

Consumer Advisory Panel Meeting 32

Thursday, 22 February 2024

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
2. General updates and action items
 - Meeting #31 - 20 November 2023
 - Workshop - 18 January 2024
 - ISP Submission Update & Acknowledgement
 - Inertia Service Update
3. Annual Planning Cycle & Key Priorities
4. Energy Consumers Australia Forum
5. Other Business
 - Business SA Survey Results
 - Victorian Power Outage
6. CAP Only Session



Consumer Advisory Panel 2024

 **Business SA**
Chamber of Commerce
and Industry South Australia

 **SACOSS**
South Australian Council
of Social Service

 **EUAA**
Energy Users Association of Australia

 **CIT**

 **Ai**
GROUP

 **THE UNIVERSITY**
of ADELAIDE

Craig Wilkins
*Individual Consumer
Representative*

 **South
Australian
Chamber
Of
Mines &
Energy**

 **PPSA** **PRIMARY
PRODUCERS
SA**

Mark Henley
*Individual Consumer
Representative*

Action Items & General Update

#	Action Item	Status
1	ElectraNet to circulate the updated CAP meeting schedule proposed for 2024	Complete
2	ElectraNet to provide the Board's response to the CAP on the Annual Report	Complete
3	ElectraNet to arrange a time for a deep dive or workshop on system strength for interested CAP Members (scheduled 18 January 2024)	Complete
4	ElectraNet to arrange a workshop to explore the outcomes of AEMO's draft ISP and next steps with interested CAP Members (scheduled 18 January 2024)	Complete
5	Business SA would like information about the supply risk and potential for outages in the coming summer	In progress
6	Reconciliation Action Plan to be sent to CAP Members	Complete – hard copies on table

Inertia services update

Background

- AEMO sets the level of inertia services needed to protect SA when 'islanded'
- Service costs are 'passed through'
- The CAP advised us to minimise customer price volatility by using our best estimate of these costs

Update

- In December AEMO reduced the inertia required from 360 MWs to 50 MWs
- This reduces expected annual costs from over \$8m to around \$2m (still under negotiation)
- We have applied to the AER to pass these costs back to customers in 2024-25

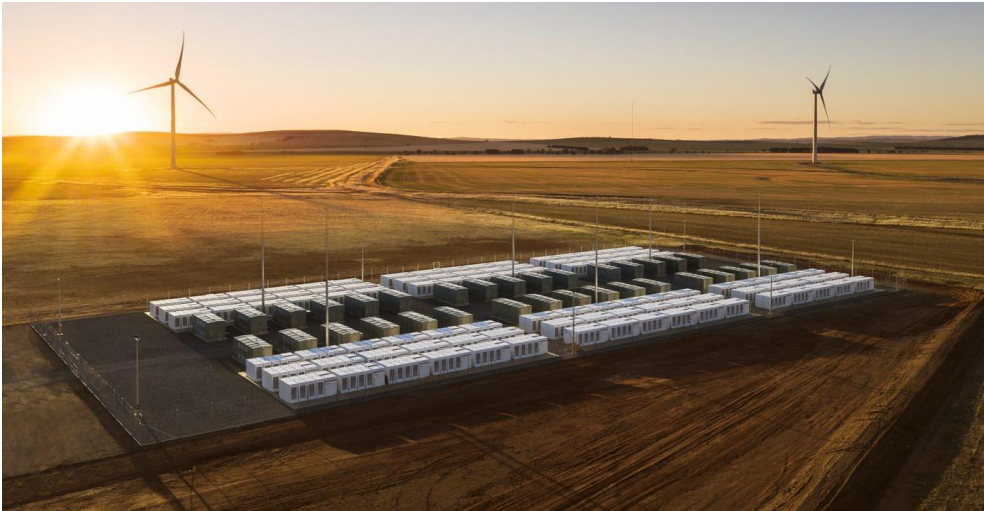
What is inertia?

Inertia helps the power system withstand disturbances while maintaining stable system frequency

Without adequate inertia:

- Generators may trip after disturbances
- Limits may be required on network flows

This may result in cascade failures and interruptions to customers



3. Annual Planning Cycle & Key Priorities

Chris Hanna

External Relations Lead

&

Rainer Korte

Chief Operating Officer

Annual planning cycle and key priorities

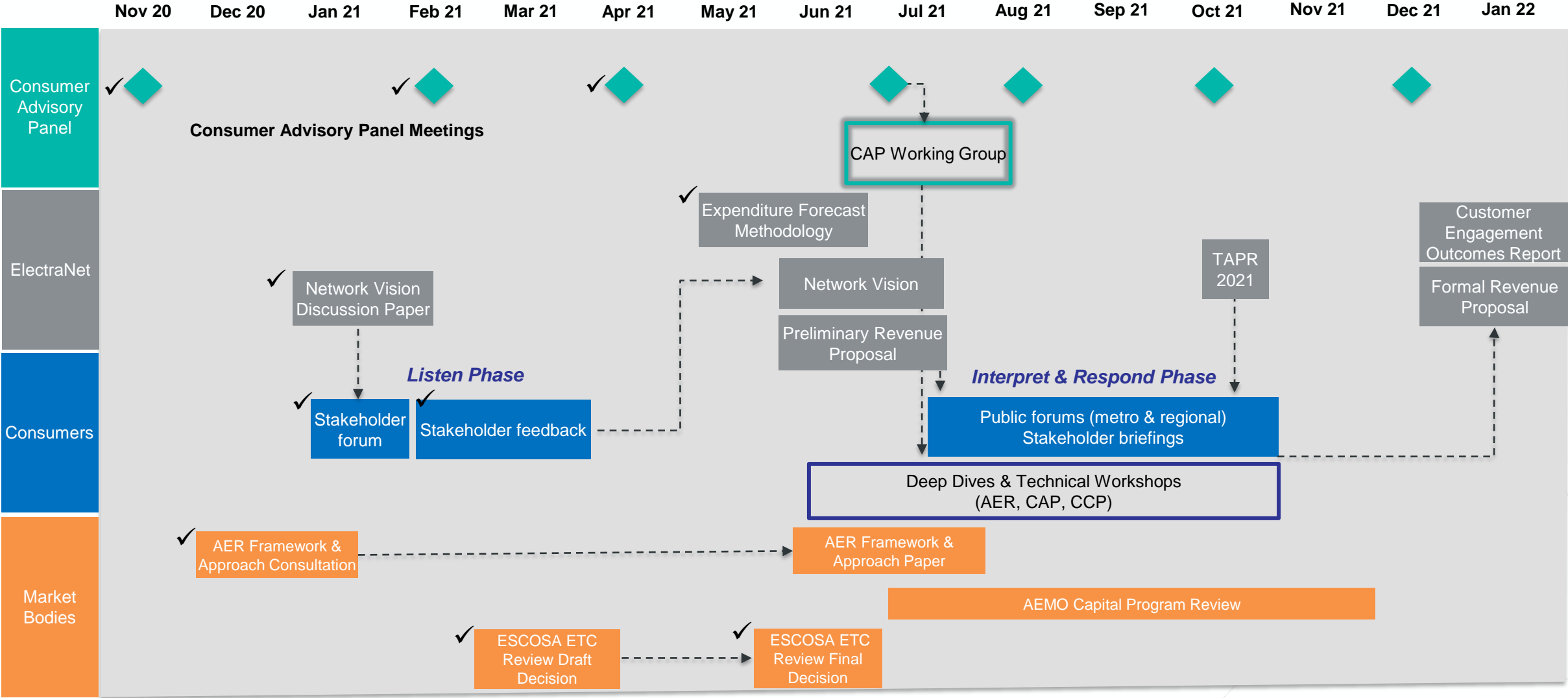
Purpose

- To engage with the CAP on the key **milestones and activities** planned for the next 12 months and seek input on the areas of greatest interest to the CAP
- To introduce the **Network Transition Strategy** we plan to launch in the coming weeks, seek any feedback and identify issues of greatest interest to the CAP
- To provide an update on our **capital program**, including key changes and priorities under the Regulatory Investment Test for Transmission (RIT-T) and explore areas for further engagement

Questions for the CAP

1. What are the highest priority areas you would like to engage with us on over the next 12 months?
2. How would you like to engage with us on these issues?

Early Engagement Approach



Engagement Improvement Opportunity

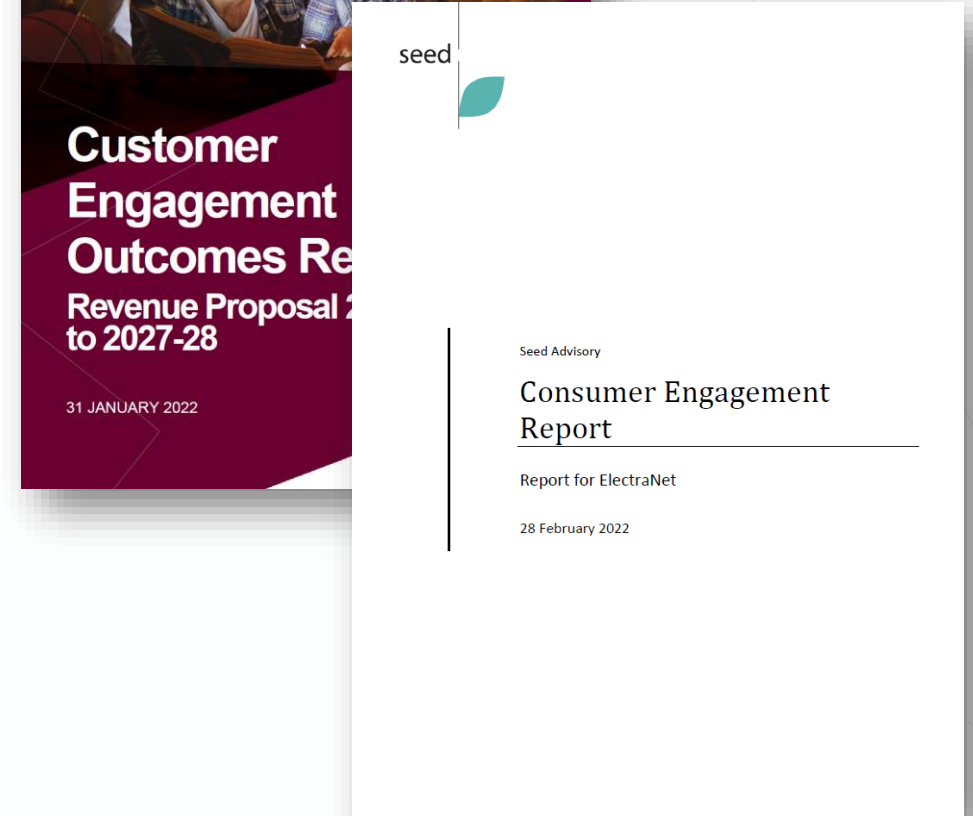
Opportunity:

“Ongoing engagement of the CAP in our annual planning process with the introduction of twice-yearly sessions in say March and September that would provide insight and opportunity for input on the development of network and asset plans, including the Transmission Annual Planning Report.”

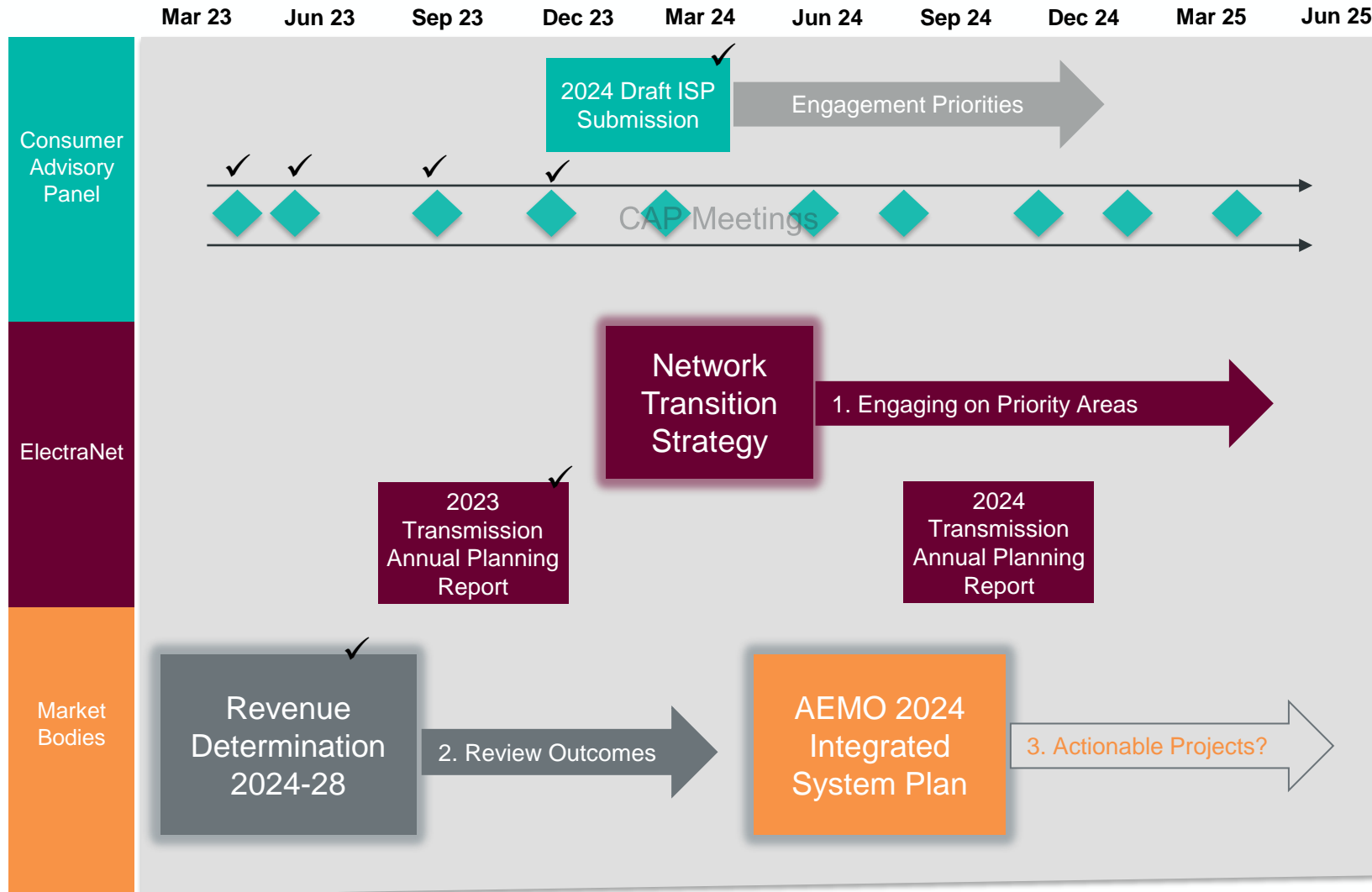
CAP Report:

“This learning has strong support, including suggestions that the CAP is involved with twice yearly considerations of the development of network and asset plans, including the Transmission Annual Planning Report (TAPR).”

“Other opportunities for improvement that we recommend for consideration include a **bolder and more active development** of a network direction and strategy that is developed in conjunction with stakeholders and can be a clear guiding document to aid in the development of future revenue proposals.”



Annual Planning Process - Engagement



Revenue Proposal

- 5-yearly process
- Determines the maximum allowable revenue ElectraNet can receive from customers

Transmission annual Planning Report (TAPR)

Public report with 10-year horizon that provides information on the current capacity and emerging limitations of the South Australian transmission network

Network Transition Strategy

The Network Transition Strategy sets out the specific actions required to maintain the reliability, security and operability of the network to deliver the clean energy transition (replaces the Network Vision)

CAP Engagement Priorities – Next 12 Months

Network Transition Strategy

- Priority Areas:
 - Energy Reliability,
 - Power System Security and Resilience
 - Operability
- Influence current work program and the upcoming Revenue Proposal (2029-2034)

Capital Work Program

- Ongoing delivery of Capital Program 2024-28
- New Projects / RIT-Ts

Actionable ISP Projects

(Subject to ISP Outcomes)

- Identified Need → Investigate solutions
- Commence RIT-T
- Social Licence /ESG/ Landholder Engagement (BAU + Major Projects)
- Customer Price Impacts

Potential Consumer Engagement Priorities

Network Transition Strategy

- Our vision and South Australian economic growth rely upon the network operating safely and securely to deliver reliable and sustainable electricity transmission services through the transition to 100% renewable energy
- The Network Transition Strategy is designed to achieve this outcome

Our Vision

Energising South Australia's clean energy future

Our Purpose

We are leaders in the clean energy transition, delivering reliable and sustainable electricity transmission services and valued customer connections.

Network Transition Strategy

Sets out the actions required to enable the clean energy transition by ensuring South Australia's transmission network continues to operate safely and securely to deliver reliable, affordable and sustainable electricity supply

Energy Reliability

Plan and deliver efficient transmission infrastructure to connect new renewable generation and storage with customer loads

Power System Security and Resilience

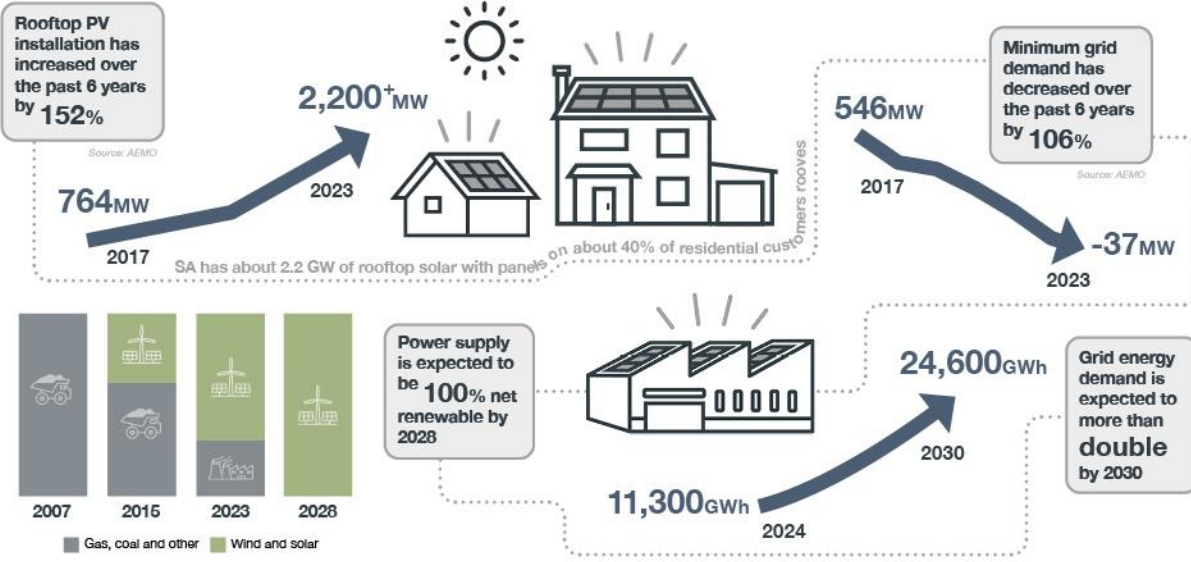
Plan and deliver new investments and contracted system services to maintain network security and resilience during the energy transition

Operability

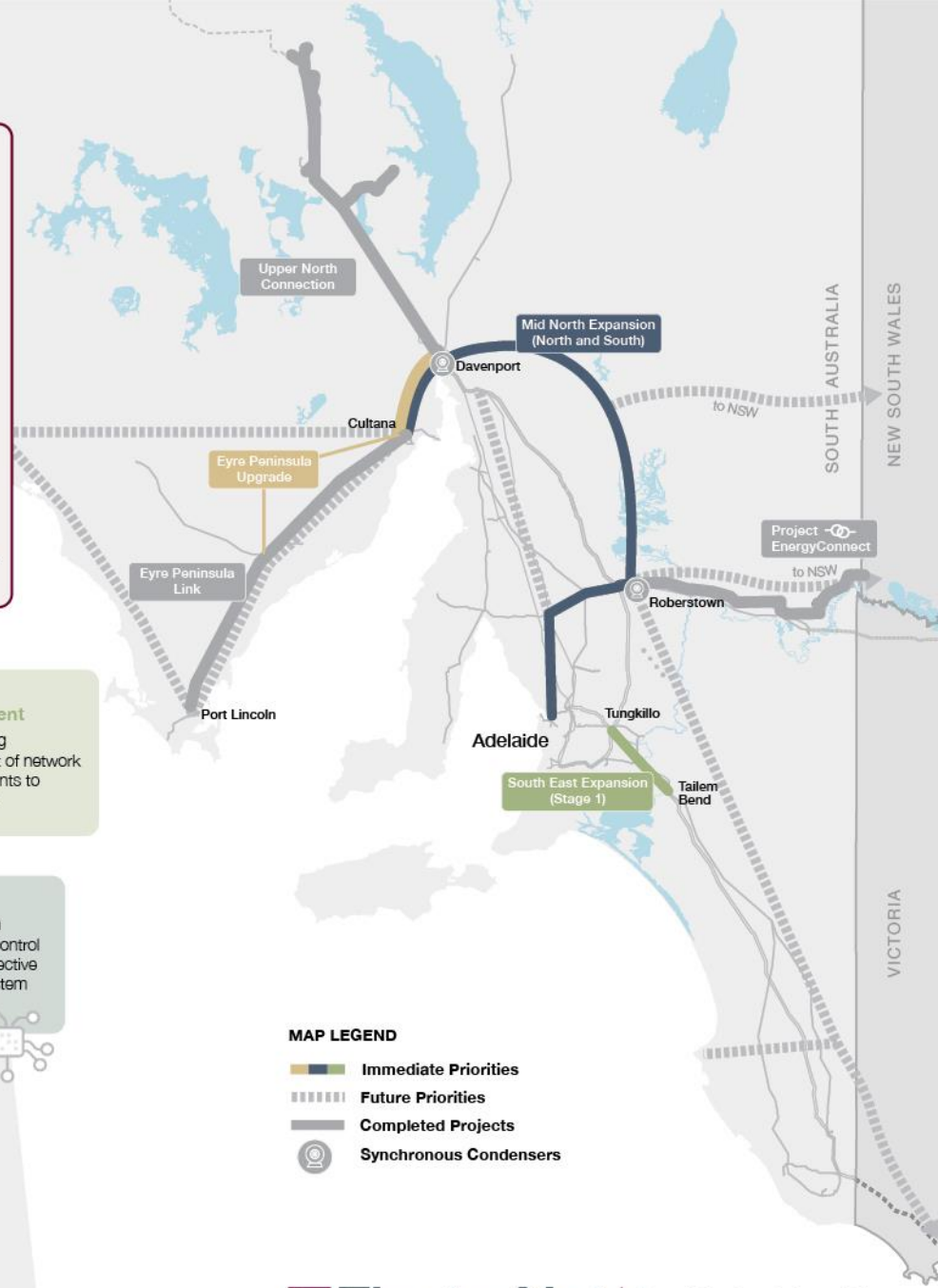
Manage risk in an increasingly complex operating environment by uplifting network planning and operations capability, systems and tools

Network Transition Strategy

Energising South Australia's Clean Energy Future



- ### Challenges
- Unlocking demand growth
 - Supply variability
 - System security services
 - Voltage control
 - Protection adequacy
 - Increasing complexity and risk
 - Network planning and operations
 - Harnessing customer energy resources
 - Managing non-credible contingencies



Energy Reliability

- Eyre Peninsula Link**
Delivered in 2023 providing improved reliability and unlocking future growth on the Eyre Peninsula
- Project EnergyConnect**
Completed in SA in 2023 to improve reliability, enable more renewable energy and reduce customers prices
- Pursuing priority network developments**
 - Mid-North (Southern and Northern) Expansion
 - South-East Expansion
 - Eyre Peninsula upgrade
- Asset Management**
Strengthening management of network critical elements to manage risk

Power System Security and Resilience

- ElectraNet synchronous condensers**
Installed four large synchronous condensers to meet minimum inertia and system strength requirements
- Contracted additional inertia support services for when South Australia is islanded from the rest of the NEM
- Upgraded the System Integrity Protection Scheme (SIPS) to the Wide Area Protection Scheme (WAPS)
- Implemented an automated Voltage Control Scheme (VCS) at Davenport
- System Strength**
Planning and developing sufficient forward looking system strength and inertia through RIT-T engagement
- Voltage Control**
Developing efficient solutions to ensure adequate voltage control through RIT-T engagement
- Protection**
Ensuring system protection and control schemes are effective for changing system conditions

Operability

- Control Room Capability**
Replaced Energy Management System to deliver improved capability
- Wide Area Monitoring System**
Implementing WAMS for enhanced monitoring of power system oscillations in control room
- Network planning and operations capability uplift**
 - Realtime operations
 - Near real-time planning
 - Outage planning
 - Longer-term planning
- Network Operations Systems**
Implementing systems capability uplift to manage increasing complexity and risk

Energy Reliability

A capable transmission network



What we have done

- Delivered **Eyre Peninsula Link**, providing improved reliability and unlocking future growth on the Eyre Peninsula
- Completed construction of **Project EnergyConnect** in SA, which will strengthen the grid, unlock renewables and drive price savings
- Delivered the **Upper North project**, a significant private network, that unlocks mining and other growth opportunities in the region



What we are doing

- Pursuing **priority projects** for a least-cost transition to net zero:
 - Mid-North Expansion (South and North)
 - South-East Expansion
 - Eyre Peninsula upgrade
- Increasing our planning resources and strategic **network planning**
- Upholding **sound asset management practices** (plan, build, operate and maintain) with stronger focus on **network critical assets** to maintain reliability
- Building further **delivery capability** and tackling supply chain challenges



Sound asset management practices

Asset Management Objectives developed in consultation with the CAP guide asset management activities and decision-making



Safety of People

Ensure the safety of staff, contractors, and the public.



Protect the Environment

Ensure the environmental impact of network operations are minimised.



Affordability and Reliability

Reduce the overall cost of electricity to customers by removing network constraints, operating the network, and delivering our capital and maintenance works as efficiently as possible, while maintaining safety and reliability.



Power System Security and Resilience

Ensure the network is resilient and operates within acceptable parameters in the face of electrical, physical, or cyber disruption, and continues to enable the transition to a low carbon emissions future.

Upholding **sound asset management practices** with a stronger focus on **network critical assets**



Essential at a time of rapid change, to **stay focussed on managing underlying network and asset risk** to maximise value and maintain the performance of the transmission network

Power System Security/ Resilience

A secure and resilient power system



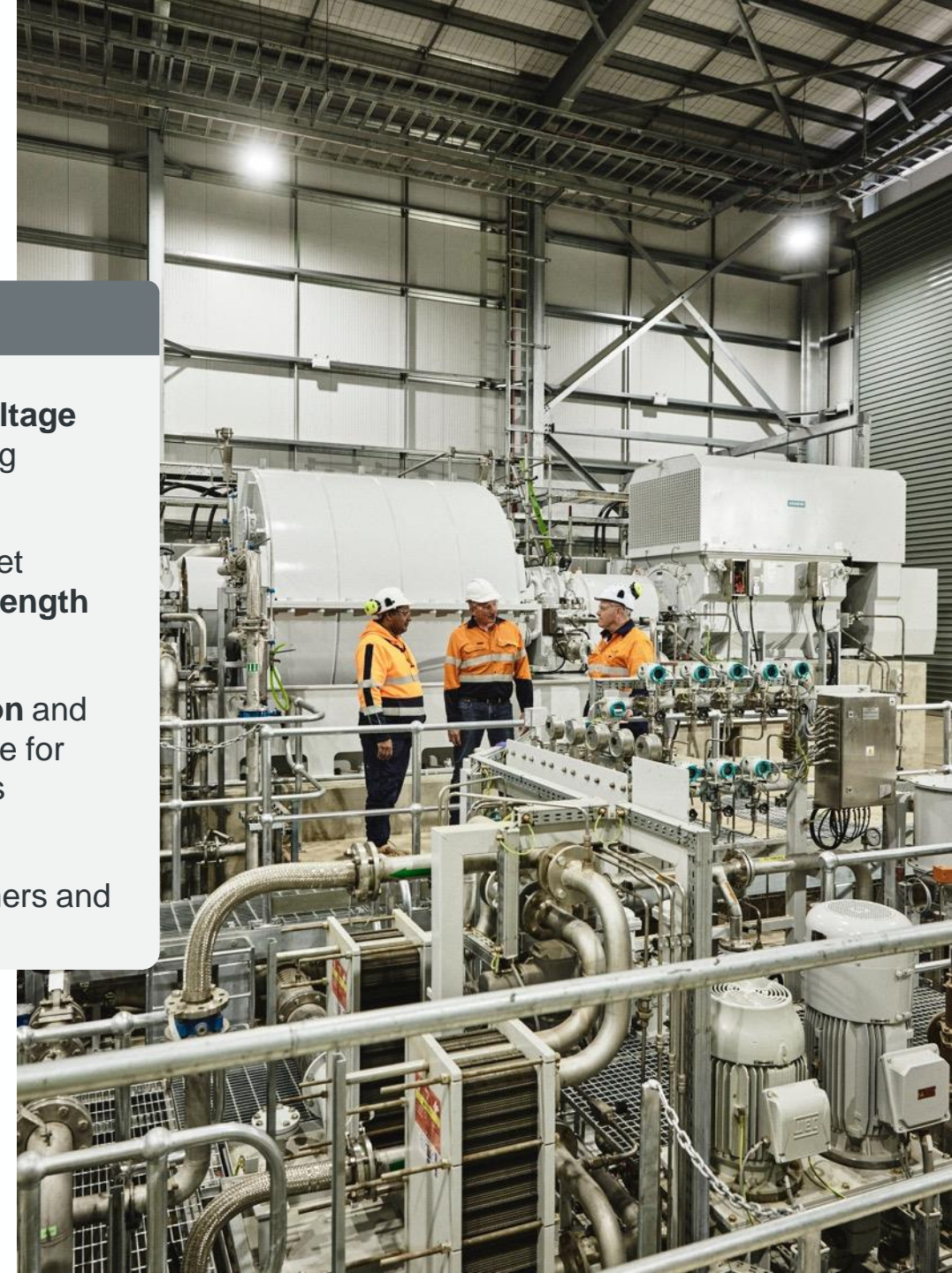
What we have done

- Installed four large **synchronous condensers** to meet minimum inertia and system strength requirements
- Procured **inertia support** services to protect South Australia when islanded from the rest of the NEM
- Upgraded the System Integrity **Protection Scheme** to a Wide Area Protection Scheme
- Determined minimum **synchronous generator** requirements through detailed studies with AEMO



What we are doing

- Developing solutions for **voltage control** across the changing network
- Developing solutions to meet forward-looking **system strength** requirements
- Ensuring **system protection** and control systems are effective for changing system conditions
- Improving **connection arrangements** with customers and the distribution network



Operability

Manage increasing system complexity and risk



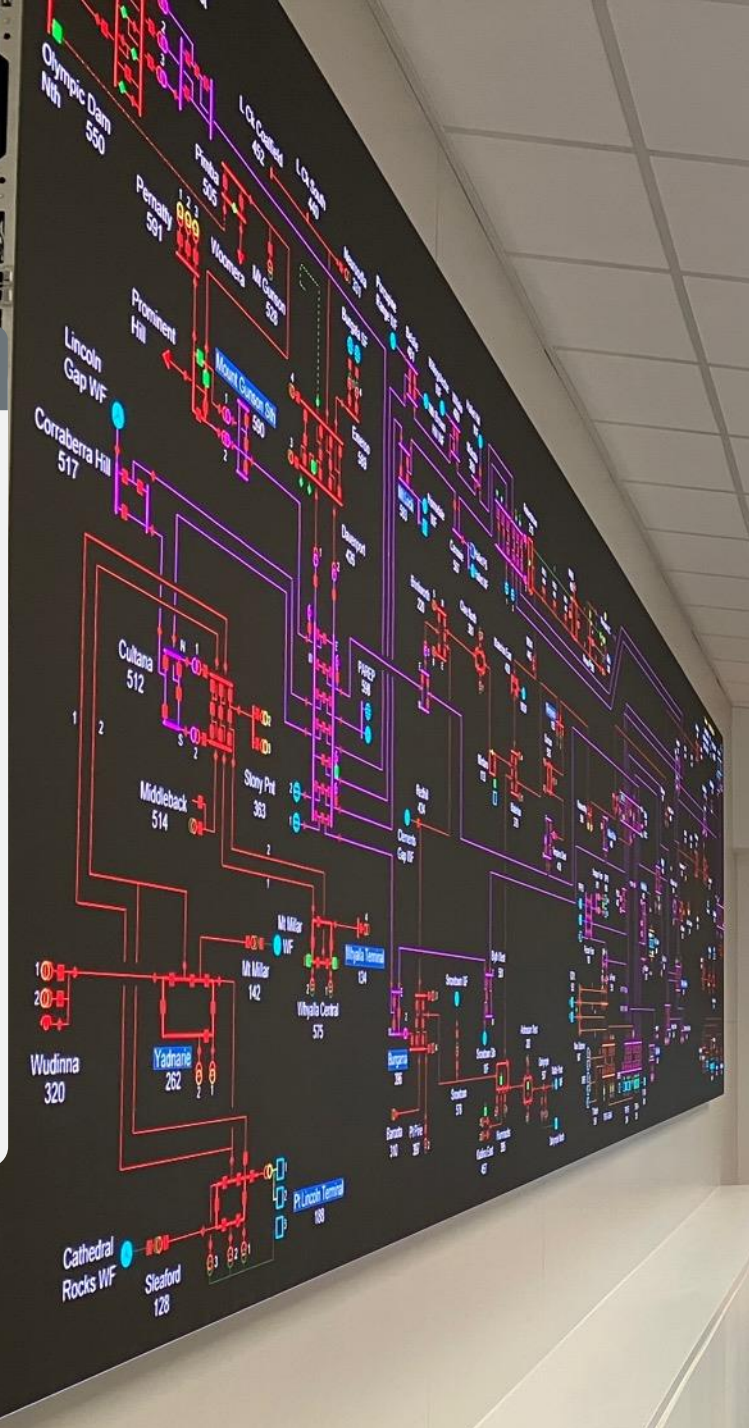
What we have done

- Established a new **Transmission Control Centre** and rebuilt the existing one for improved operation and to diversify risk
- Replaced the **Energy Management System** we use to operate the network
- Implementing a Wide Area **Monitoring System** for improved power system monitoring
- Conducted reviews of network **planning and operations** capability to meet future needs

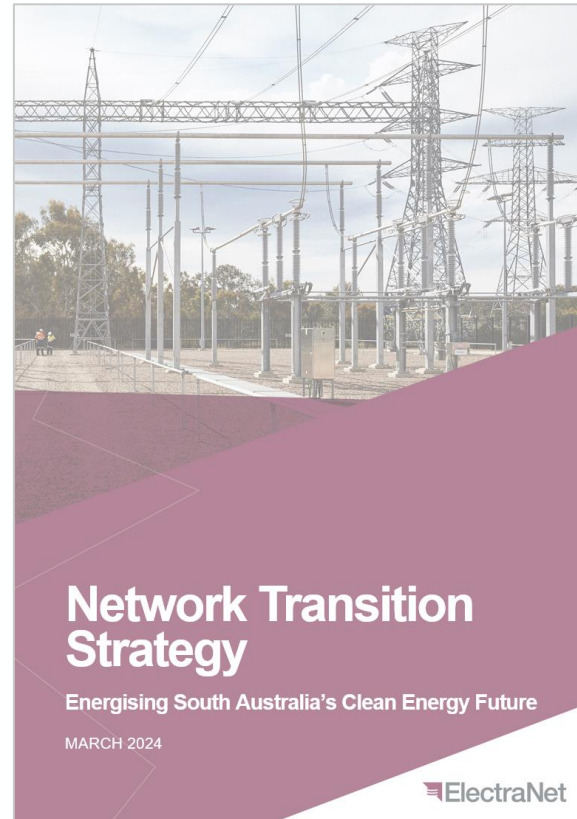
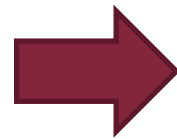
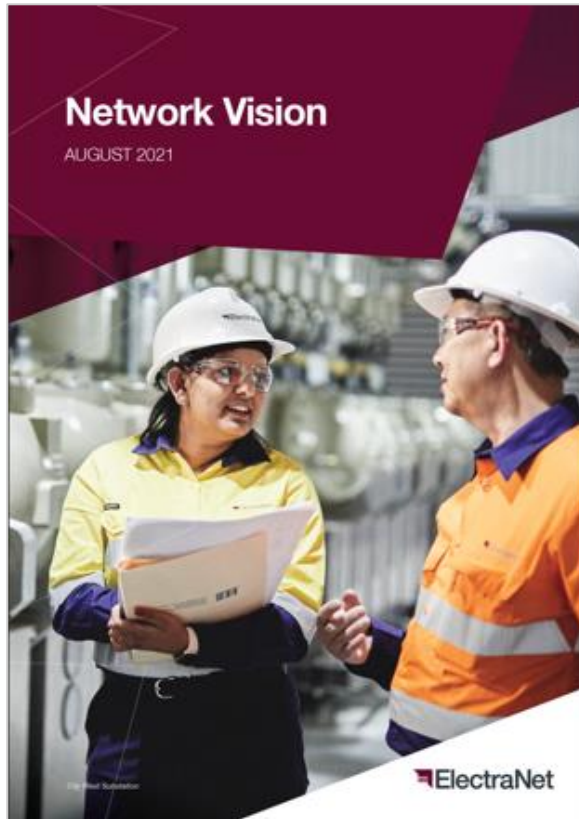


What we are doing

- Improving network **planning and operations** capabilities to manage increasing complexity and risk in:
 - Realtime operations
 - Near real-time planning
 - Outage planning
 - Longer-term planning
- Developing a roadmap of **operational systems** improvements
- Developing ability to deliver required **systems capability** enhancements
- Improving decision making through best practice **data analytics**



Connection to Network Vision



Network Transition Strategy

- Guides our plans and priorities to support the clean energy transition
- Provides a framework for ongoing engagement with customers and stakeholders on what needs to be done

The **Network Vision** was developed in collaboration with customers and stakeholders to help shape our directions and priorities over 5-10 years for the transmission network and inform our expenditure programs

The **Network Transition Strategy** sets out the actions required over the next 5-10 years and beyond to enable the clean energy transition and ensure South Australia's transmission network continues to operate safely and securely to deliver reliable, affordable and sustainable electricity supply

Capital Program 2024-2028 – major network projects

1 Project EnergyConnect – \$59m

This is the final phase of Project EnergyConnect, which will connect South Australia's transmission network to New South Wales, paving the way for reduced wholesale electricity prices due to increased competition and also enabling increases in the use of renewable generation in South Australia.

2 Hummocks to Ardrossan West Line Rebuild – \$32m

Our routine condition assessment indicates that the transmission line between Hummocks and Ardrossan West is in need of substantial work. The most efficient option is to replace the line.

5 Transmission Tower Anti-Climb Installation – \$22m

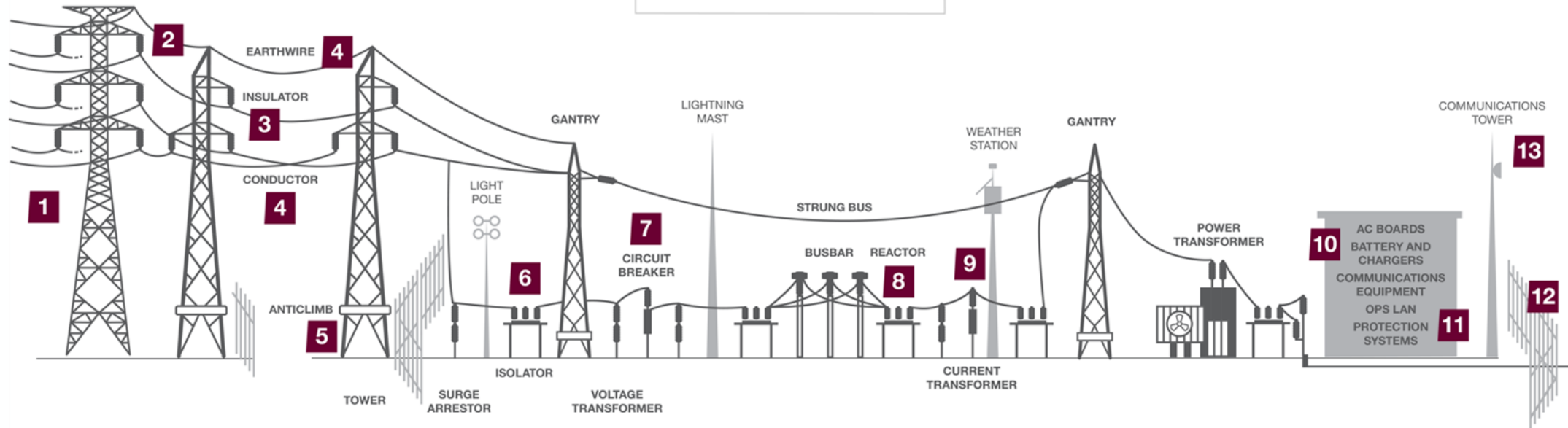
Many of our older transmission towers are not fitted with anti climb equipment that is now standard. For public safety reasons we propose to install this equipment on towers in locations most at risk of unauthorised climbing. We are taking a phased approach over multiple regulatory periods.

10 Substation Technology System Cybersecurity Uplift – \$16m

With the rising risk of cyber attack this project is to upgrade computer systems in our substations as part of a broader program of upgrading substation security.

11 Wide Area Monitoring Scheme – \$14m

We will install phasor measurement units at various sites around the network as AEMO requires. These devices will increase the speed with which we and AEMO receive network information and, in turn, allow us to manage the network more efficiently.



3 Transmission Line Insulation System Replacement – \$33m

4 Line Conductor and Earthwire Refurbishment – \$27m

6 Isolator Unit Asset Replacement – \$43m

7 Circuit Breakers Unit Asset Replacement – \$15m

9 Instrument Transformer Unit Asset Replacement – \$18m

We have several replacement programs to replace key asset components, based on asset condition and risk. These are staged asset replacement programs conducted over multiple regulatory periods.

8 Transmission Network Voltage Control – \$54m

Increased use of electronic devices and falling minimum demand levels due to increased use of solar is causing dynamic and static reactive power devices on the network to reach the limit of their ability to keep voltage levels within applicable limits. We propose to install several reactors to rectify this problem.

12 Substation Perimeter Intrusion and Motion Detection Security – \$12m

This project forms part of a broader program of improving the physical and cyber security of our substations.

13 Telecommunications Asset Replacement – \$11m

ElectraNet operates a substantial telecommunications network which is used to operate the transmission network efficiently and to ensure substations and other assets can be accessed for maintenance safely. This project is the next stage in the ongoing replacement of end of life assets in this broader network.

Capital projects update – Major RIT-Ts underway

Major RIT-T Projects	Description of identified need	RIT-T Status	Indicative cost (\$m)
Transmission Network Voltage Control	<p>Required to maintain adequate voltage control when network is lightly loaded from falling minimum demand levels driven by ongoing growth in rooftop solar output.</p> <p>Proposed solution is to install four additional reactors in the metro region and one in the South-East.</p>	<p>Responses to PADR closed on 15 Feb 2024</p> <p>One response received</p>	74
<p>Main Grid System Strength Support 2024-2028</p> <p>(contingent project)</p>	<p>Required to maintain adequate forward looking system strength based on AEMO forecast of growth in renewable generation inverter-based resources.</p> <p>Solution likely to be a combination of contracting with battery service providers and later investment in additional synchronous condensers.</p>	<p>EOI / PSCR published with responses due 30 Jan 2024 / 23 Feb 2024</p> <p>Seven submissions received.</p>	100
<p>Eyre Peninsula Upgrade</p> <p>(contingent project)</p>	<p>Required to upgrade the Eyre Peninsula transmission network to meet forecast increased demand.</p> <p>Solution will depend on the magnitude and location of new customer loads.</p>	<p>PSCR published with responses due by 19 Mar 2024</p>	100

RIT-T: Regulatory Investment Test for Transmission | PSCR: Project Specification Consultation Report | PADR: Project Assessment Draft Report
EOI: Expression of Interest

Capital projects update – New requirements

Project	Description of new requirement	Indicative Cost (\$m)
IMB300 CT Hazard Mitigation (including Torrens Island)	Replace high failure risk current transformers as a matter of urgency following several failures to mitigate both safety and operational risk	16
Northfield Transformer 7, 8 and 9 Interface Connection	Scope and cost increase driven by SA Power Networks requirements	15
Emergency Transmission Network Voltage Control	Required to manage forecast high voltages at times of low or negative grid demand by installing a 275 kV 50 Mvar reactor at Cherry Gardens substation	6
Tailem Bend Tower Emergency Replacement	Replace transmission tower on the Tailem Bend – South-East 275 kV transmission line that was damaged by a storm event on 12 November 2022	2
Davenport - Pimba Damaged Section Replacement	Replace transmission towers and infrastructure on a section of the Davenport-Pimba 132 kV transmission line damaged by a storm event on 20 December 2022	3
Wide Area Protection Scheme (WAPS)	Scope and cost increase driven by AEMO changing requirements	1

Capital projects update – New requirements (cont.)

Project	Description of new requirement	Indicative Cost (\$m)
Installation of Network Voltage Transient Monitoring Equipment	Install new equipment to detect transient voltage phenomena which may be contributing to plant failures	5
Lightning Protection Improvement 2024-2028	Replace arcing horns at older substations with surge arrestors to provide an increased level of lightning protection and reduce the risk of damage to plant	4
Tailem Bend 132/33 kV Transformer Upgrade	Replace two 132/33 kV, 25 MVA transformers with two 60 MVA transformers to meet SAPN forecast demand growth.	12
Tailem Bend to South East High-Risk Tower Foundation Replacements	Replace 12 transmission tower foundations to mitigate risk of failure under extreme weather conditions.	10

We are managing approx. \$75m of increased requirements within the AER capex allowance

4. Energy Consumers Australia Forum

Leanne Muffet

Independent Facilitator

&

Craig Wilkins

CAP Member



ECA FORESIGHTING FORUM REFLECTIONS

AUTHORED BY CRAIG WILKINS, ALCIA MARTIN AND LEANNE MUFFET

(FEBRUARY 2024)



PURPOSE OF PRESENTATION

Inform the CAP of key trends and findings from the conference that align with the CAP interests & acknowledge to ElectraNet

A NOTE OF THANKS to:

ElectraNet for supporting us to attend

THE ECA CONFERENCE AIM

To provide practical and tangible ways to think about the role you / 'we' can play in delivering an energy system that benefits consumers.

Context:

- Energy system is undergoing accelerated and significant change
- Big push / pull to transition to renewables
- Growing investment in consumer energy resources



KEY ITEMS WE HEARD

- Climate change: impact on and role of energy
- Electrification is accelerating
- Energy poverty and is **energy a basic human right**
- Lack of clarity re: national regulation, governance and markets
- Consumers/customers are part of the solution – need tailored solution
- No one stop shop for the energy transition
- *(some)* consumers are actively adapting their energy consumption patterns

CURRENT NATIONAL STATUS

- Electricity is king / gas on the outer
- The electricity system is not working for customers/consumers/citizens (and hasn't really worked for 20 years)
- What is the narrative that consumers are looking for to create a trusting and trusted system?
- There is a need for transition certainty (including universal access to CER (consumer energy resources) but we keep walking into the transition backwards
- Need new ways to think about energy supply and demand - the role of energy efficiency is undervalued
- System resilience is a key consideration

ELECTRIFICATION IS ACCELERATING...

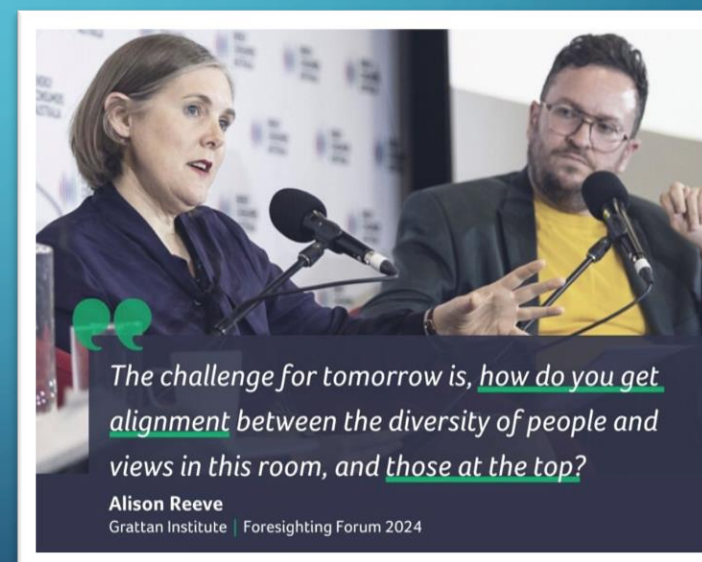
Core reform is underway: wind, solar and storage chosen for economics


- Aims to reduce the reliance on fossil fuels, increase efficiency and mitigate environmental impacts
- Process of converting systems... devices ... infrastructure
- Is there a parallel with the NBN?
- Need universal protocols and standards
- Regulatory and market design are key
- Examples: Rewiring Australia (financial models) , Horizon Power – principles for people to make the change

QUOTES FROM THE CONFERENCE

Michael Colgrove (Oregon) - Consumer journey – “ knowledge doesn’t lead to awareness”.

Audrey Zibelman: “we can’t have a vibrant economy without access to energy”





CONSUMERS (economic construct) V CUSTOMERS (people with rights) V HUMAN RIGHT

Change is in the air!

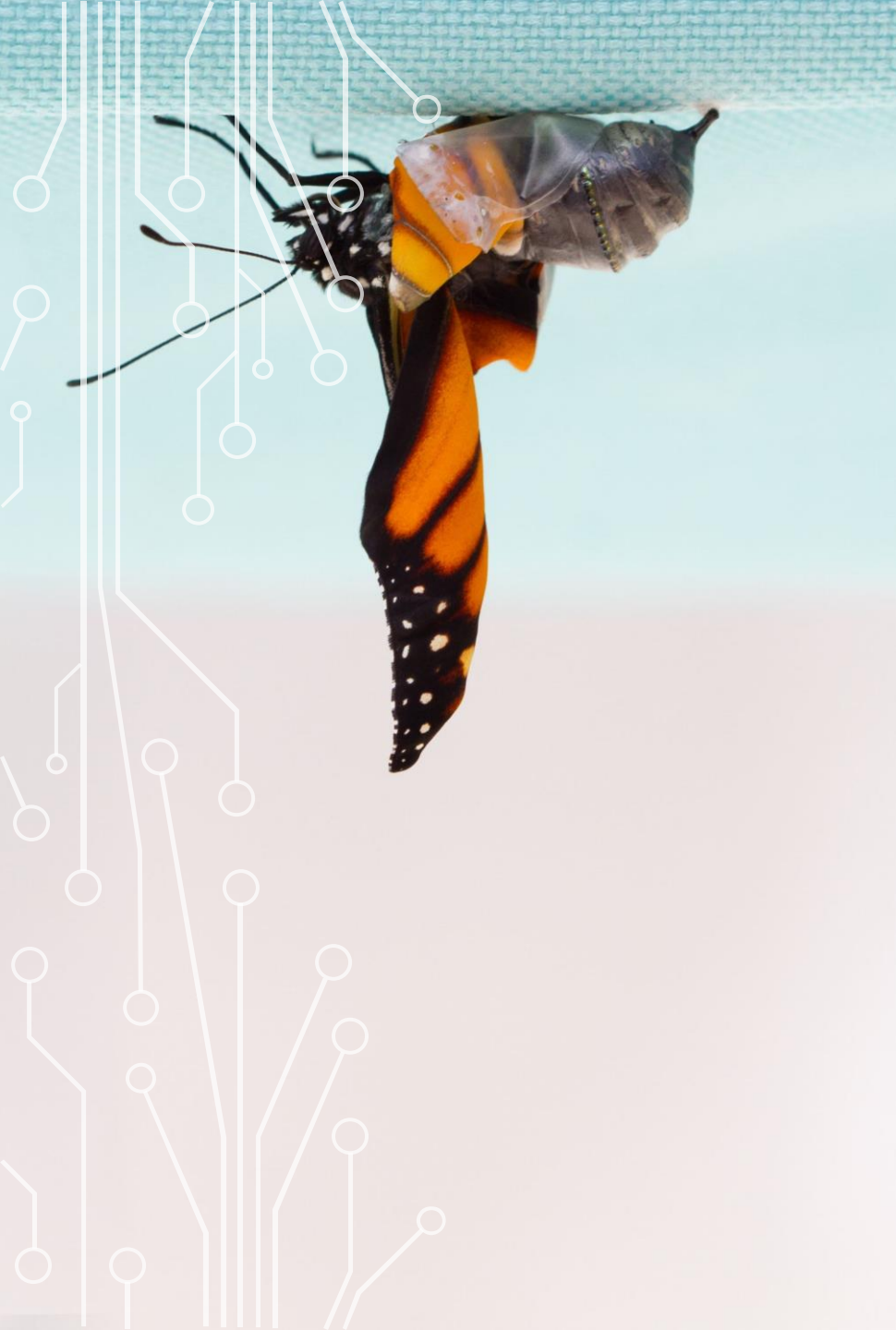
- Economic Construct: A consumer is an individual or entity that uses or consumes goods or services.
- A customer is a real person:
 - Someone who purchases goods or services from a business
 - Has legal rights.
- Is access to electricity a core human right???
 - What are the implications of this?



COMMUNITY ENERGY RESILIENCE + TRANSITION

3 X Examples:

- Community resilience (Venus Bay)
- Climate resilience / “Heat culture” (Spain)
- Financing electrification options (Victoria)

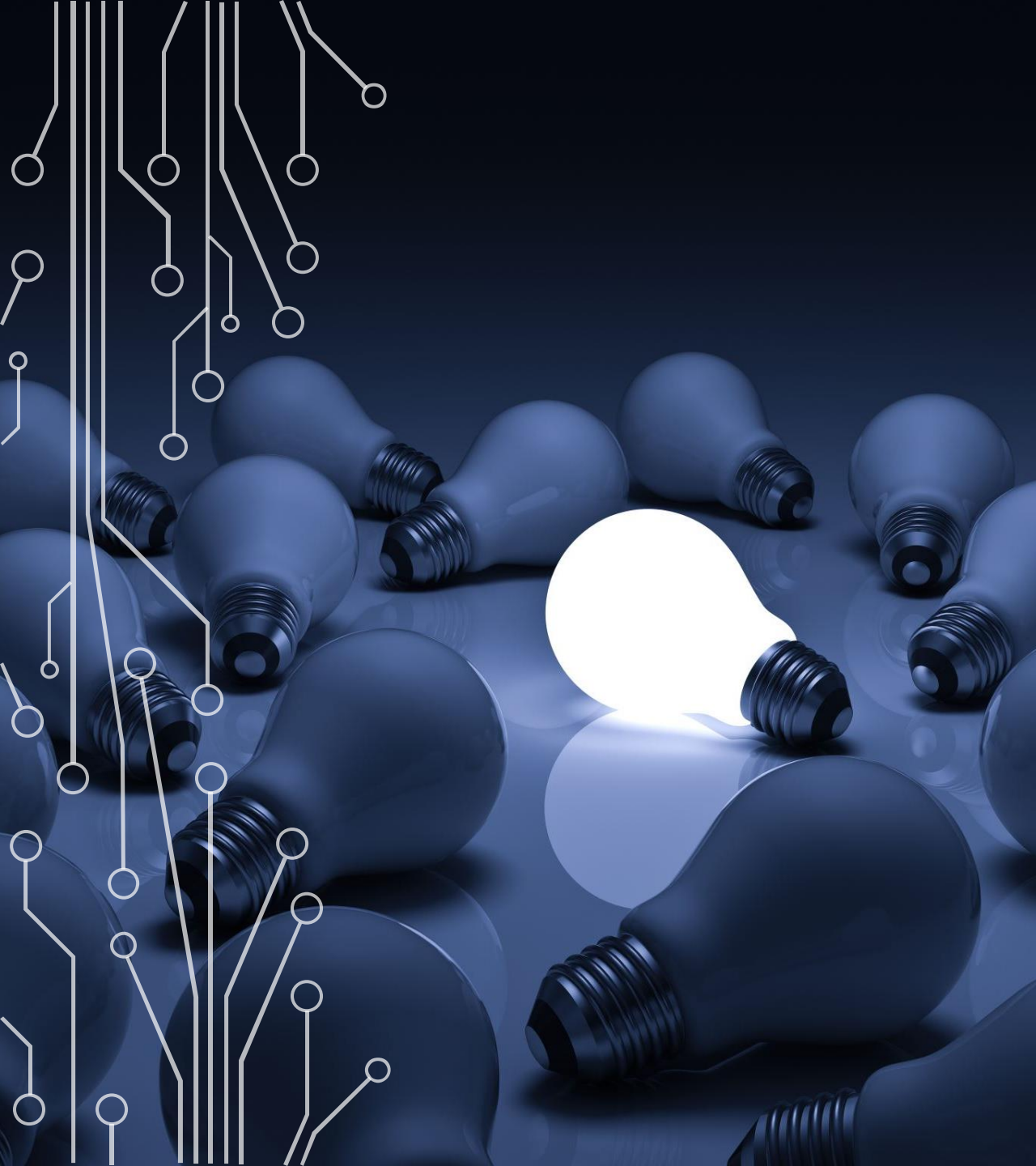


RADICAL CHANGE: OREGON

- Core role of NGO
- Energy efficiency central
- Customer engagement
- Simplicity + transparency
- Utilities need to create clean energy plans

KEY REFLECTIONS & TAKEAWAYS





QUESTIONS FOR THE CAP

- *What does successful energy transition look to consumers / customers?*

5. Other Business

Yarik Turianskyi

CAP Member

&

Rainer Korte

Chief Operating Officer

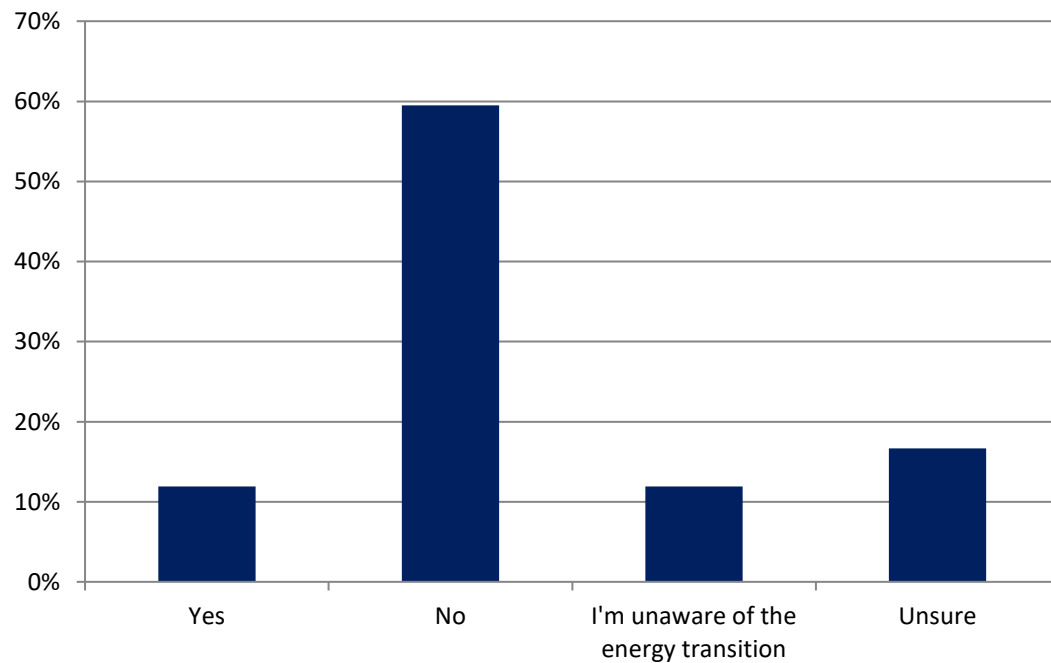


South Australian Business Chamber

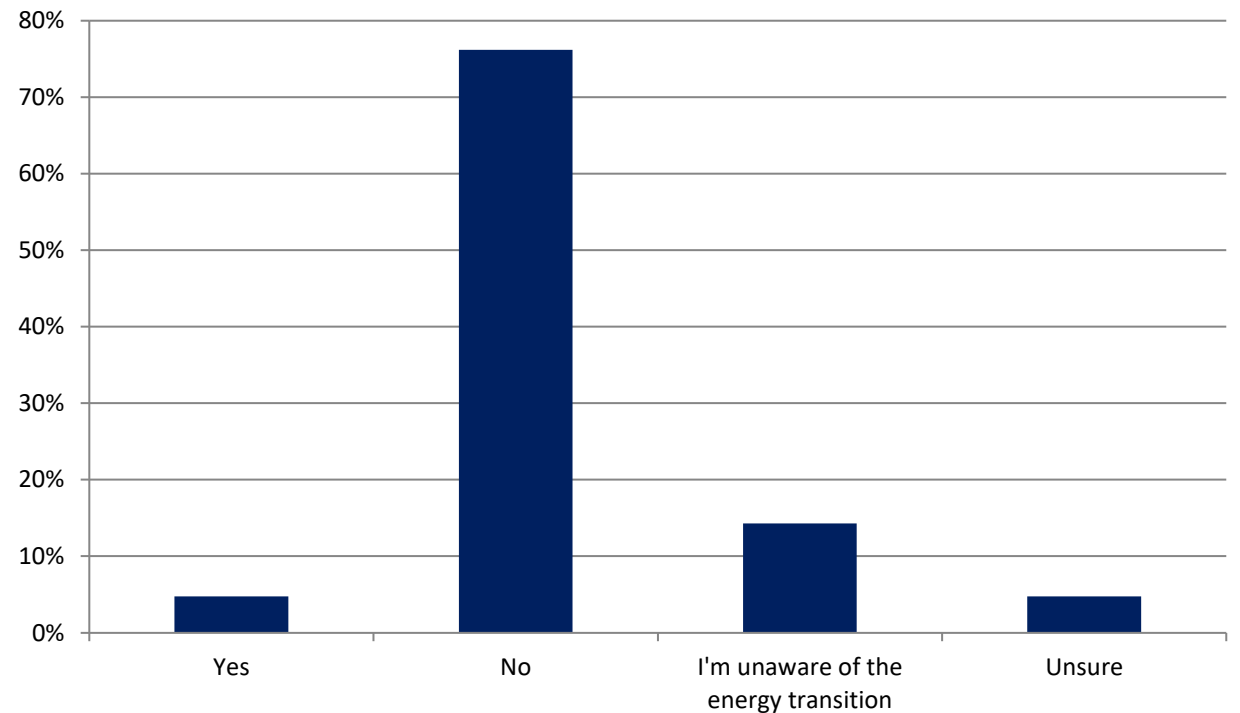
Survey of Business Expectations
December quarter 2023

Confidence in the energy transition

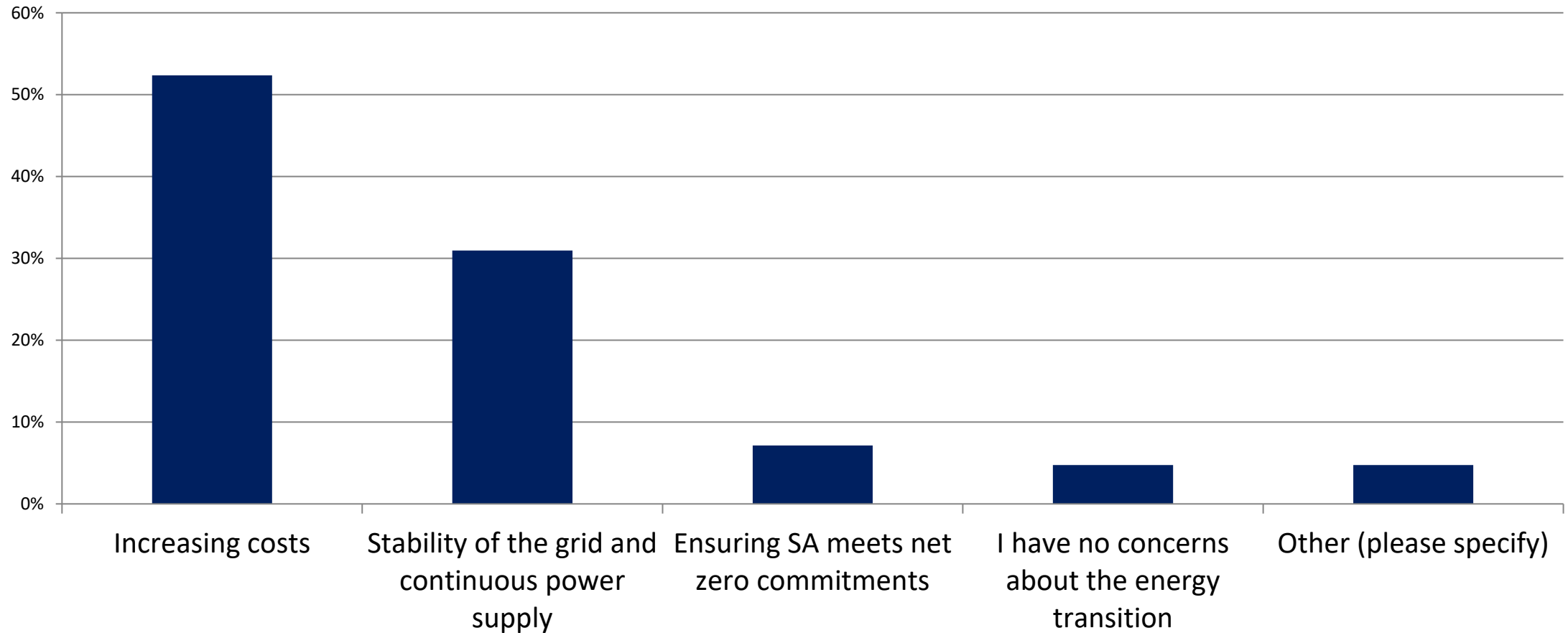
Do you believe the State Government has adequately planned for the energy transition?



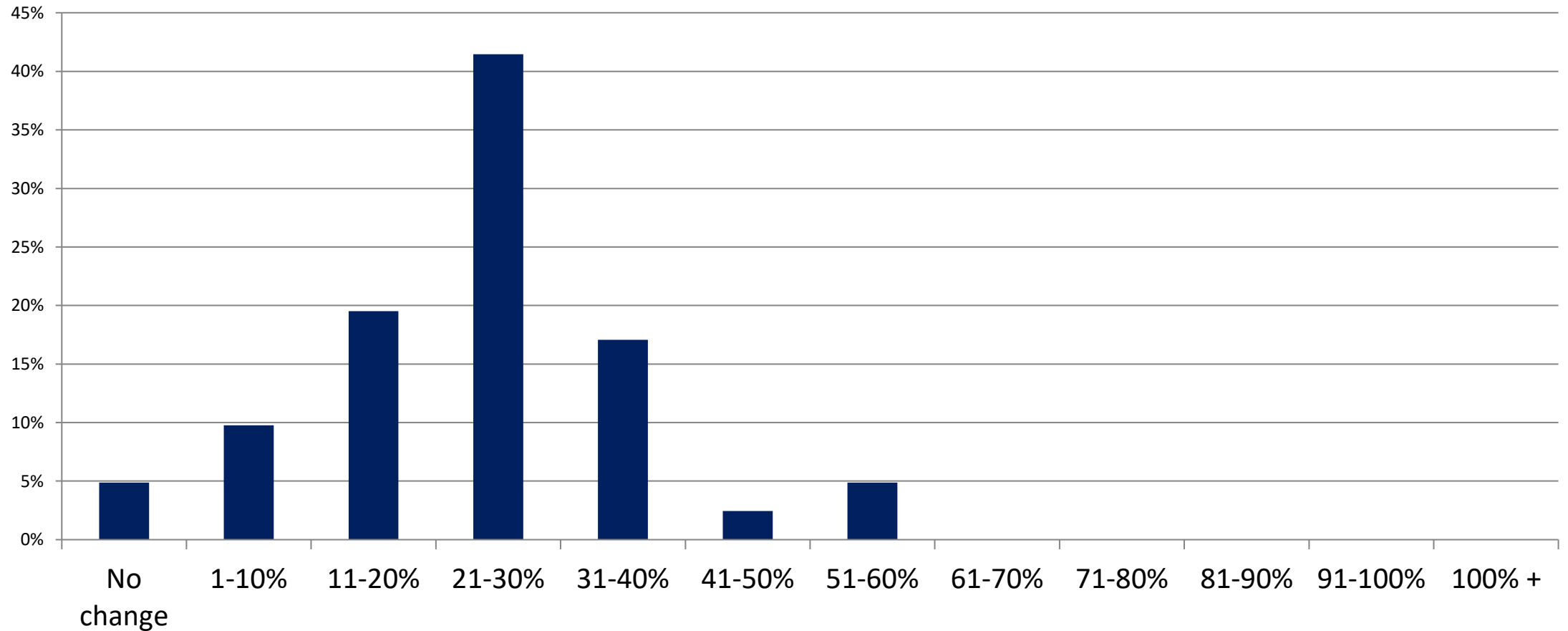
Do you believe the Federal Government has adequately planned for the energy transition?



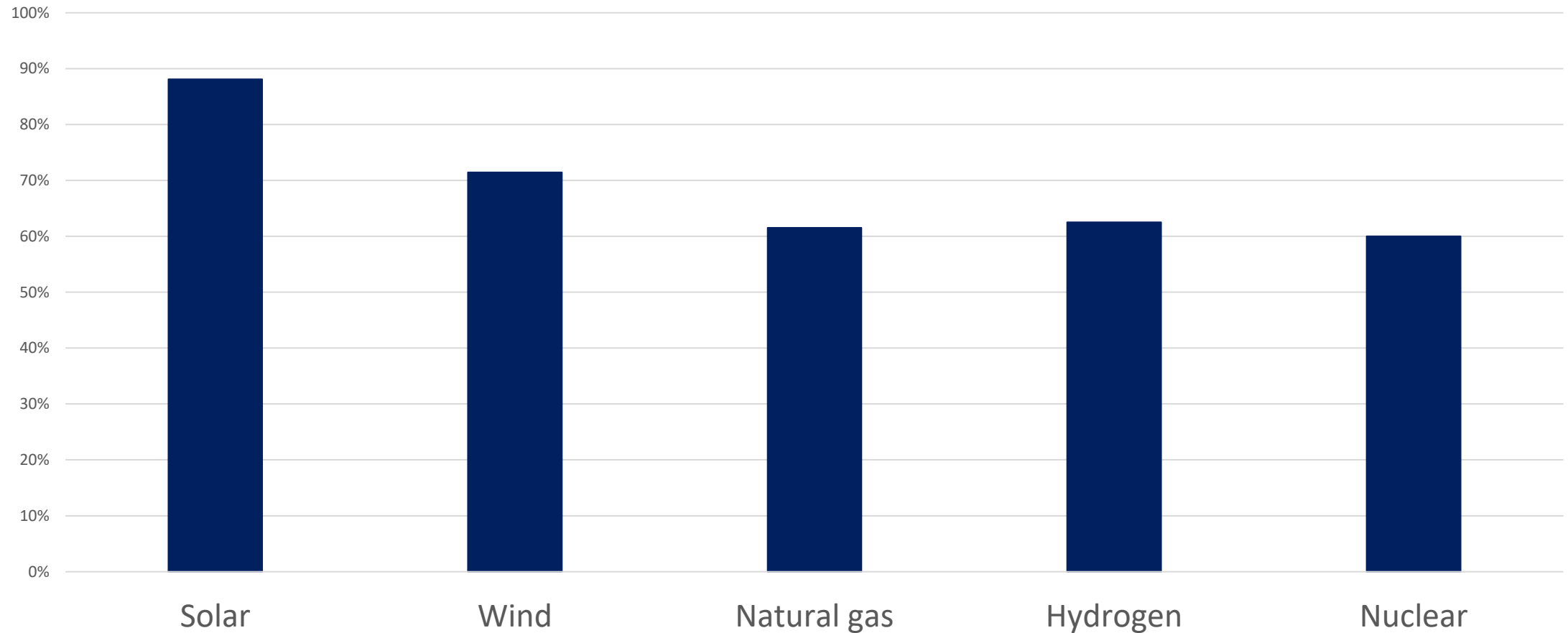
What is your main concern about the energy transition?



How much have your electricity bills increased in the last 12 months?



What is your level of support for the following energy sources?



Select comments

- “A more planned energy transition would result in lower costs associated with network operation and reliability, better outcomes from the ISP, and consideration of the long-term costs of energy in SA.”
- “Energy prices have not had a direct cost effect on our business (our solar system covers a large portion of our energy needs).”
- “The pursuit of ‘renewable energy’ and the mythical, unattainable ‘Net Zero’ is going to bankrupt the country and drive tens of thousands of people into energy poverty.”

Business Now

The South Australian Business Chamber
Survey of Business Expectations

2024 // December Quarter



Powered by
WilliamBuck
ACCOUNTANTS & ADVISORS



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sabusinesschamber.com.au

Victorian power outage – 13 February 2024

What really happened? ElectraNet will consider learnings for the SA transmission network.

What we know

- Failure of six 500 kV transmission towers on Moorabool to Sydenham No.1 and 2 lines under extreme weather conditions
- Subsequent disconnection of Loy Yang A generating units and Dundonnell and Yaloak Wind Farms
- Approx. 2,700 MW of generation lost and 1,000 MW of load “shaken off” – AEMO directed 300 MW of load shedding to manage incident
- Storm activity caused significant damage to distribution networks, impacting more than 500,000 residential and business customers.

Points to consider

- Like 2016 SA event severe wind forces appear to have exceeded the design rating of transmission towers and disruption resulted from a series of cascading failures
- Not caused by clean energy transition
- Not caused by privatisation of networks or a lack of maintenance
- Cost of grid strengthening to avoid impact of infrequent extreme weather events is prohibitive
- Growth in wind and solar generation backed by transmission and storage AND distributed customer resources should ultimately improve power system resilience



CAP only session:

Leanne Muffet
Independent Facilitator

CAP Meeting Schedule 2024

#	Date	Time
1	Thursday, 22 February 2024	10:00am – 12:30pm
2	Thursday, 16 May 2024	9:30am – 12:30pm
3	Thursday, 15 August 2024	9:30am – 12:30pm
4	Wednesday, 27 November 2024	9:30pm – 1.30pm <i>Includes lunch with ElectraNet Board</i>

Thank You

Next meeting: Thursday, 16 May 2024, ElectraNet HQ

