

# Consumer Advisory Panel Meeting 29

Thursday, 25 May 2023

# Welcome

**Leanne Muffet**  
Independent Facilitator

# Acknowledgement of Country

We acknowledge the Traditional Owners of the land on which we meet and pay our respects to their Elders past and present. We extend that respect to other Aboriginal and Torres Strait Islander people who are present today.

# Agenda Outline

1. Welcome + Acknowledgement of Country
2. General updates and action items
3. Presentations on the Integrated System Plan
  - Australian Energy Market Operator
  - SA Power Networks
4. ElectraNet's Transmission Annual Planning Report
5. Demand Management Innovation Allowance Mechanism (DMIAM)
6. Other business
7. Close & lunch

## Consumer Advisory Panel 2023



**Mark Parnell**  
*Individual Consumer Representative*



**Mark Henley**  
*Individual Consumer Representative*

# General Updates

**Simon Appleby**  
Head of Corporate Affairs

# General Update & Action Items

#	Action Item
1	CAP recommended we have <b>future briefings</b> on: <ul style="list-style-type: none"><li>the ISP – current scenario planning, AEMO could be invited to attend and provide that briefing.</li><li>State Hydrogen strategy – inviting Office of Hydrogen Power South Australia (OHPSA)</li></ul>
2	ElectraNet to <b>invite SAPN</b> to brief the CAP on what they see as realistic inputs to the ISP to ensure the assumptions are consistent between transmission/distribution including understanding the joint planning process
3	ElectraNet to share a draft of the <b>TAPR Update</b> with CAP Members together with the key questions to be put to stakeholders and seek further input on this prior to the next CAP meeting
4	Include <b>DMIAM</b> on upcoming CAP Agenda and engage to determine how the CAP can be involved in the process



# Presentations on the Integrated System Plan

**Samantha Christie**  
Manager Strategic Planning  
AEMO

**Matt Napolitano**  
Head of Network Planning  
SA Power Networks

# ElectraNet's Transmission Annual Planning Report (TAPR)

**Brad Harrison**

Network Planning Manager



# Outline

## Purpose

Provide an update on current developments and seek input and feedback from the CAP on priorities and trends

## Content

- Recap on TAPR Update and context
- What did AEMO forecast for the Mid-North in the 2022 ISP?
- Key take aways from ElectraNet's REZ expansion study for the SA Government
- Outlook for the Mid-North and the potential for higher demands
  - Electrification - What is the CAP seeing?
- ElectraNet engagement with large industrial loads
  - Large industrial loads – What is the CAP seeing with large customers
- How the options enable new industries and assist with cost-of-living pressures
- Recap on emerging priorities

# TAPR Update Fast Facts

- ElectraNet is supporting almost 3000 MW of connection inquiries
- Energy from renewables is forecast to grow strongly (AEMO, SAPN, Energeia)
- Demand could change dramatically due to:
  - hydrogen facilities near Whyalla, Iron Ore mining and 'green' steel
  - potential connection of large new customer loads
  - widespread adoption of electric vehicles
  - proponents who are keen to take advantage of SA low cost and low emission electricity
- SA remains at forefront of Global gigawatt scale zero emission electrical systems
- A rapid rise in demand for electrification may have a material impact on speed and quantum of renewable development
- To meet projected significant increases in demand, additional sources of supply will be needed

# The purpose of the TAPR and AEMO's ISP is to coordinate the development of the power system

## Transmission Annual Planning Report

Provides information on

- Trends and directions for the transmission system
- AEMO's Integrated System Plan
- 10-year demand forecasts
- System capability and performance
- Project status
- Transmission system development plans

## AEMO's Integrated System Plan

Finkel\* recommendation 5.1

- *Integrated grid plan to facilitate the efficient development and connection of renewable energy zones across the National Electricity Market*

NER 5.22.2

- The purpose of the Integrated System Plan is to establish a whole of system plan for the efficient development of the power system that achieves power system needs for a planning horizon of at least 20 years for the long-term interests of the consumers of electricity

*\*Independent Review into the Future Security of the National Electricity Market, Final Report, Dr Alan Finkel, 9 June 2017*

# We are reviewing our TAPR to reflect the high levels of interest in loads connecting to the network

## May 2023 TAPR Update

Provides information on

- Possible electrification trends
- Large industrial loads
- Recap on the potential of hydrogen

Updates options highlighted in the 2022 TAPR for large expansion of the transmission network

Input being sought from stakeholders on potential loads, renewable generation developments and network options

1

How representative is the current new connection interest (Table 2) of future demand growth in South Australia? Are there other emerging load developments we should be considering? To what extent should potential electrification be considered in developing forecasts of future grid demand in South Australia?

2

Are there other options for increased supply from renewable generation sources, including REZ options, that we should be considering as part of our planning?

3

What are your views on the near-term priorities and next steps proposed to address emerging constraints and unlock benefits for customers?

4

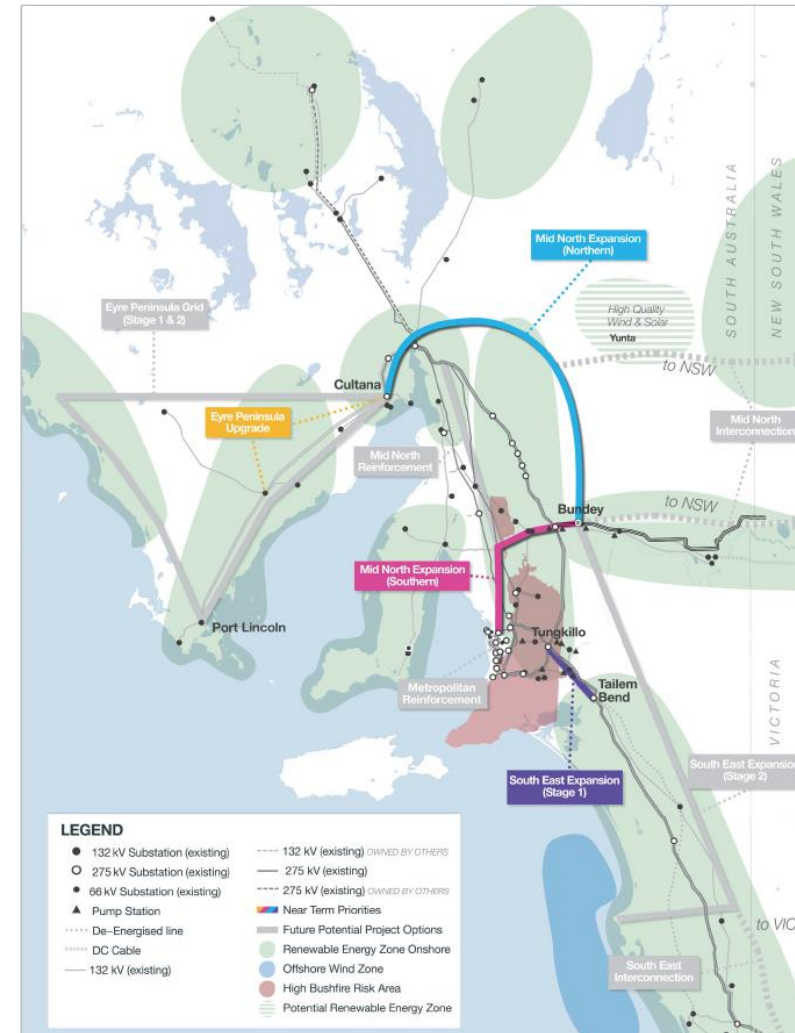
Do you have any views on the future potential options for network development? Are there other options we should consider for future network development?

# We have refined the TAPR Update since the last CAP meeting

## Our near-term priorities have narrowed

We are optimizing and prioritizing near term transmission system development by:

- Prioritizing renewable energy zone development to put downward pressure on price
- Enabling large industrial customers to support state economic growth
- Ready the grid for a rapid electrification as we decarbonize the economy
- Monitor the potentially massive hydrogen expansion over the coming decade which would establish South Australia as one of the lowest cost energy jurisdictions in the world





# AEMO's 2022 ISP forecast large expansion in the Mid-North

## A5.5.7 Mid North South Australia REZ expansion

### Summary

The Mid-North SA REZ has moderate quality wind and solar resources. There are several major wind farms in service in this REZ, totalling over 1,300 MW installed capacity.

The Mid North limit represents the generation build limit applied to S3, S4, S5, S6, S7, S8, and S9 REZs. This constraint is necessary because these REZs all must export any additional power generation south towards Adelaide primarily along the existing four 275 kV parallel circuits from Davenport to near Adelaide (Para). This corridor of the network forms a bottleneck for these REZ

Stage 1 of the Mid North SA REZ expansion is required in the late 2020s in the *Hydrogen Superpower* scenario, and early 30s in the *Step Change* scenario to facilitate the connection of generation within these REZs. AEMO requires preparatory activities to be undertaken for stage 1 of the Mid North SA REZ Expansion project.



### Existing network capability

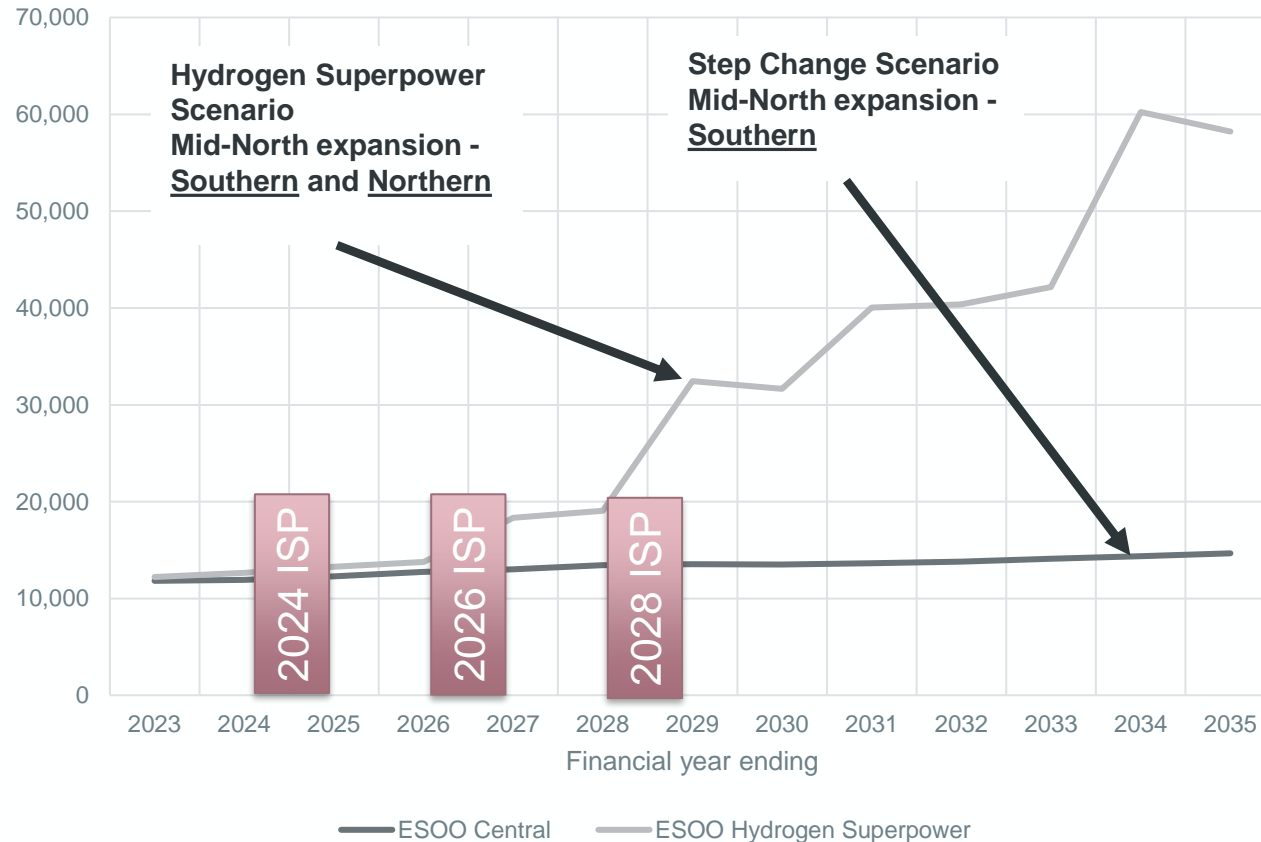
The individual REZs which form this group constraint each have their own individual existing network capabilities. The collective generation build from S3 to S9 cannot exceed an additional 1,000 MW without network augmentation between Davenport and Adelaide being required.

Additional works in the underlying 132 kV network and implementation of a control scheme will initially be required in order to reach the modelled 1,000 MW headroom.

### Augmentation sequences

Description	Status	Additional network capacity (MW)	Expected cost (\$ million)	Progressive Change	Step Change	Slow Change	Hydrogen Superpower
Option 1: • 275 kV double-circuit lines between Robertstown, Templers West and Para	Future	950	340	2039-40	2033-34	-	2028-29
Option 2: • 275 kV double-circuit lines between Davenport and Robertstown	Future	950	582	2045-46	2041-42	-	2028-29 An additional 20,500 MW REZ network capacity required by 2049-50

# Mid-North development is required in most scenarios, with optimal delivery in 2029 under a high demand outlook



Mid-North expansion required in Step Change scenario:

- Southern component 2034
- Northern component 2042

Step Change experiences strong growth after 2035, doubling over 15 years to 2050

- Growth averages 1.8% to 2035 and 4.6% after

Higher demand scenario requires earlier development by 2029

Rough project delivery timeframe is 4-6 years:

- Economic assessment: 12-18 months
- Funding approval: 3-9 months
- Design and contract execution: 12 months
- Construction: 24 months

# REZ expansion study by Energeia found the Mid-North REZ to be the top priority

REZ	Economic rank	Strategic rank	Composite rank
S3 Mid North SA	1	3	1
S2 Riverland	6	1	2
S5 Northern SA	8	1	3
S8 Eastern Eyre Peninsula	4	5	4
S1 South East SA	2	8	5
S6 Leigh Creek	4	6	5
O6 South East SA Coast	3	9	7
S4 Yorke Peninsula	6	7	8
S7 Roxby Downs	10	4	9
S9 Western Eyre Peninsula	9	10	10

ElectraNet was asked by SA Government to prioritise REZ expansion in South Australia

ElectraNet engaged Energeia to undertake the work

Energeia found the mid-north should be the top priority

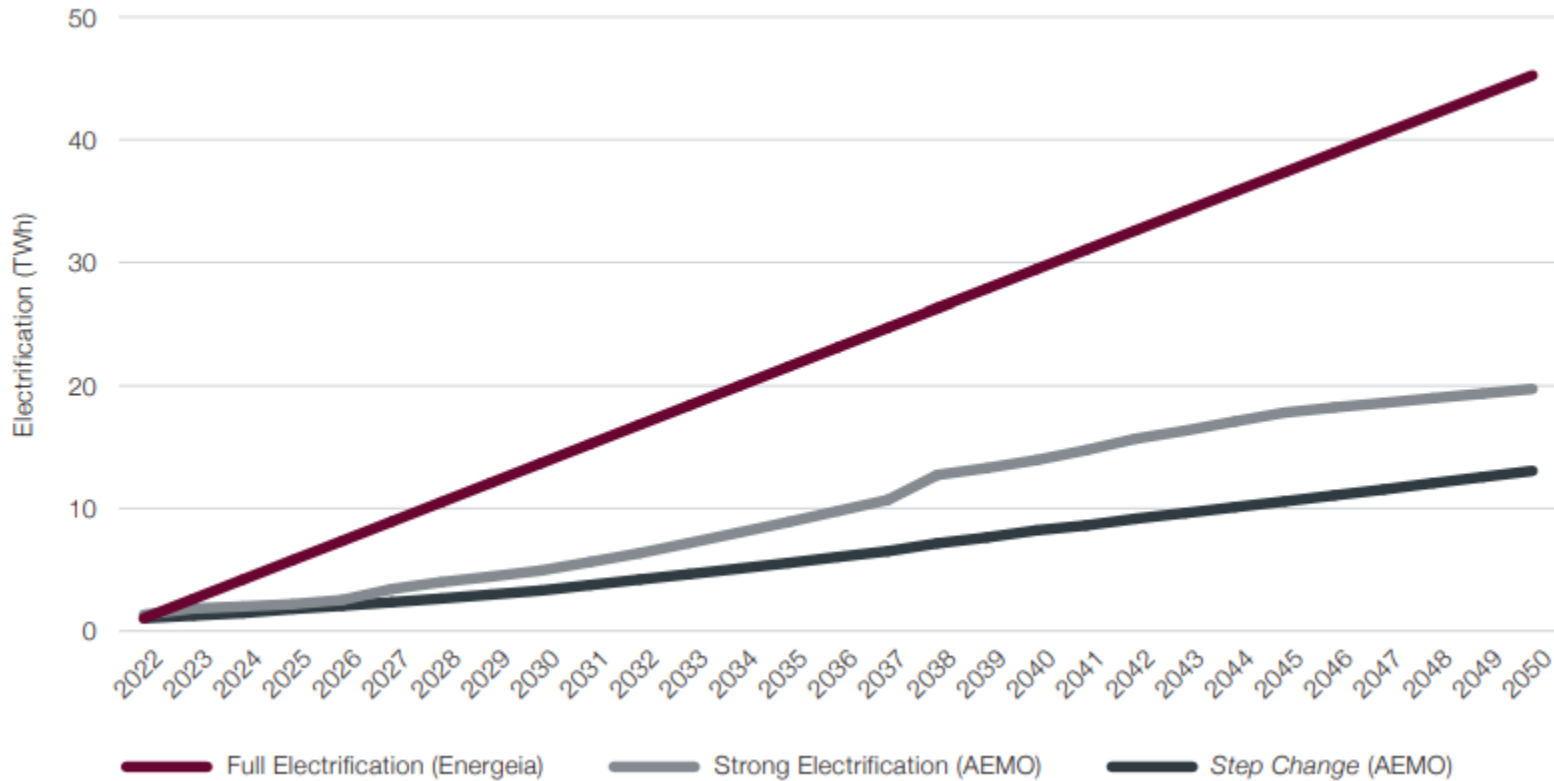
- Ease of development
- Quality of resource
- Greatest strategic value for the community

While Leigh Creek REZ is flagged in the ISP, we have ruled this out on environmental grounds.

**What are CAP's views on Leigh Creek?**

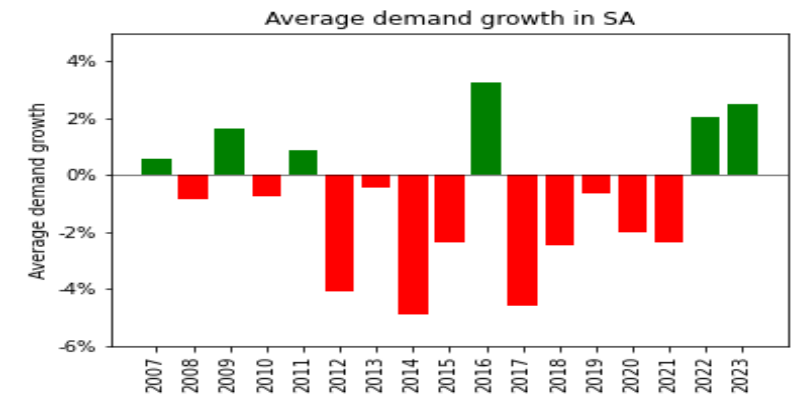


# Energeia found that electrification may be much higher and faster than AEMO's 2022 forecast



Some evidence is emerging that energy growth is also returning (AEMO MMS demands)

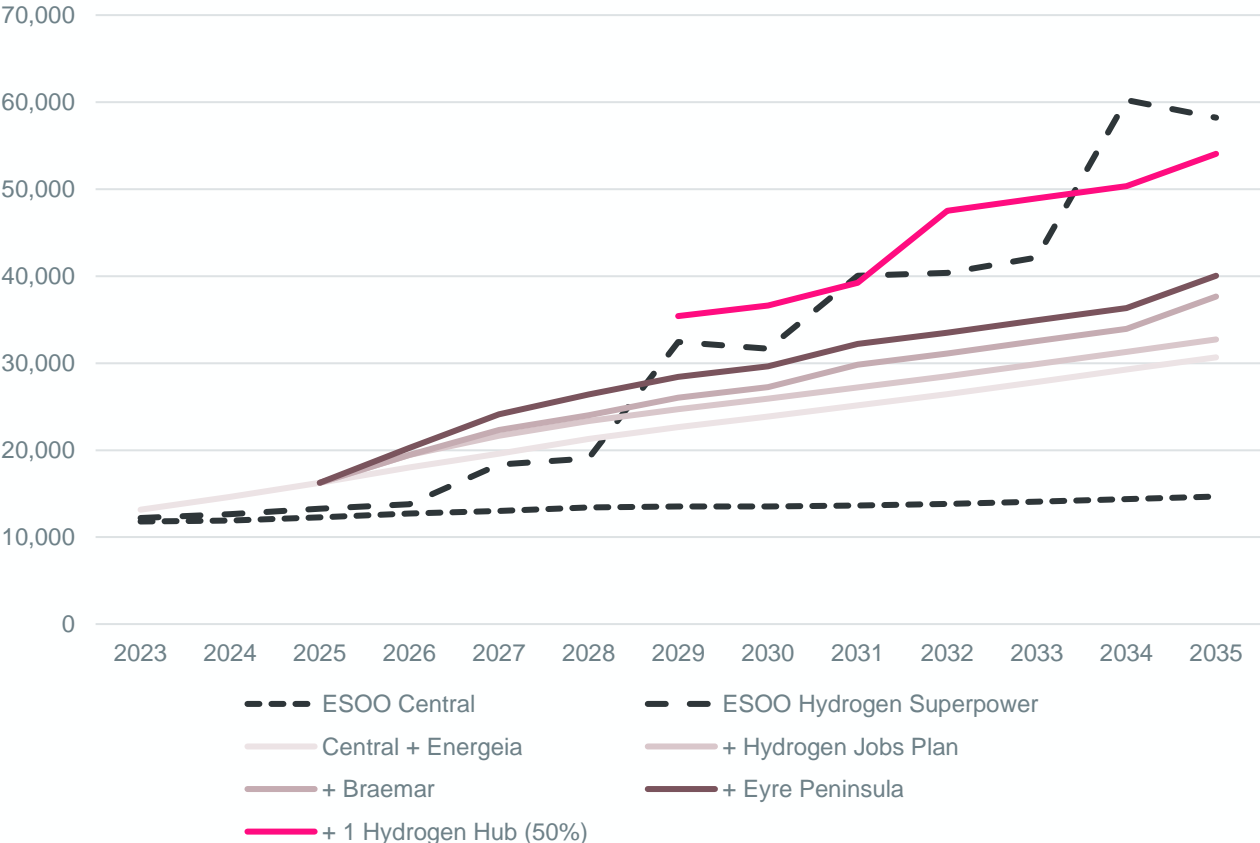
- We are doing more work with AEMO to verify this trend



Is this what CAP members are seeing?

# ElectraNet is experiencing high levels of interest from large loads

Plausible growth scenarios



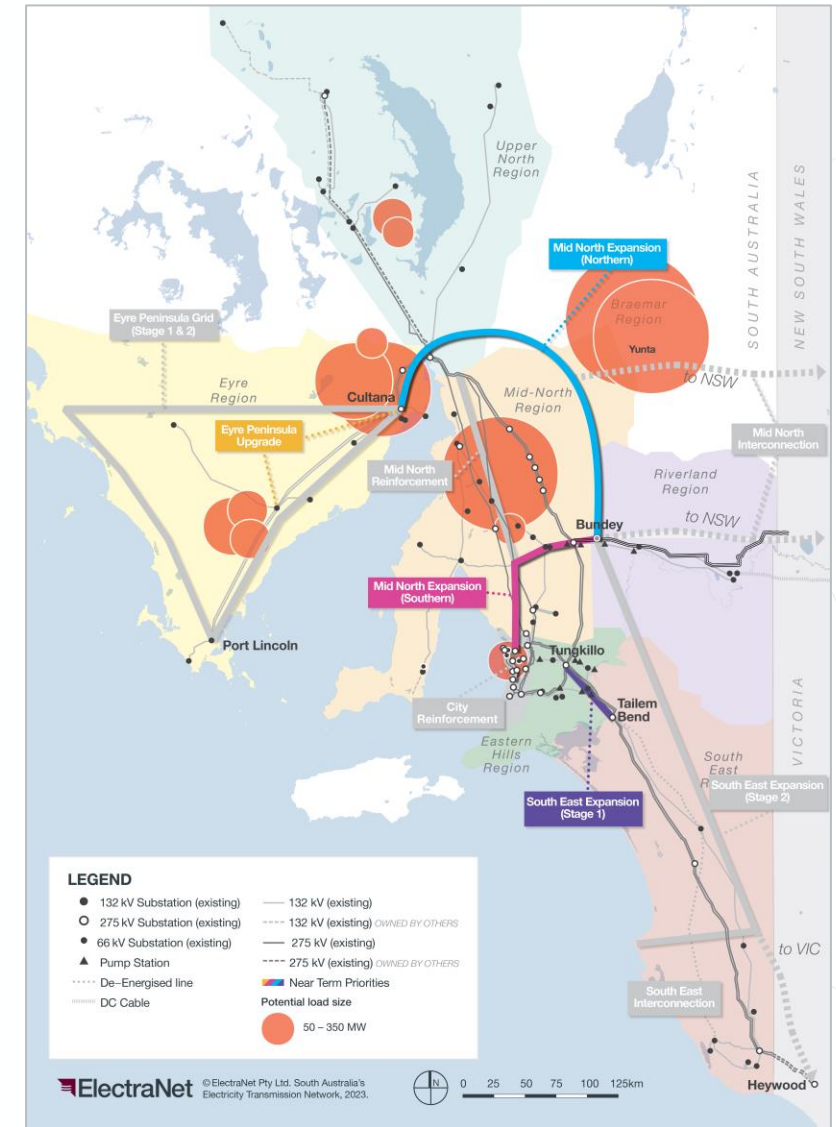
Massive potential growth driven by 3 factors

1. Electrification – achieving a net zero carbon emission economy
2. Large industrial load growth (separate from electrification)
  - 2,000 MW engaging with ElectraNet
3. Hydrogen
  - Magnetite beneficiation (value adding)
  - Energy exports via hydrogen hubs

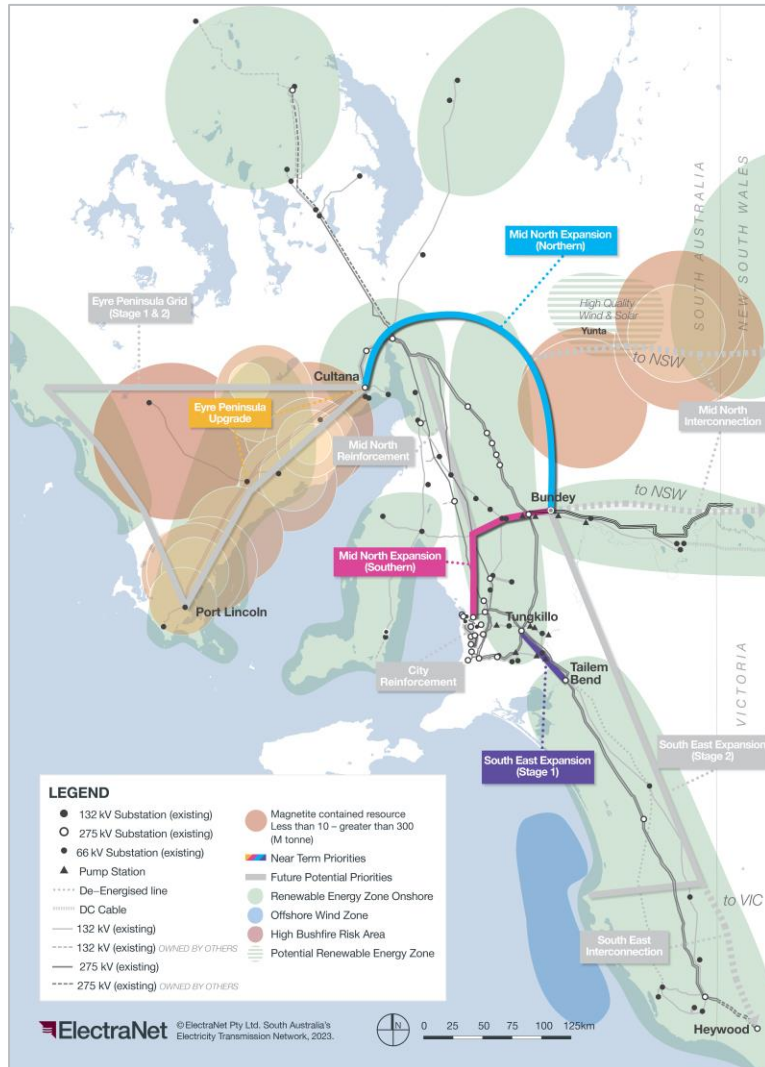
# We have developed the options further to enable industrial load growth based on active customer interest

## Potential large industrial customer load growth

Customer	Load (MW)	Load Type	Region	Status
Customer 1	100	Mine	Upper North	Advanced activity, connection increase, enquiry or application
Customer 2	50	Electrification	Mid North	
Customer 3	<50	Electrification	Whyalla	
Customer 4	300	Hydrogen	Mid North	
Customer 5	150	Data Centre	Eyre Peninsula	
Customer 6	<100	Processing Facility	Metropolitan	
Customer 7	350	Mine	Braemar	Engagement on connection options
Customer 8	100	Mine	Eyre Peninsula	
SA Government	250	Hydrogen	Whyalla	
Customer 10	300	Mine	Braemar	
Customer 11	<50	Processing Facility	Upper North	
Customer 12	200	Electrification	Whyalla	
SA Government	100	Desalination	Eyre Peninsula	
<b>TOTAL</b>	<b>2,000</b>			



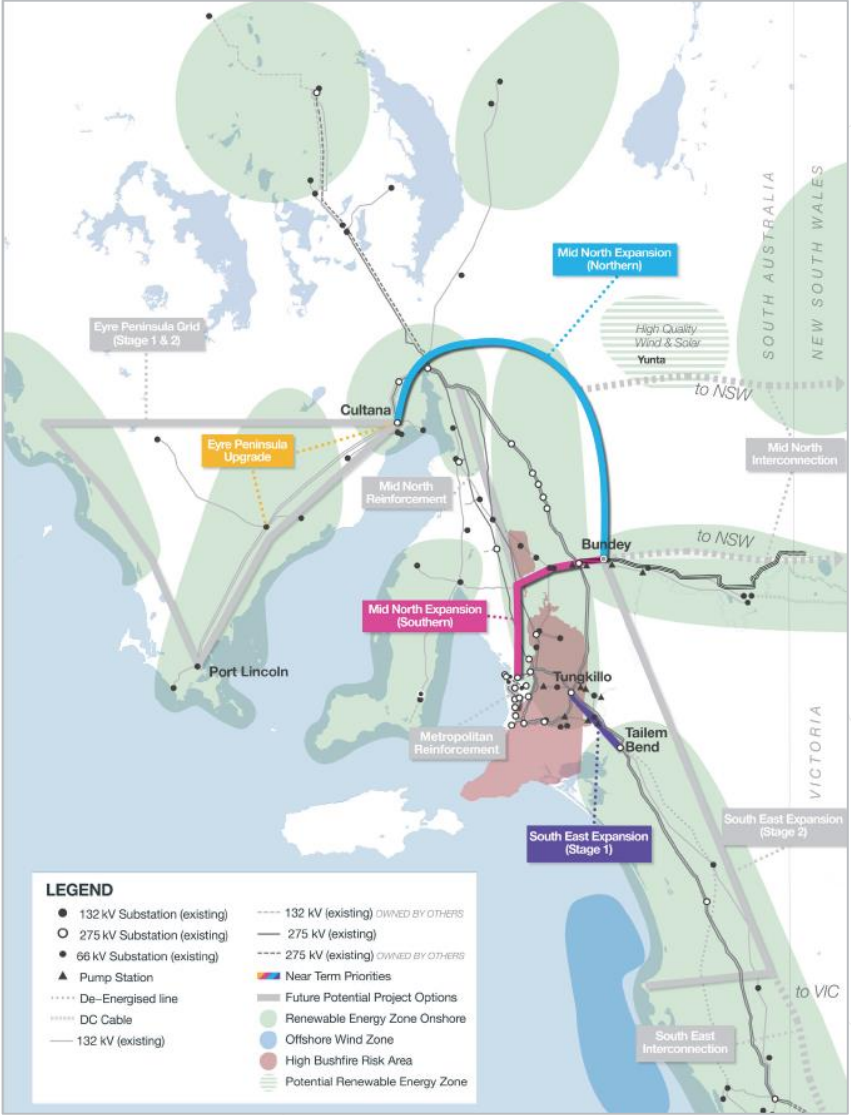
# Potential magnetite mining is also enabled by an expansion of the Mid-North transmission network



- SA Government magnetite strategy has a goal of 50 million tonnes production per annum of magnetite products in South Australia by 2030
- With the Department of Energy and Mines Identified in the order of 1.6 GW of electrical mining load potential in South Australia
- Opportunities for further value add with green steel

# Near-term priorities

Project Option	Description	Customer Benefits
South East Expansion (Stage 1) \$30-60m	String the vacant 275 kV circuit between Taillem Bend and Tungkillo	Unlock potential for low-cost renewables near Taillem Bend
Eyre Peninsula Upgrade \$60-90m	Upgrade the Cultana to Yadnarie transmission lines from 132 kV to 275 kV	Low-cost renewable generation on the Eyre Peninsula to supply proposed Hydrogen facilities near Whyalla Connect large industrial load customers
Mid North Expansion (Southern) ~150km ~\$670m (AEMO)	Construct new high-capacity lines from Bunday to Para or to a new site between Parafield Gardens West and Torrens Island	Unlocking potential for low-cost renewables Improve geographical diversification to supply Adelaide as dispatchable gas generation retires and increasing bushfire risk
Mid North Expansion (Northern) ~400km ~\$1,300m (AEMO)	Construct new high capacity lines between Bunday and Cultana	Unlock development wind and solar near Yunta Unlock development of renewables in the Mid North SA, Northern SA, and Eastern Eyre Peninsula REZs Support magnetite mining development in two provinces Support emerging hydrogen hubs on Eyre Peninsula (e.g. at Port Bonython or Cape Hardy)

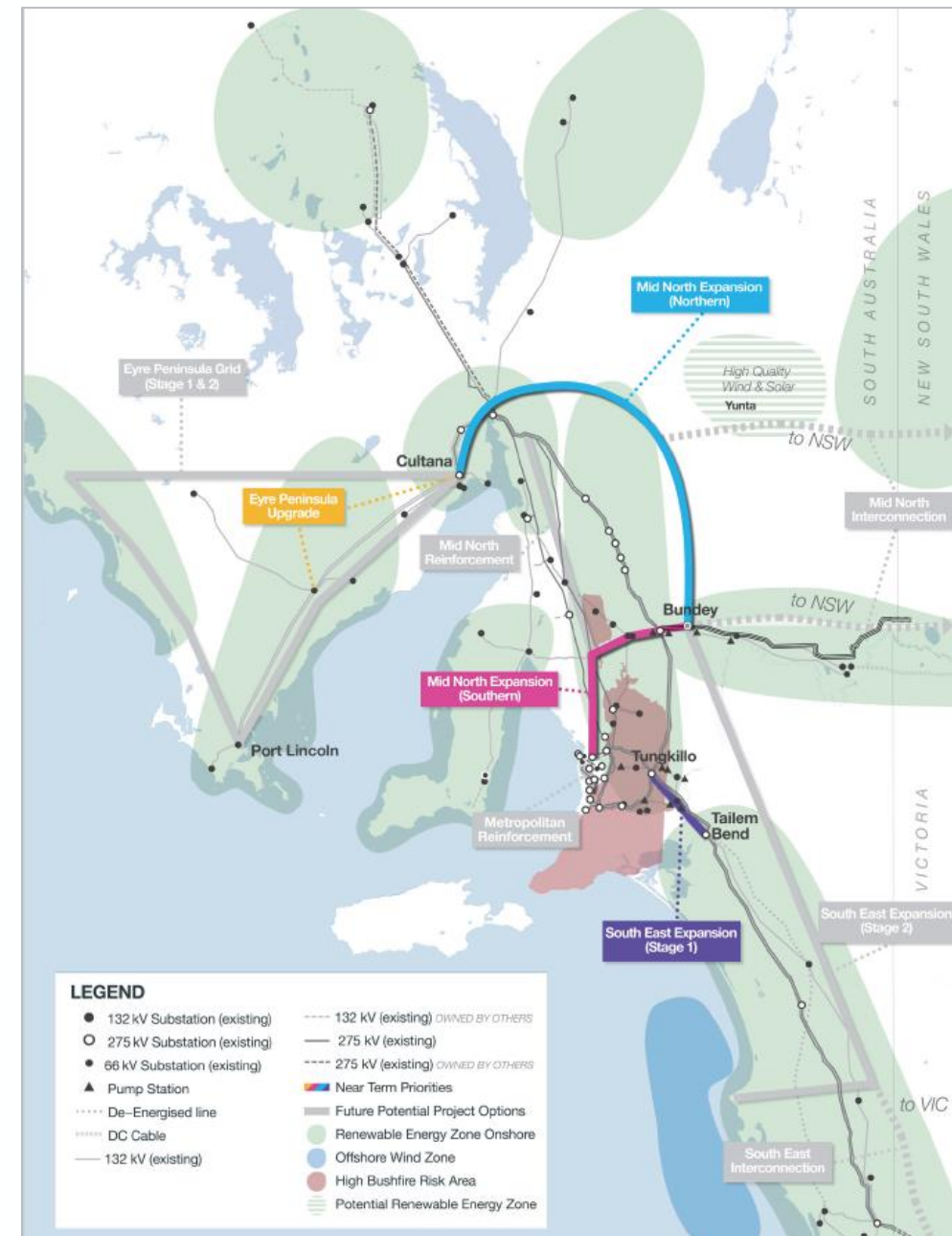




# Previous feedback from CAP

Have these questions been answered?

- Impact of rooftop solar exports on the transmission network
- Projected EV demand can be met by localised generation
- Draft IASR scenarios
- Hydrogen / transmission intersection



# Demand Management Innovation Allowance Mechanism (DMIAM)

**Simon Appleby**  
Head of Corporate Affairs

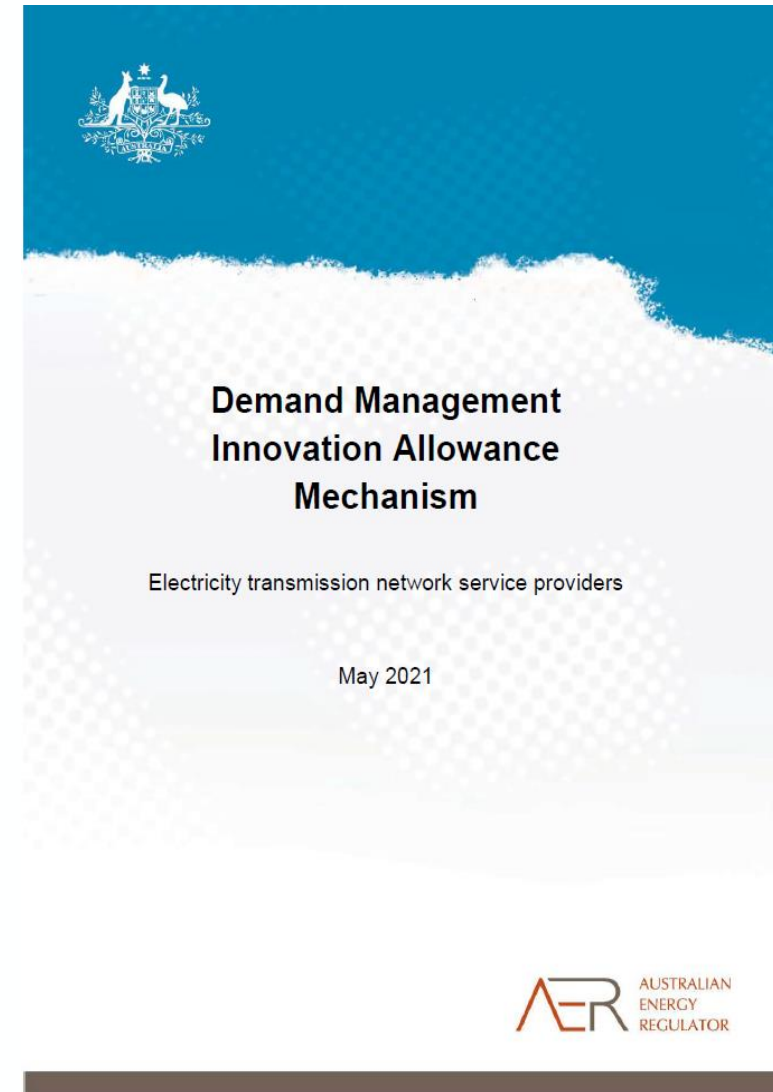
# Demand Management Innovation Allowance Mechanism

**Purpose** – support innovative demand management projects and programs with potential to reduce long-term network costs and prices for customers

**Funding** – allowance of \$2.2m (0.1% of revenue) over 5 years plus \$200k for independent assessment

**Criteria** – must be innovative, increase demand management capability, reduce long-term network costs, share learnings

- With the CAP's support, ElectraNet included the DMIAM in its Revenue Proposal
- This was approved by the AER for the 5-year regulatory period
- ElectraNet proposes to bring forward suitable projects progressively to the CAP for endorsement over this period





# Potential Initiatives

Potential Initiative	Description	Potential Benefit
EV-to-Grid integration	Two case studies exploring options to enable EVs to contribute to grid needs	Reduce network and generation investment needed for EVs
Participation in Emergency System Management	Harnessing Customer Energy Resources for emergency management	Minimise customer outages during emergency conditions
Regional demand smoothing	Use of Customer Energy Resources to offset intermittent generation variability	Increase export capability from South Australia
Intermittent generation following	Shifting demand to follow intermittent generation output patterns	More efficient operation of the network and the market
Locational trough filling	Increasing local demand at times of low or reverse power flow	Increase embedded generation and avoid network investment
Locational peak lopping	Reducing local demand at times of high power flow	Defer network replacement investment

# Proposed Approach to DMIAM

ElectraNet and Consumer Advisory Panel

## ElectraNet

- Identify proposed projects
- Undertake approved projects
- Report and publish results

Identify potential research projects / programs

Conduct research project / program

Annual compliance reporting

Proposal

Reporting

## CAP

- Endorse proposed projects
- Review outcomes

Review & endorse specific research project / program

Endorsement

Share outcomes of research project / program

## AER

- Assess compliance
- Approve expenditure

Annual Approval Process

# Other Business

**Chris Hanna,**  
Senior Adviser Government & Stakeholder Relations

# Forward Meeting Schedule

## Future Meetings 2023

- 24 August 2023 (9:30am to 12:30pm)
- 9 November 2023 (9:30am to 12:30pm)

Thank You

