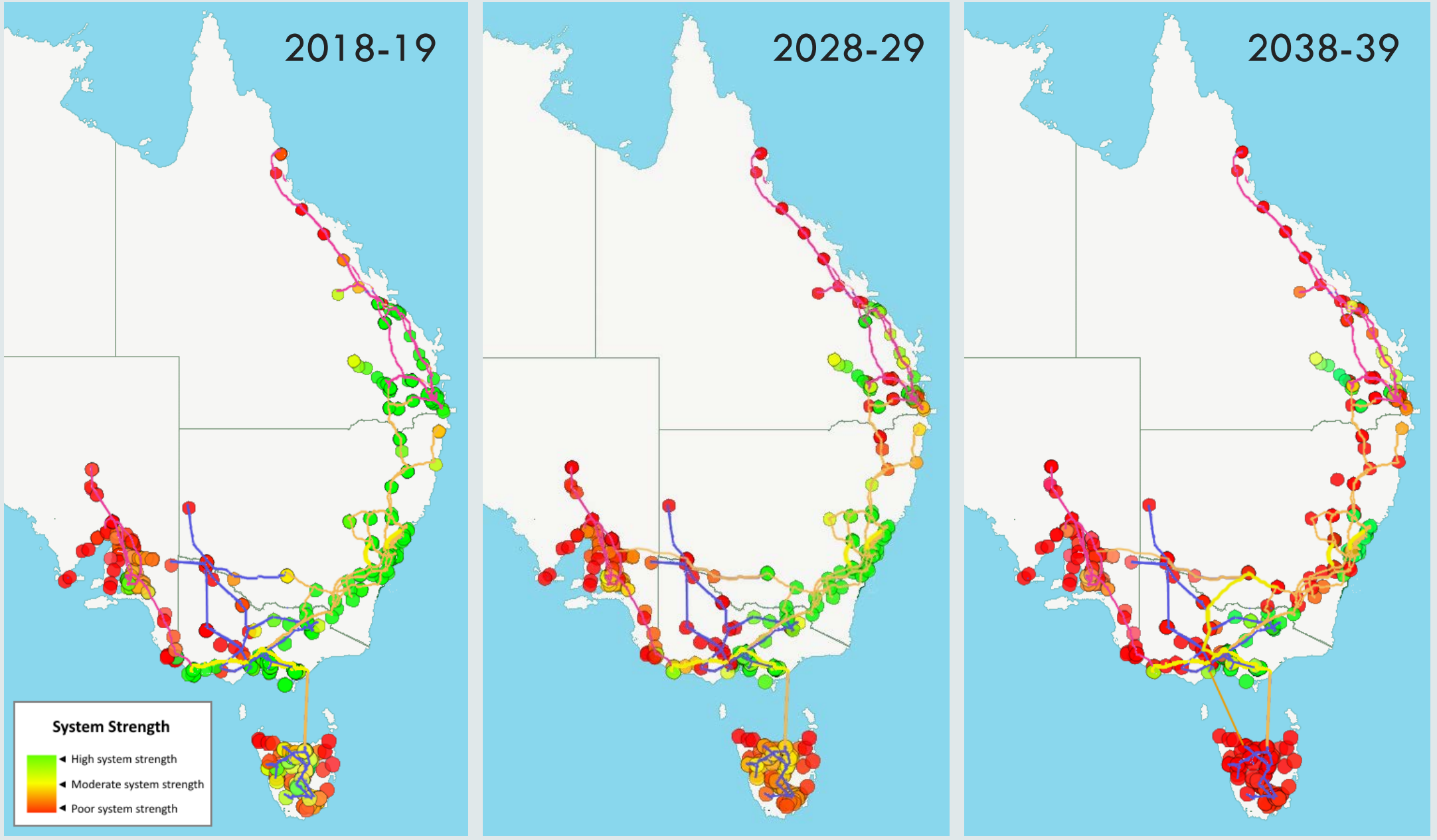
The year in which the generation built in the REZ exceeds the existing network capacity.

Key requirements

Integrated development of REZ and the power system to achieve long term optimised outcomes and resilient power system



Example of future technical requirements - system strength



Wider considerations for REZ development – the need for integrated planning on a systems basis

- The objective of the ISP is to identify the development of the power grid which over time achieves reliability, security and sustainability obligations at the lowest resource cost:
  - “Integration” is shown to be key, delivering multiple value streams from major infrastructure
  - Finkel recommendation for orderly transition is also key to ensure we maintain reliability, resilience and operability of the power system through the transition
  - More sophisticated than just the coordination of generation projects
- While the potential benefits are clear, regulatory framework to implement is not.
- Raises all the issues of the COGATI review on access to market, coordination of transmission and generation (storage) investment and who pays for infrastructure