

Consumer Advisory Panel Meeting 31

Monday, 20 November 2023

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
 3. Introduction of ElectraNet Chair
 4. CAP Evaluation Report
 5. Major Project Update
 - System strength requirements
 - Transmission planning update
 6. SA Transmission Modelling – Initial Findings
 7. Reconciliation Action Plan
 8. CAP Only Session: Forward Planning
- Close & networking drinks*

Consumer Advisory Panel 2023



Business SA
Chamber of Commerce
and Industry South Australia

SACOSS
South Australian Council
of Social Service

EUAA
Energy Users Association of Australia

Ai GROUP

CIT

**THE UNIVERSITY
of ADELAIDE**

Craig Wilkins
*Individual Consumer
Representative*

SACOME

**ppsa PRIMARY
PRODUCERS
SA**

Mark Henley
*Individual Consumer
Representative*

Action Items

#	Action Item	Status
1	Provide CAP with briefing on the State Government's Hydrogen Strategy (from previous meeting)	In progress
2	Provide the CAP with further information on the Energy Charter on its purpose and operation. This could include engaging with other members who have joined/left the Charter and inviting its Chair to a future CAP meeting	In progress
3	Send CAP Members slides from PEC industry briefing which provide an update on timing	Completed
4	CAP to consider further conversations needed with AEMO on ISP inputs and assumptions	In progress. Refer Item 6
5	CAP to work with ElectraNet to explore the indicative customer price impacts of proceeding with transmission developments under different demand scenarios, and to consider further analysis around the optimal timing of these projects.	In progress. Refer Item 6
6	ElectraNet to present a proposed program of DMIAM initiatives to consider (early 2024)	In progress
7	Leanne to take the lead on the development of an Annual Report from the CAP, aiming to get paper to the Nov ElectraNet Board meeting	Completed
8	ElectraNet to prepare a meeting schedule for 2024 for the next CAP Meeting	Completed

Proposed 2024 Meeting Schedule

#	Date	Time	Notes
1	Thursday, 15 February 2024	9:30am – 12:30pm	
2	Thursday, 16 May 2024	9:30am – 12:30pm	
3	Thursday, 15 August 2024	9:30am – 12:30pm	
4	Monday, 18 November 2024	1:30pm – 6:00pm <i>Includes networking drinks</i>	Moving to 26 November would coincide with ElectraNet Board meeting

3. Introduction of ElectraNet Chair

Dr Julie Beeby

ElectraNet Independent Chair

4. CAP Evaluation Report


Leanne Muffet
Independent Facilitator

PRESENTATION:

ELECTRANET CONSUMER ADVISORY PANEL EVALUATION REPORT

Prepared by ElectraNet's Consumer
Advisory Panel members
Monday 20 November 2023



An aerial photograph of a coastal landscape. In the foreground, a large, vibrant pink lake stretches across the bottom half of the frame. To the left, a small, sandy peninsula with sparse vegetation juts into the lake. In the background, a rugged coastline with low hills meets a bright blue ocean under a cloudy sky. The text is overlaid on a dark grey rectangular area on the left side of the image.

ElectraNet's Consumer Advisory Panel acknowledges the Traditional Custodians of the various lands on which we meet, work and live.

We respect and value the diversity and wisdom of Aboriginal people and their ongoing culture and connections to the land and waters of Australia.

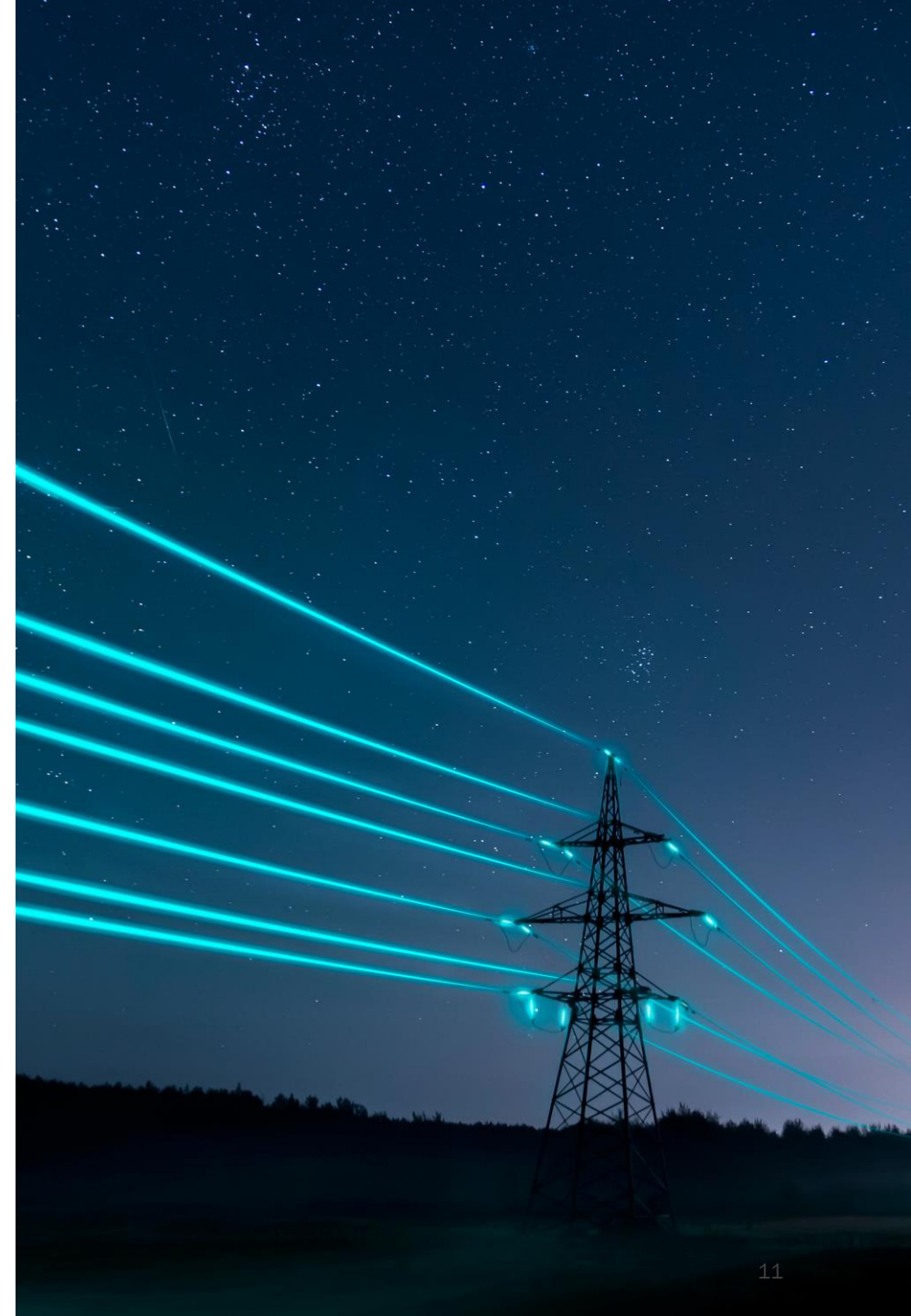
ROLE OF ELECTRANET'S CONSUMER ADVISORY PANEL (CAP)

ElectraNet's Consumer Advisory Panel (CAP) is designed to play an important role to better inform ElectraNet's decision making processes and policy decisions, with a clear emphasis on consumer perspectives, households, and Small to Medium Enterprises (SMEs) and Commercial and Industrial (C+I) energy users.

What does this mean in practice?

CONTEXT... THE CAP

- Recognises ElectraNet's commitment to active, participatory, early, and transparent stakeholder engagement processes
- Is here to help and has a vested interest in the system working well
- Is operating within a framework of a national objective to realise *net zero carbon emissions* by 2050.
- Considers many energy issues including: national, state, and regional network planning, reliability + distribution of supply, equity of cost, equity of access, energy storage, renewable energy, and stakeholder needs.



INTENTION OF THE CAP

Provide the Directors and Management with insights and ideas

Bring diverse and varied perspectives to the table

Offer a strategic approach for effective risk management

Address complexity through a range of perspectives

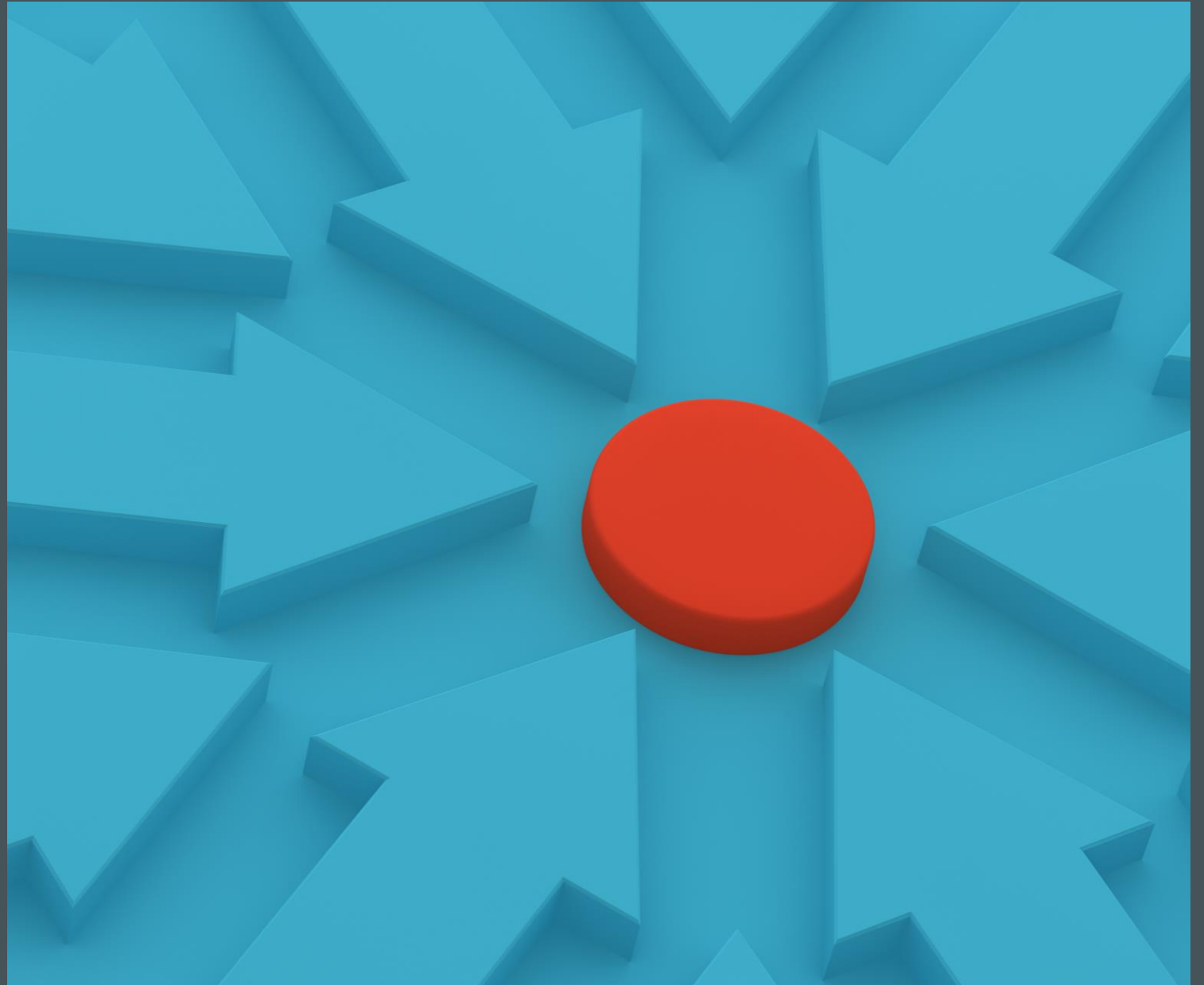
Facilitate informed deliberation on critical issues

Foster an environment that values and respects diverse perspectives

Provide “wise counsel” on issues raised by the Board or Management

Collaborate to improve decisions

**ANY
QUESTIONS
AND / OR
THOUGHTS**



OVER THE PAST 12 MONTHS WE HAVE:

- Provided advice on the Revised Review proposal, submitted in January 2023
- Established CAP Values in April
- Engaged in discussions on Integrated System Plan (ISP) and Transmission Annual Planning Report (TAPR)
- Met with the South Australian Power Networks (SAPN) Advisory Committee Board during August
- Provided feedback to Endgame in October

SESSION FRAMING

The CAP is ready to:

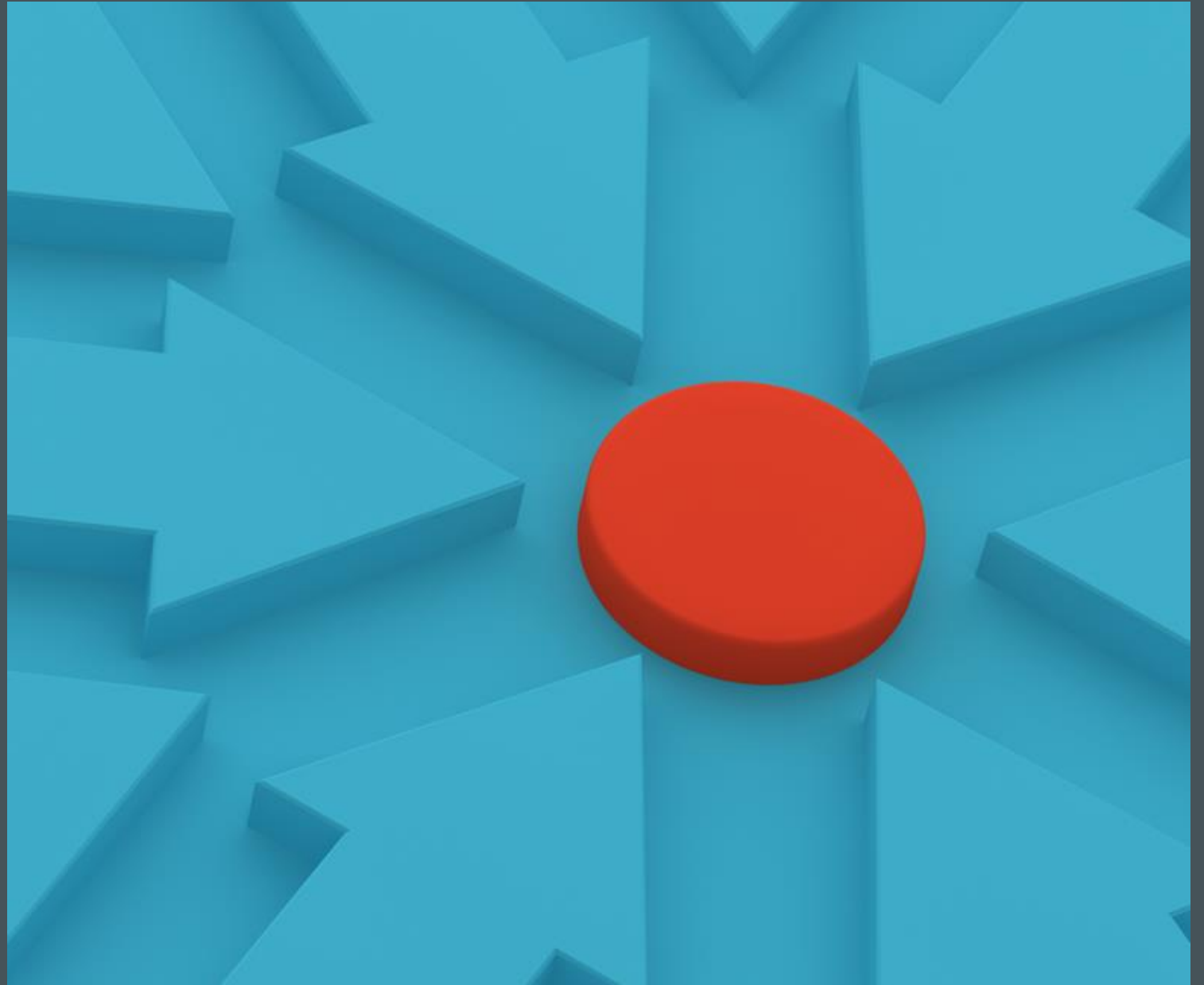
- Embark on a collaborative journey to increase consumer impact
- Broaden impact across the energy network space
- Shift gear to contribute more strategically to ElectraNet's decisions
- Understand the Board's perception of the importance of the CAP

OBJECTIVES FOR THE SESSION

... a collaborative journey might look like:

- Co-Designing things e.g.: TAPR, and ElectraNet's annual planning cycle
- More joint exploration of best practice / strategic input / general feedback
- Clarity from ElectraNet regarding role / scope of the CAP
- Enhanced feedback loops

FOCUS OVER THE COMING 12 - 24 MONTHS



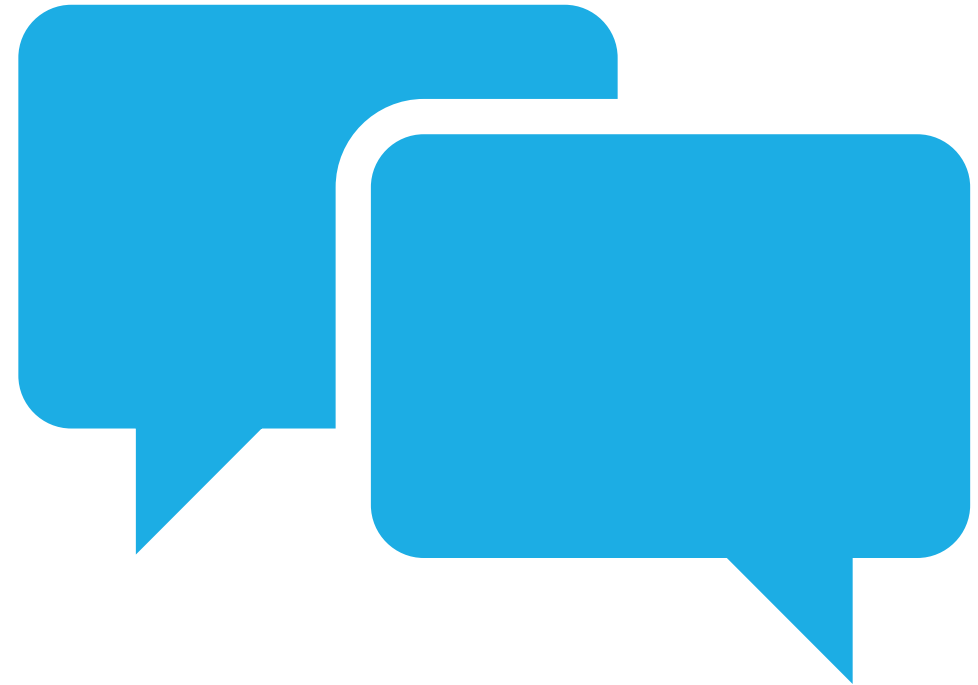
STRATEGIC ITEMS FOR THE CAP

- Meet customer needs
- Transition to renewable based electrification - including transport (opportunities and potential pitfalls)
- Electricity costs (both cost of electricity and market intervention costs)
- Regional community relationships
- Hardship and cost of living impacts on vulnerable customers
- Broadening engagement to include topics such as Social Licence and ESG
- Improved understanding of Risk (Traditional and Emerging) e.g. bushfire, adverse weather events, cybersecurity etc. along with improvements to network resilience
- Developing measurable success criteria for engagement practices
- Stronger interface with the Board

POTENTIAL AREAS FOR ONGOING ENGAGEMENT

- **ElectraNet Board** - two-way interaction with periodic discussion on consumer issues
- **Annual Planning Cycle** - engagement in ElectraNet's annual planning cycle including increased input to TAPR process,
- **Regulation and Policy** - working together with ElectraNet to provide input on relevant regulatory and policy matters such as AEMC rule changes and development of the ISP led by AEMO,
- **Industry Collaboration** - with South Australian Power Networks (SAPN) Consumer Advisory Board including on demand forecasting and clean energy acceleration,
- **Early and Continuous** - on significant policy, planning and statutory matters will result in improved input from the CAP, and prospectively avoid high pressured situations that are often paired with compressed timeframes.


INVITING CONVERSATION



WHAT CAP SEEKS COLLABORATIVELY

1. Development of engagement metrics (both the CAP and ElectraNet)
2. Contribute more actively to regulatory and policy matters
3. Meet with other entities e.g. AEMO, other CAPs, and SAPN for strategic understanding
4. Broaden engagement to topics to ESG and social licence
5. Examine economic development pressures in greater detail
6. **Contribute to decision-making processes with ElectraNet**
7. **Identify opportunities for input into strategic positioning, forward planning, and specific matters**
8. **Develop stronger interface with ElectraNet's Board of Directors**
9. **Enhance feedback and communication loops**





The CAP can provide consumer
insights to both benefit and
strengthen ElectraNet's decision
making

5. Major Project Update

Brad Harrison

Manager Network Planning

Brad Parker (online)

Principal Engineer Power Systems

System Strength Requirements in South Australia

Purpose

- Engage with the CAP on system strength service requirements ElectraNet that is required to meet in South Australia and seek input on our proposed approach
- Our Question to the CAP is:
What solutions should ElectraNet be considering to maintain system strength in South Australia?

Outline

- The framework
- The need
- Our proposed approach

What is system strength?

Relates to the ability of the power system to withstand disturbances while **maintaining stable voltage levels**

Without adequate system strength:

- Generators may trip after disturbances
- Voltage can fluctuate
- Protection systems may not operate correctly

This can result in supply interruptions to customers and can also lead to constraints on generation output

New system strength framework

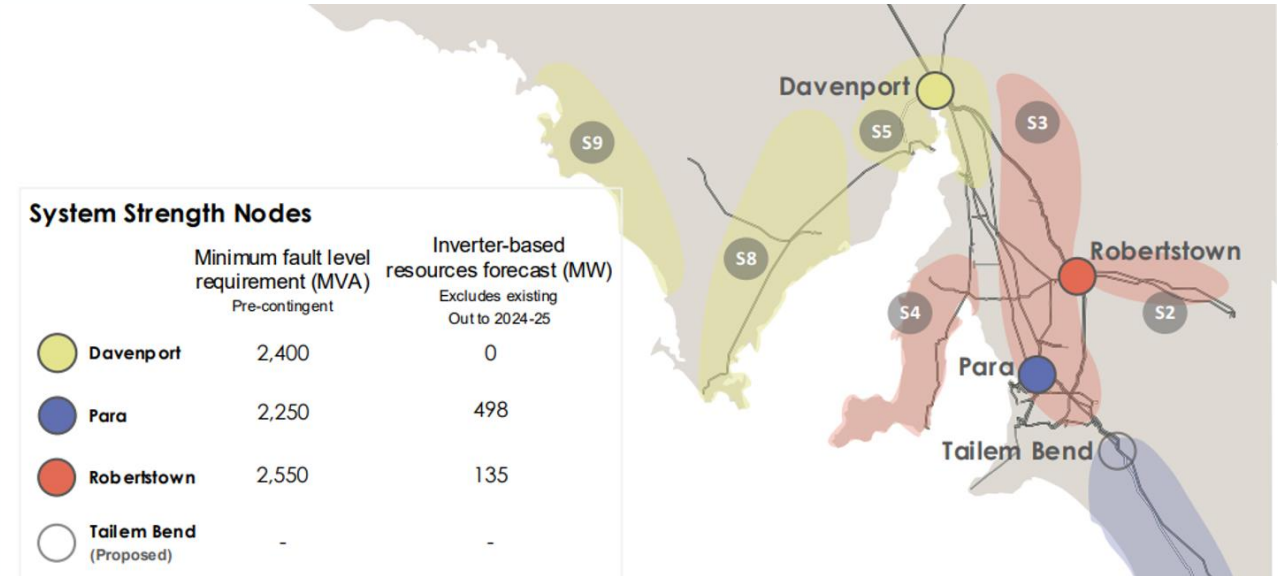
- New framework brings a forward-looking approach to providing system strength
 - Not ‘new’ physical requirement but a coordinated way of providing an efficient level of service
- Who pays – new generators pay their share as they connect
- ElectraNet is the designated System Strength Service Provider for South Australia
- We must provide:
 - A “minimum” level of system strength to ensure the power system can be operated satisfactorily
 - An “efficient” level of system strength to ensure the satisfactory operation of new Inverter Based Resources (IBR) based on AEMO forecasts
 - “Grid-following” inverter technology requires a level of system strength to remain synchronised to the grid
 - “Grid-forming” inverter technology can make a positive contribution to system strength

Inverter Based Resources (IBR) include wind farms, solar farms, batteries, loads etc. that are based on inverter technology.

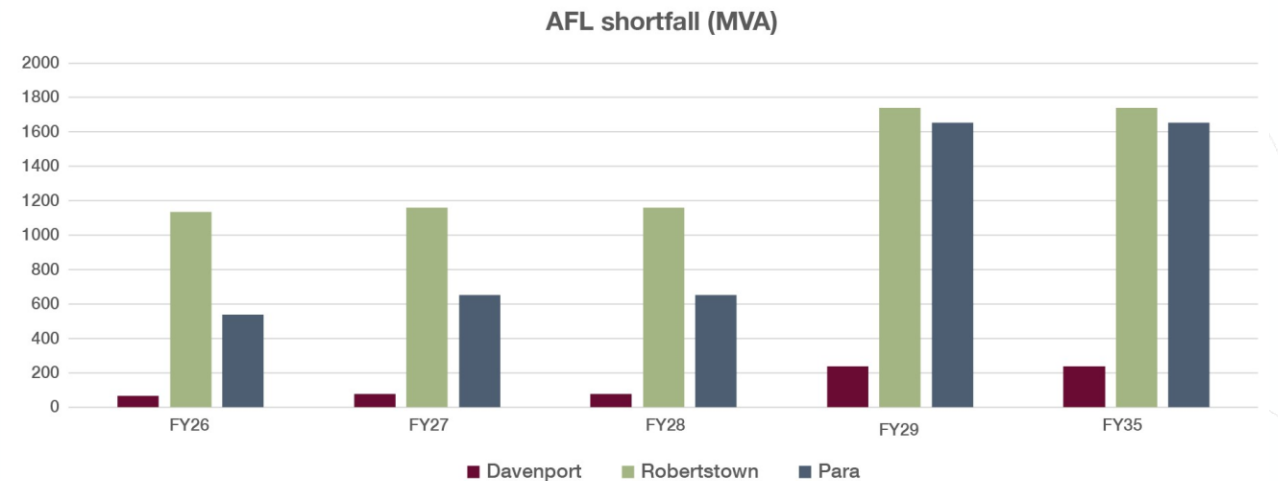
An **inverter** is a device that converts DC (direct current) electricity generated from renewable sources into AC (alternative current) electricity.

Services requirements under the new framework

- AEMO publishes an annual System Strength Report
- Its 2022 report concludes:
 - No gap in minimum level of system strength
 - Growing requirement for efficient level of system strength based on forecast IBR
- AEMO's methodology is used to determine the required 'efficient' level of system strength
- Growing gap to be addressed from Dec 2025 when our service obligation commences
- Next annual report due December 2023
 - Outlook may change



Source: AEMO 2022



Options

Option	Description	Cost (±30%)
Base Case Do nothing	<ul style="list-style-type: none"> ▪ If the generation forecast is realised, the power system would be insecure without action from AEMO due to inadequate system strength services. 	
Option 1 Synchronous condensers	<ul style="list-style-type: none"> ▪ By December 2025: Install the equivalent of: <ul style="list-style-type: none"> ○ 2x 125 MVA synchronous condensers in the Adelaide area ○ 1x 125 MVA synchronous condenser at Robertstown or Bunday ▪ By July 2028: Install the equivalent of: <ul style="list-style-type: none"> ○ 1x 125 MVA synchronous condenser in the Adelaide area ○ 1x 125 MVA synchronous condenser at Robertstown or Bunday 	Capital cost \$400m (\$80m each)
Option 2 Non-network solutions	<ul style="list-style-type: none"> ▪ Non-network solutions such as grid forming batteries or equivalent technology ▪ Contracts with synchronous generators to provide system strength services 	TBD based on responses from proponents

The optimal solution may be a combination of network (Option 1) and non-network options (Option 2)

Our proposed approach - for CAP feedback

- We will initiate the Regulatory Investment Test for Transmission (RIT-T) with publication of a Project Specification Consultation Report and accompanying Expression of Interest (EOI) in November
 - Submissions due February 2024 – from potential service providers and any other interested stakeholders
- AEMO will release 2023 System Strength Report in December
 - Amount and timing of future system strength requirements remains uncertain
 - Updated forecasts will be considered in the Draft Report for the RIT-T
- Factors that will influence the preferred solution
 - The timeframe in which new technologies can provide a cost-effective solution
 - The achievable timeframe for a synchronous condenser solution
- We are in discussions with the market bodies to achieve a solution in the best interests of customers
 - We may need to make “no regrets” decisions ahead of the RIT-T conclusion in the second half of 2024

Does the CAP have any feedback or input for ElectraNet to consider at this point?

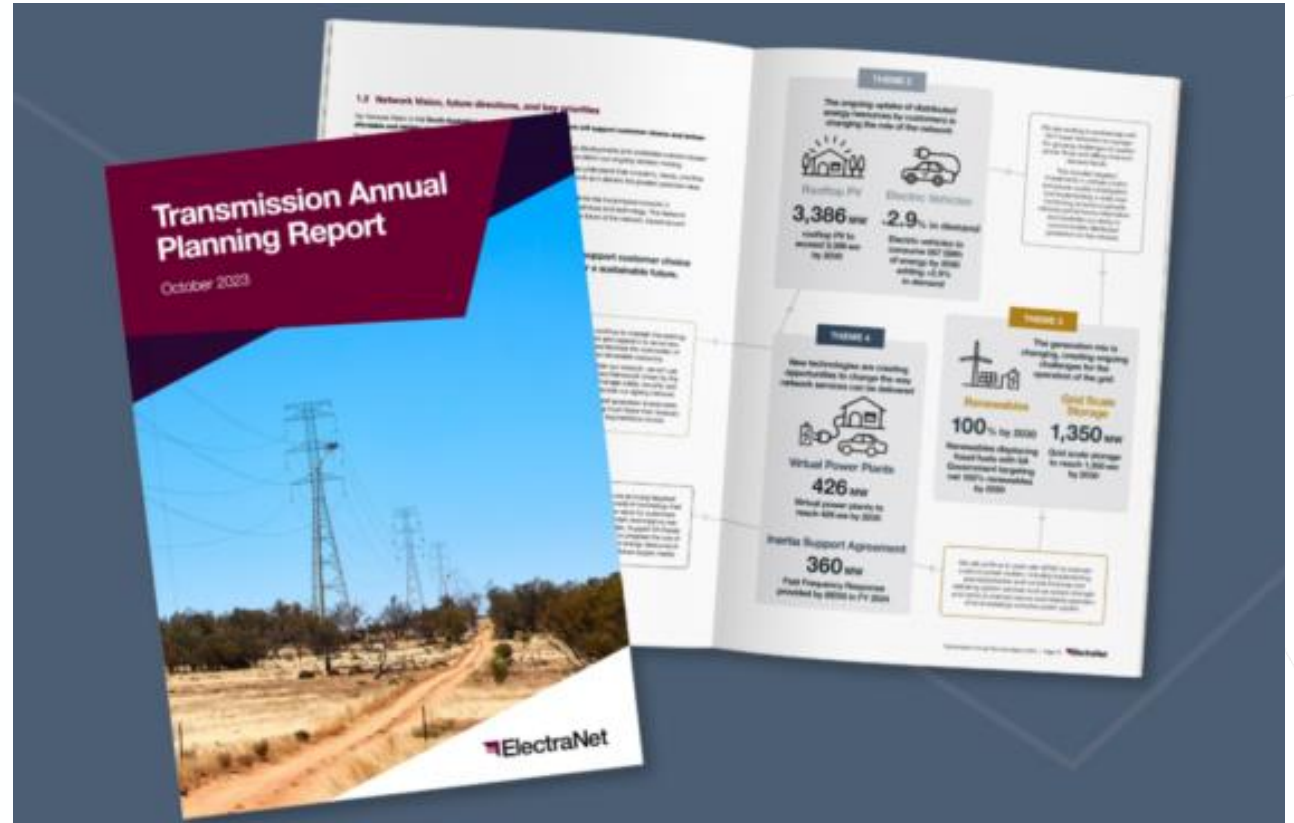
Transmission Annual Planning Report Update

- ElectraNet published on 31 October 2023
- Public forum on 6 December
 - 9.30am to 10.30am
- Submissions close 13 December 2023
- Welcome further feedback on any aspects of the TAPR, particularly the forecasts, potential solutions and timing
- Comments and suggestions can be directed to:

consultation@electranet.com.au

+61 8 8404 7966

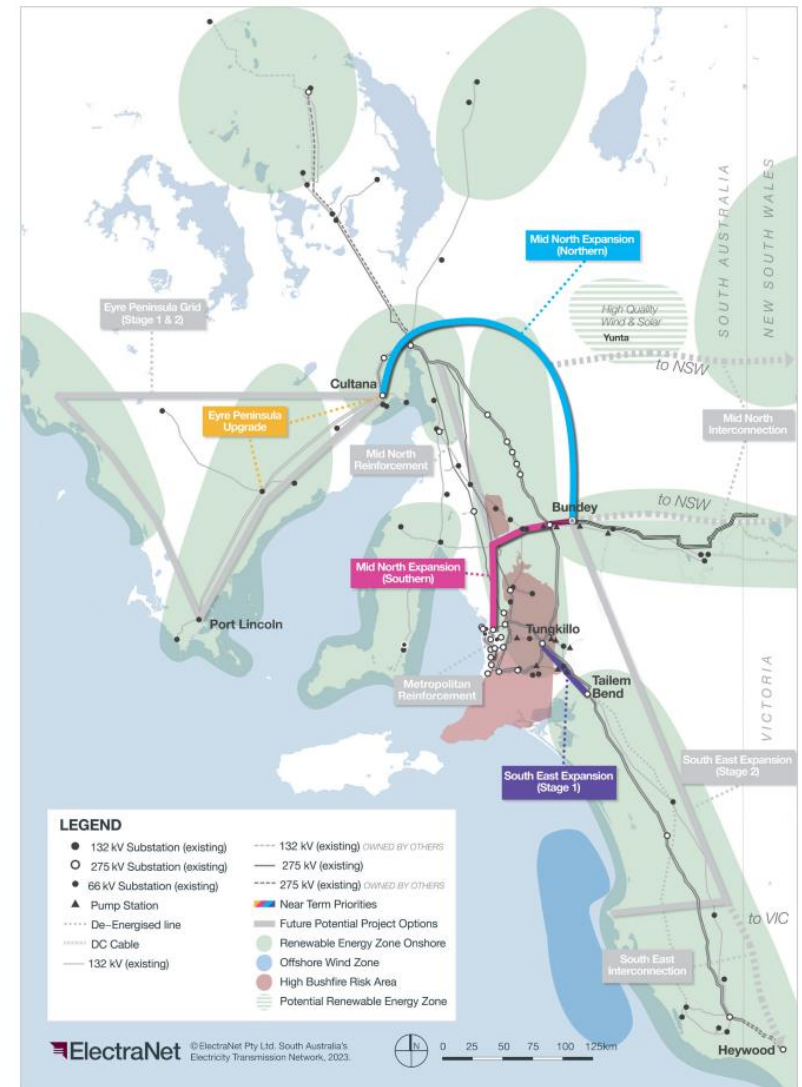
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Integrated System Plan projects in South Australia

What we heard at the last meeting from the CAP:

- Question of intergenerational equity on major transmission investments if current consumers pay more for a future benefit
- The risk to consumers of under investment is equally problematic and is more likely than the risk of over investment in the current environment
- The CAP would be concerned if ElectraNet was required to rush social licence activities, which take time
- AEMO's demand forecasts are not reflective of the most likely future in SA and the CAP expressed support for a forward-looking demand forecast approach
- The CAP also recognised the time needed to deliver projects and determined it would be more supportive of early delivery versus the risks of late delivery in an environment of rising demand
- The CAP to work with ElectraNet to explore the indicative customer price impacts of proceeding with transmission developments under different demand scenarios and consider further analysis around the optimal timing of these projects (refer agenda item 6)



Integrated System Plan Update

- Australian Energy Market Operator (AEMO) to publish draft plan on 15 December 2023
 - Includes preliminary information on actionable projects
 - Request submissions for non-network solutions
 - Submissions due February 2024
- AEMO declined ElectraNet's request to share preliminary findings with the CAP
- Does the CAP want ElectraNet to convene a special purpose / optional CAP meeting (online) to discuss the outcomes and implications in January?
- Final plan due 28 June 2024

6. SA Transmission Modelling – Initial Findings

Oliver Nunn & Daniel Picone (online)
Endgame Economics

Purpose of modelling work

- ElectraNet engaged Endgame Economics to advise on the following:
 1. The impact of high demand and generation development on the timing of transmission expansion, and assess the key drivers
 2. Cost savings through economies of scale from coordinated versus piecemeal transmission development
 3. Key modelling assumptions and methodology in the ISP influencing the timing and benefits of projects
 4. The transmission price impacts of transmission projects and options to facilitate hydrogen and improve customer outcomes
- The CAP supported these questions and identified specific areas of interest:
 - Sensitivities: what happens if projects are late or costs increase?
 - How can Social Licence be considered in this advice?
 - What are the cost impacts on consumers and on different consumer groups - residential customers, solar PV customers, direct customers, medium and large businesses
 - What infrastructure is required for hydrogen developments?
 - What is the impact of generation connecting to the network in comparison to loads, and the risks and benefits?
- Endgame will today provide an update on the work undertaken to date and outline proposed next steps

Additional SA load modelling - CAP meeting 20 November 2023



Background



ElectraNet is expecting a large amount of additional load to join their network over the next decade

Endgame Economics has been asked to model how additional load effects the timing of transmission augmentation in South Australia

Results presented today are to inform timing, and to discuss next steps for further modelling



Victorian Offshore Wind target

- Inclusion of target for Victoria
- 2GW by 2032
- 4GW by 2035
- 9GW by 2040
- Represents a significant increase in renewable capacity in Victoria

Emissions budget

- To remain on track for a 1.8C temp increase, AEMO has tightened the emissions budget
- Tightened from ~650Mt to ~555Mt from 2026 to 2050
- Huge implications for coal retirement schedule in the NEM

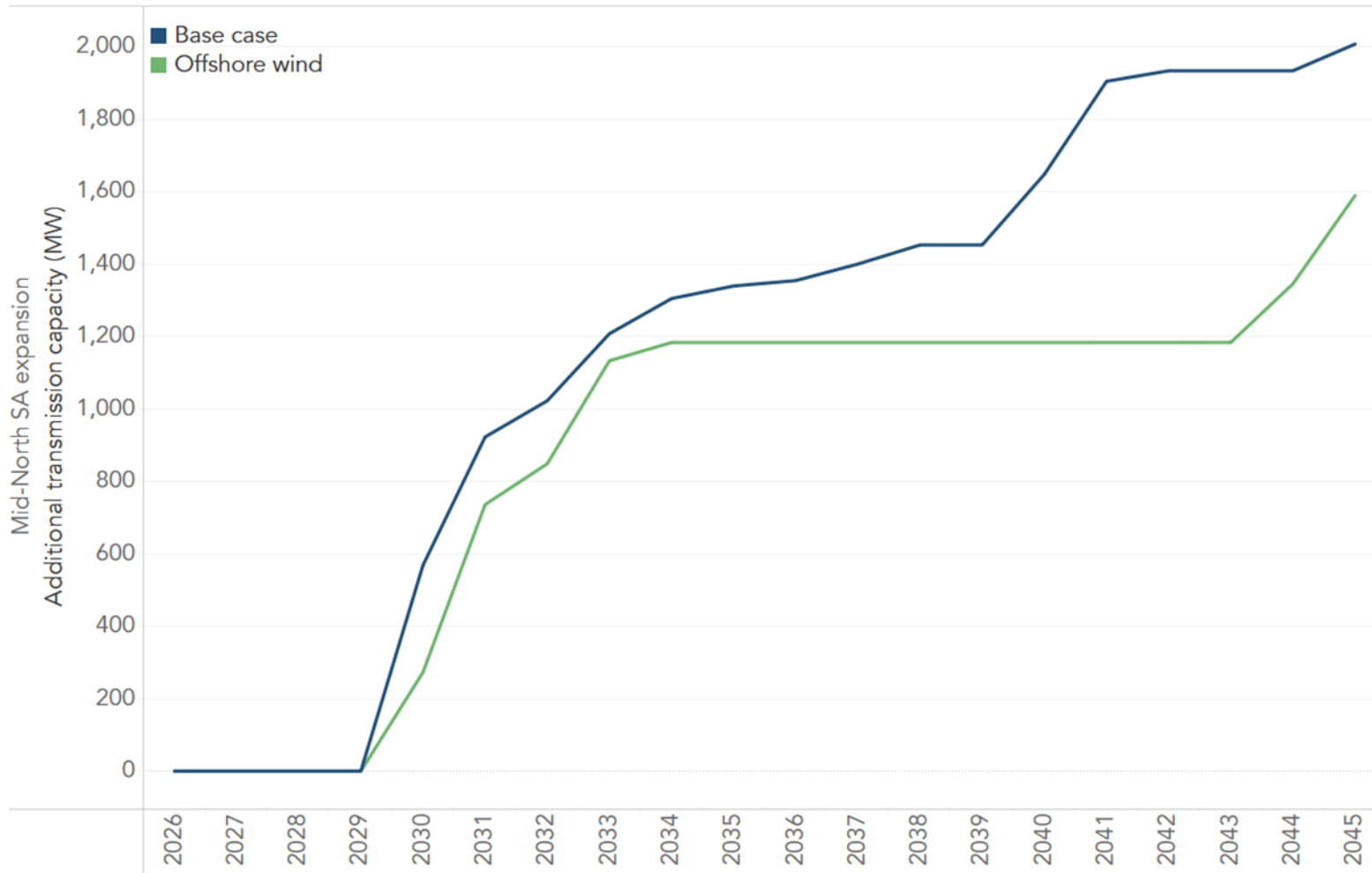
Queensland Energy and Jobs Plan

- AEMO is now including QEJP for Queensland
- Major addition is Borumba Pumped Hydro in 2030 (2GW, 24hrs of storage)
- Updated coal retirement schedule, however unknown publicly currently

Mid-North expansion occurs in 2030 under ESOO 2023 demand



Mid-North expansion transmission capacity, in the ESOO 2023 demand and ESOO 2023 demand OSW cases

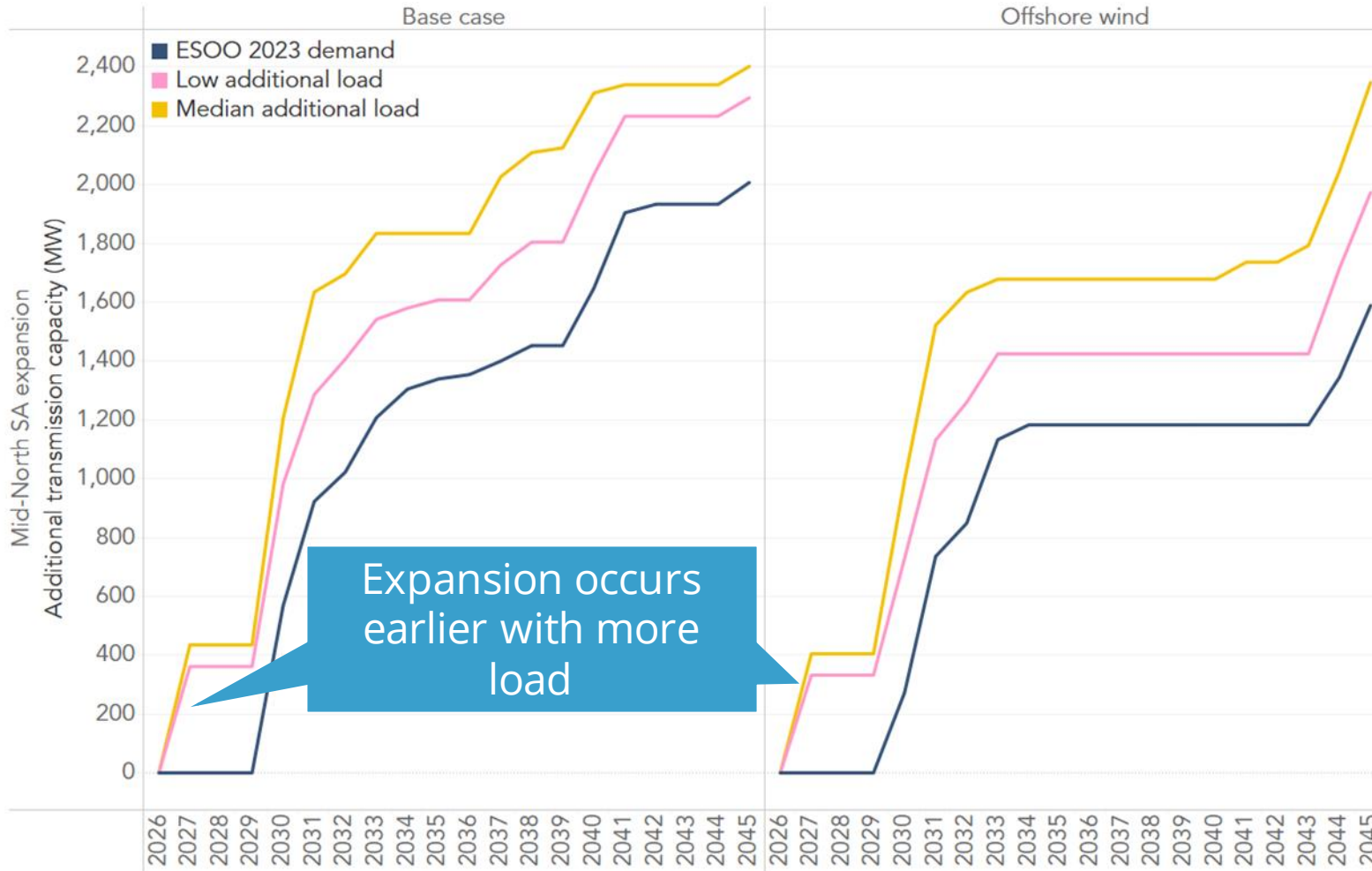


- First expansion occurs around 2030 under the Base case, slightly later *if* offshore wind comes online in Victoria
- This is consistent with the timing in AEMO's 2022 ISP

Mid-North expansion occurs earlier with additional load



Mid-North expansion transmission capacity, in the ESOO 2023 demand and additional load cases



- Additional load brings forward timing of first augmentation to late 2020s
- Timing of augmentation is independent of offshore wind in Victoria
- Need to start planning augmentation now if want a timely and smooth connection

What happens if transmission is not built?



Price and reliability

- Prices are likely to be higher, since renewables will be constrained more often
- Possible reliability concerns, due to lack of renewable generation able to get to load centres

SA renewable energy

- Maintaining 100 per cent net renewable energy could be compromised
- Higher reliance on gas-powered generation and imports

Barriers to connecting

- Connecting parties will face higher costs
- Barriers to entry of renewables will be higher
- More transmission will be required over the long term, due to lack of co-ordination

Further modelling to complete over the next 2 months

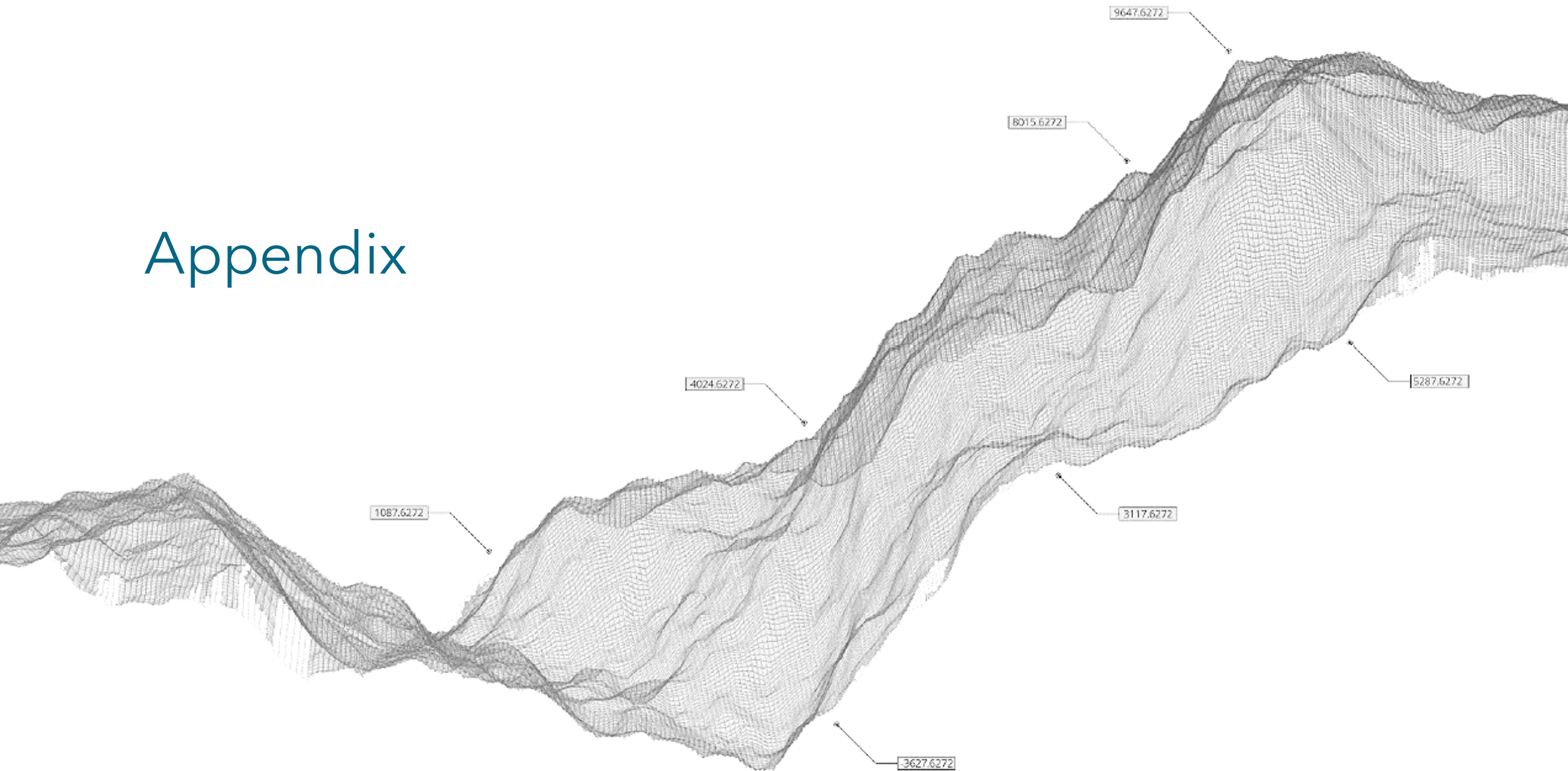


What happens if load connects but transmission isn't built in time?

What happens if transmission is significantly more expensive than estimated? Does this impact timing or need?

What happens to South Australia's existing customers if transmission is not built?

Appendix



Background



ElectraNet is expecting a large amount of additional load to join their network over the next decade

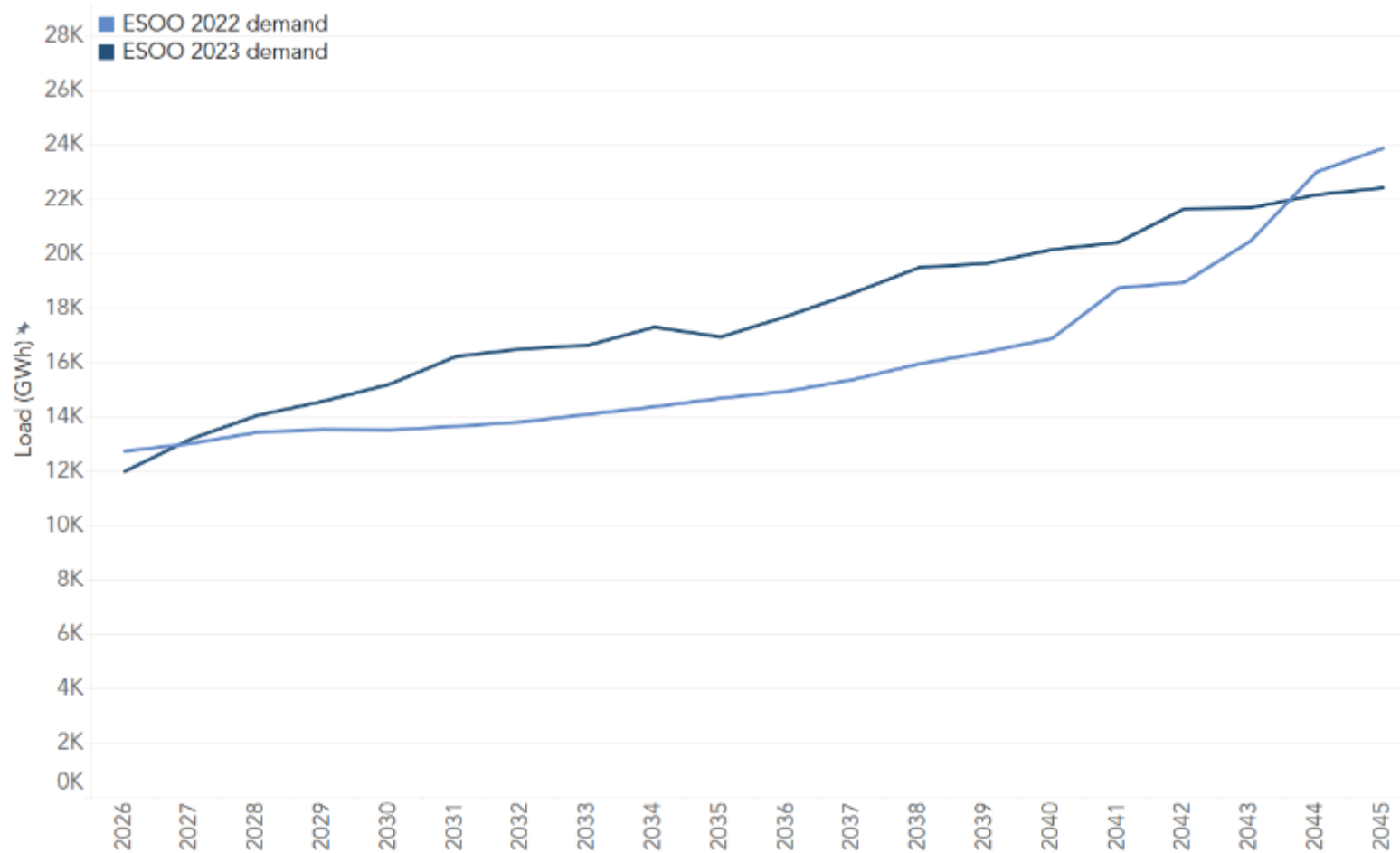
If this load eventuates, significant expansion of transmission in South Australia would be required to service it

This expansion would also facilitate additional renewable resources, ensuring that South Australia maintains a path to 100 per cent renewable energy

AEMO has revised its demand forecasts upwards recently

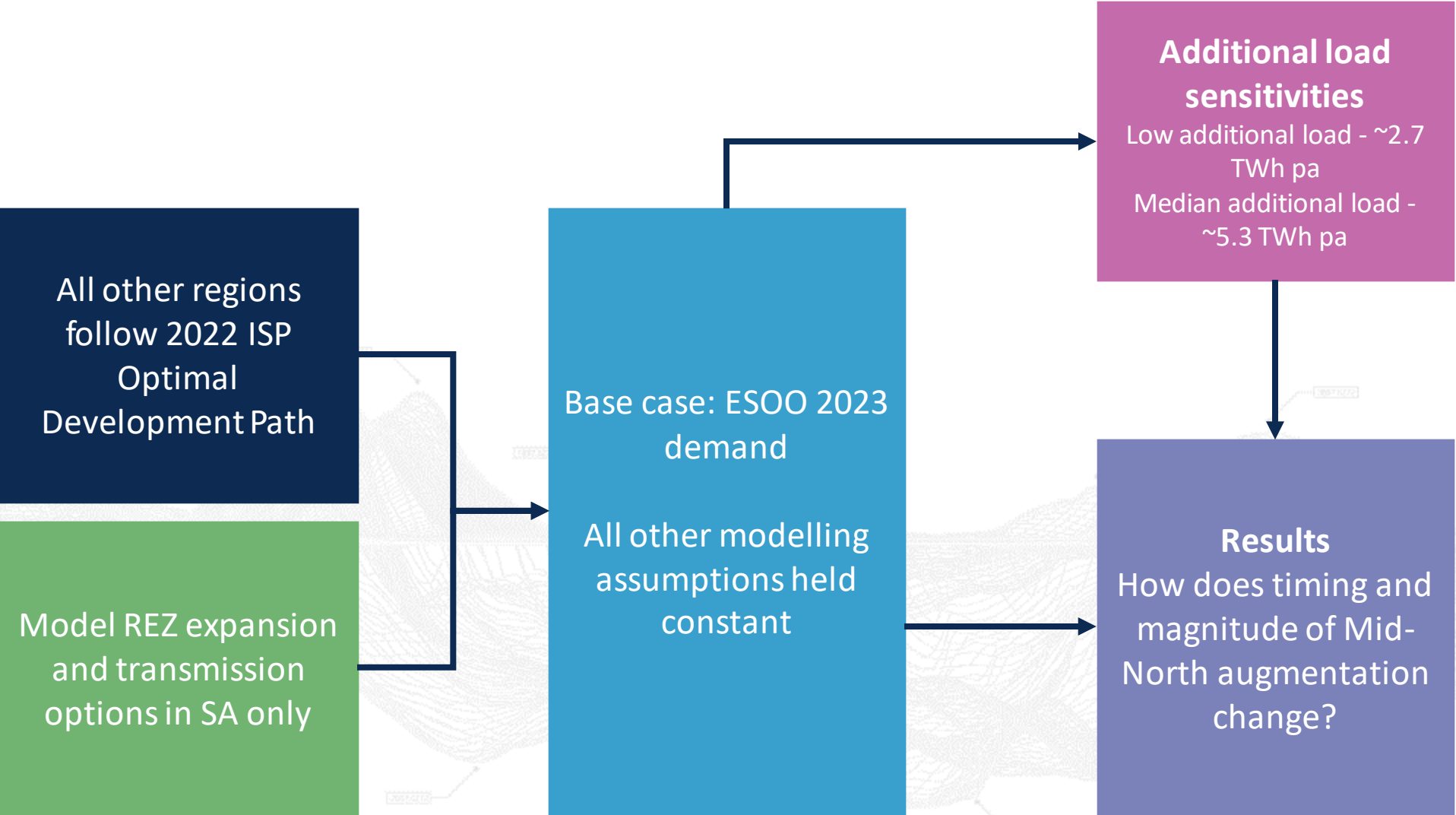


AEMO's demand forecasts in South Australia



- AEMO expects significant additional demand in South Australia compared to their 2022 ESOO forecasts
- AEMO is using the ESOO 2023 demand forecasts in their Draft ISP 2024 modelling

Modelling approach



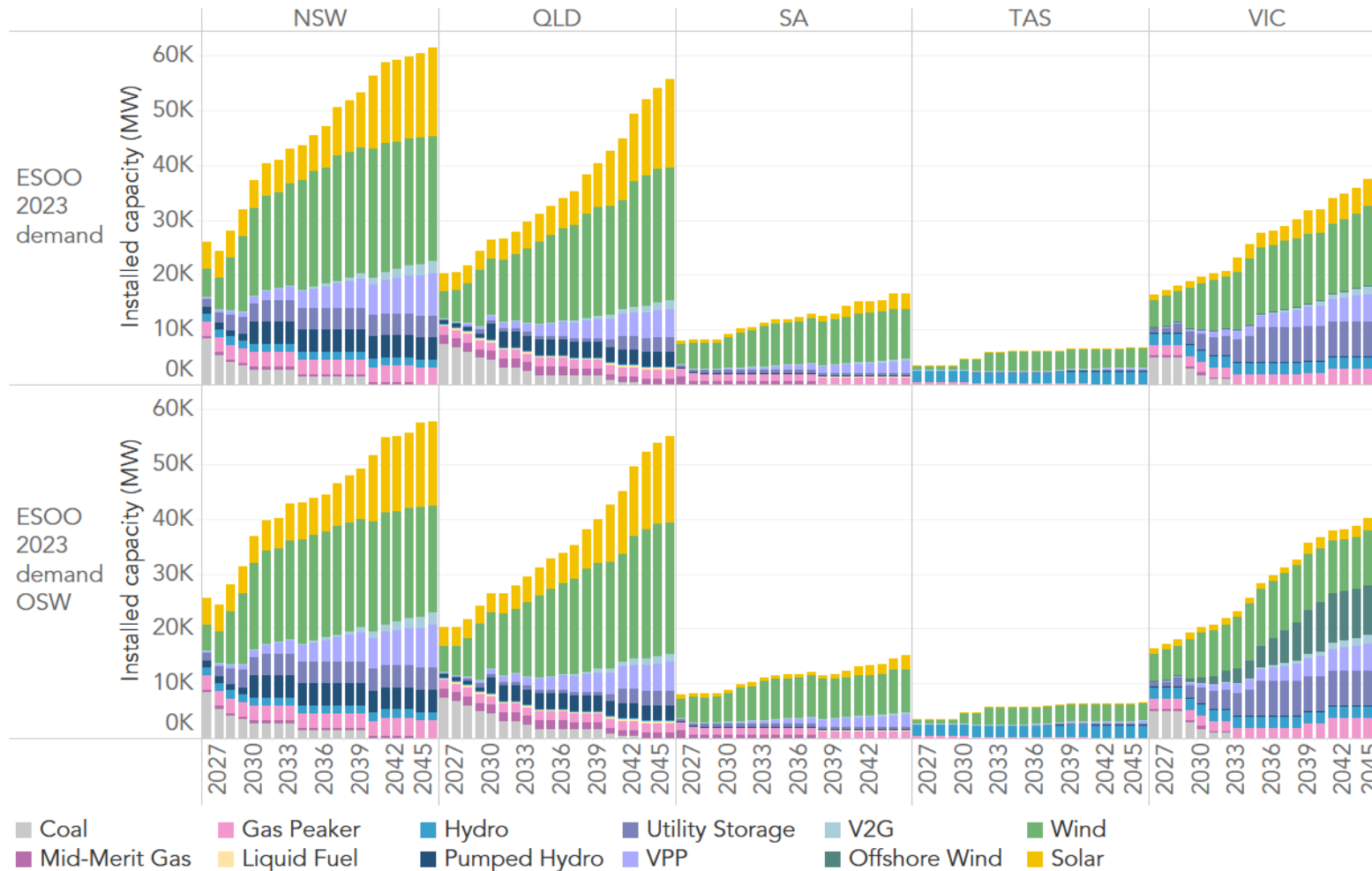
ESOO 2023 demand scenarios



The NEM sees an extreme uptake of renewables



Capacity built in each FY by region, in the ESOO 2023 demand and ESOO 2023 demand OSW cases

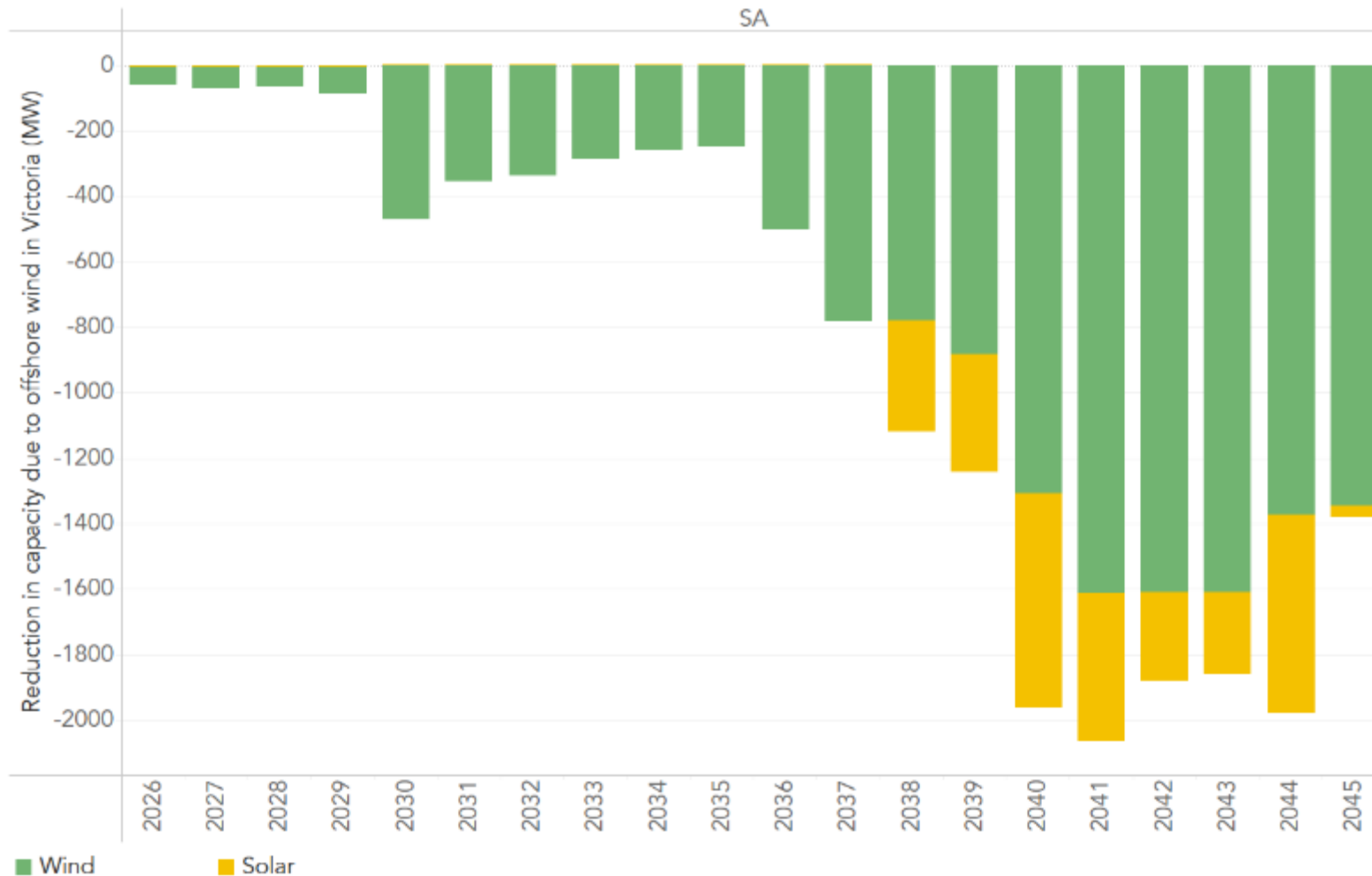


- To achieve the transition, an extremely large amount of renewable generation must be built
- South Australia sees a large amount of additional wind build initially, with solar PV being built during the 2040s
- Offshore wind in Victoria mainly replaces onshore wind and solar PV
- NSW and SA also see a reduction in VRE build, pushed out by Victorian offshore wind

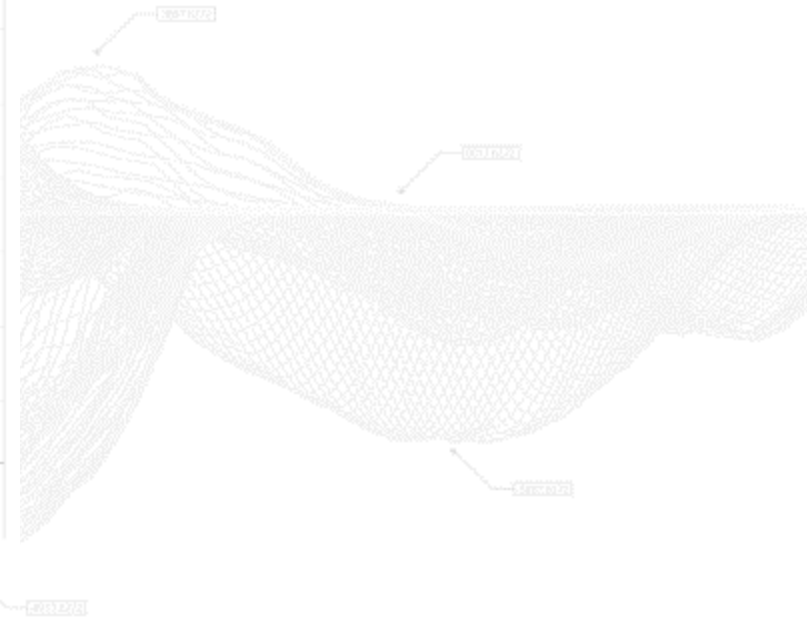
Victorian offshore wind pushes out SA renewables



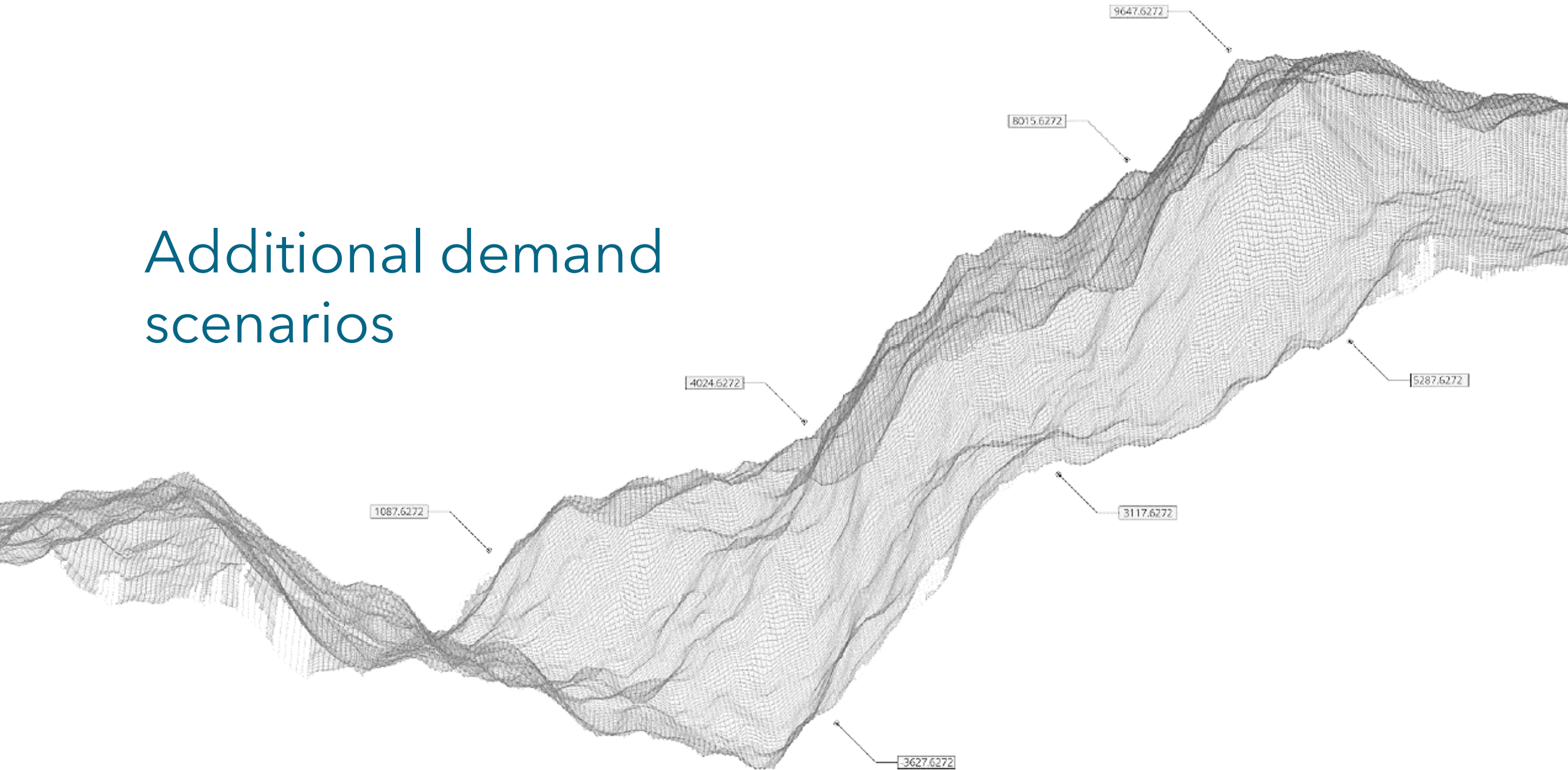
Difference in capacity between Base case and OSW scenario in South Australia



- South Australia builds ~2GW less VRE by 2040 (when offshore wind stops being built in Victoria)



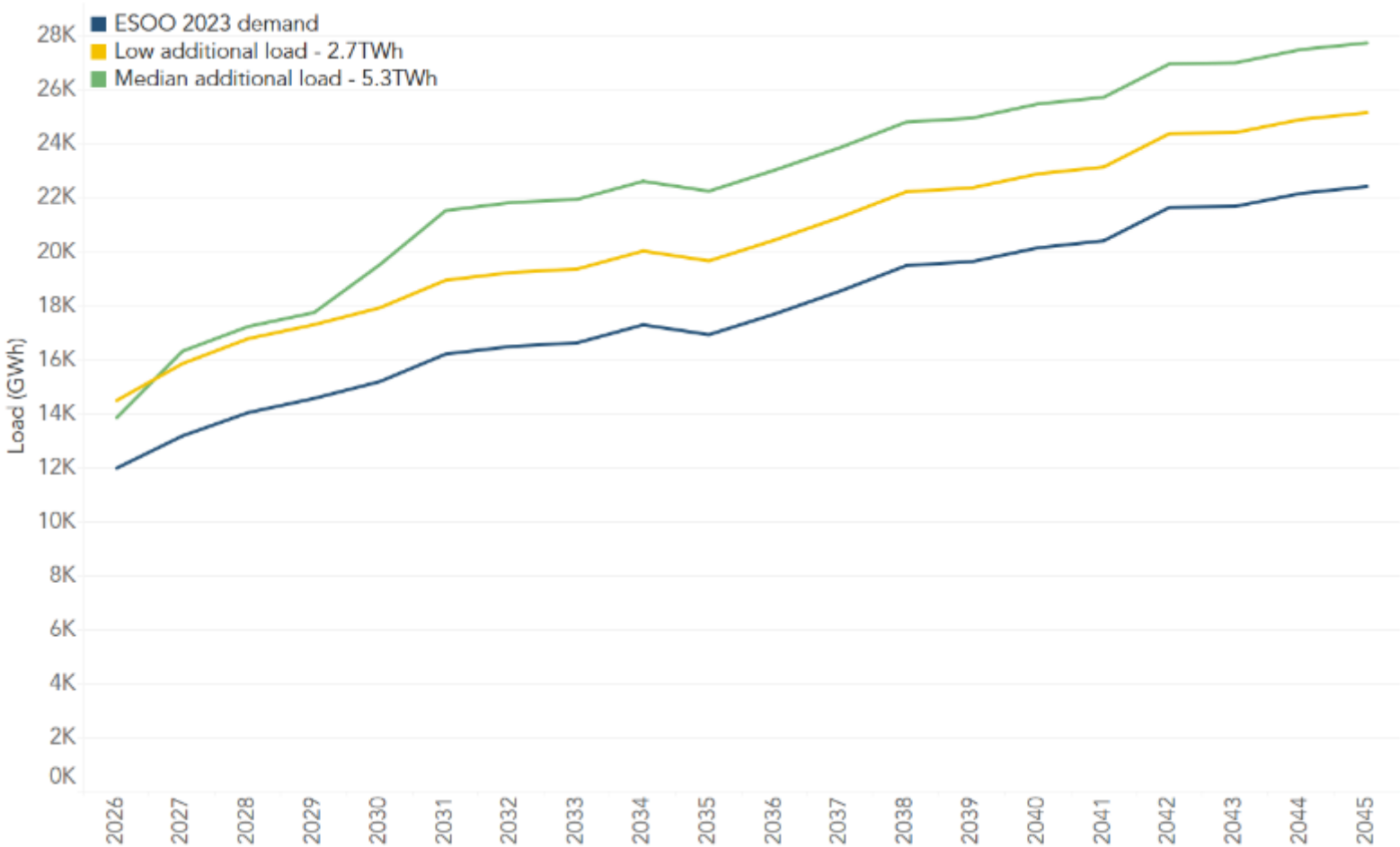
Additional demand scenarios



ElectraNet expects even higher loads to connect



ElectraNet and AEMO's demand forecasts in South Australia

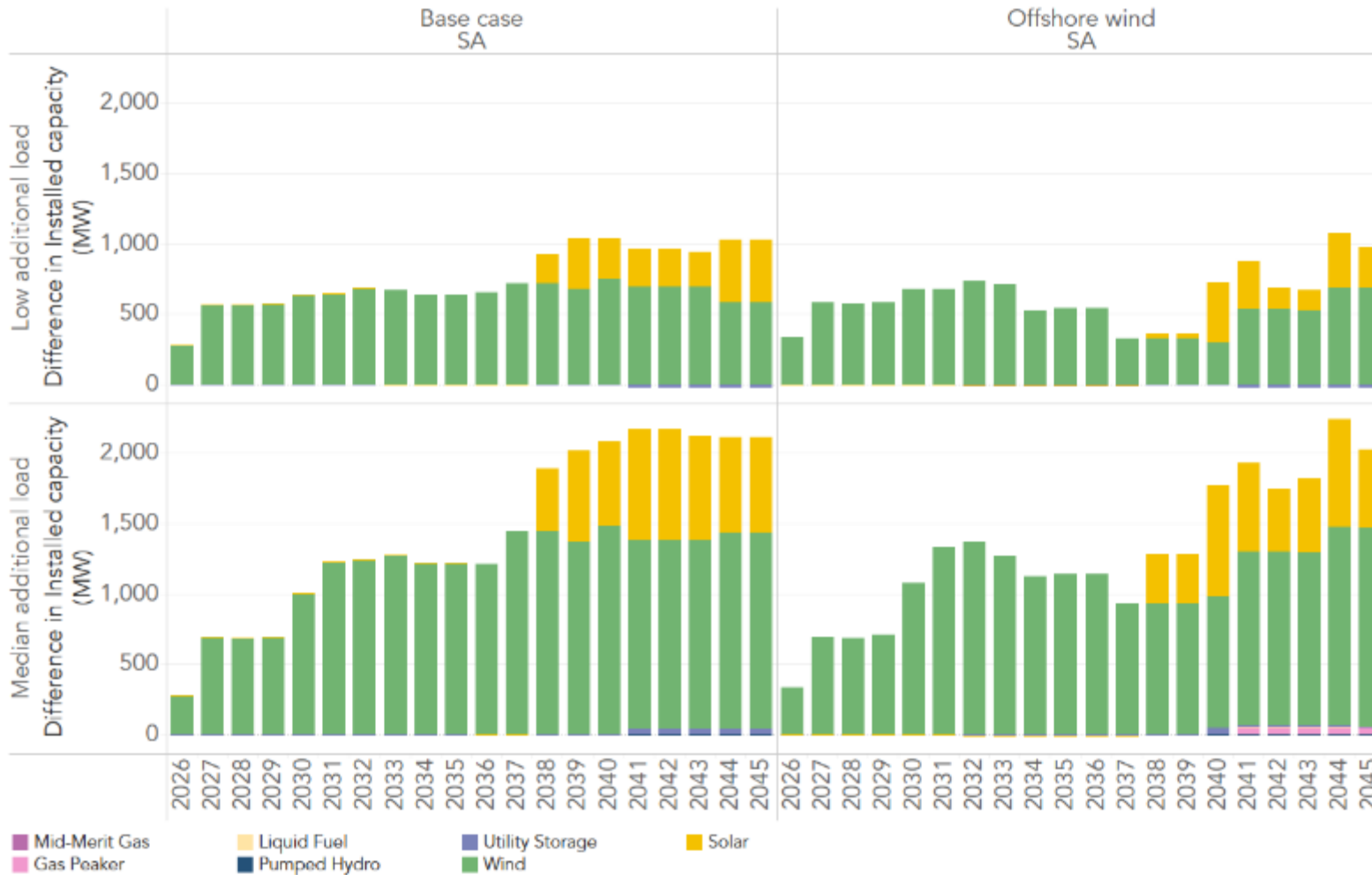


- ElectraNet expects significant industrial and mining loads to connect to the network within the next decade
- This load represents an increase in up to 33 per cent of South Australia's annual electricity consumption

Additional renewables in SA to meet additional load



Additional capacity built in each FY by region, compared to ESOO 2023 demand cases

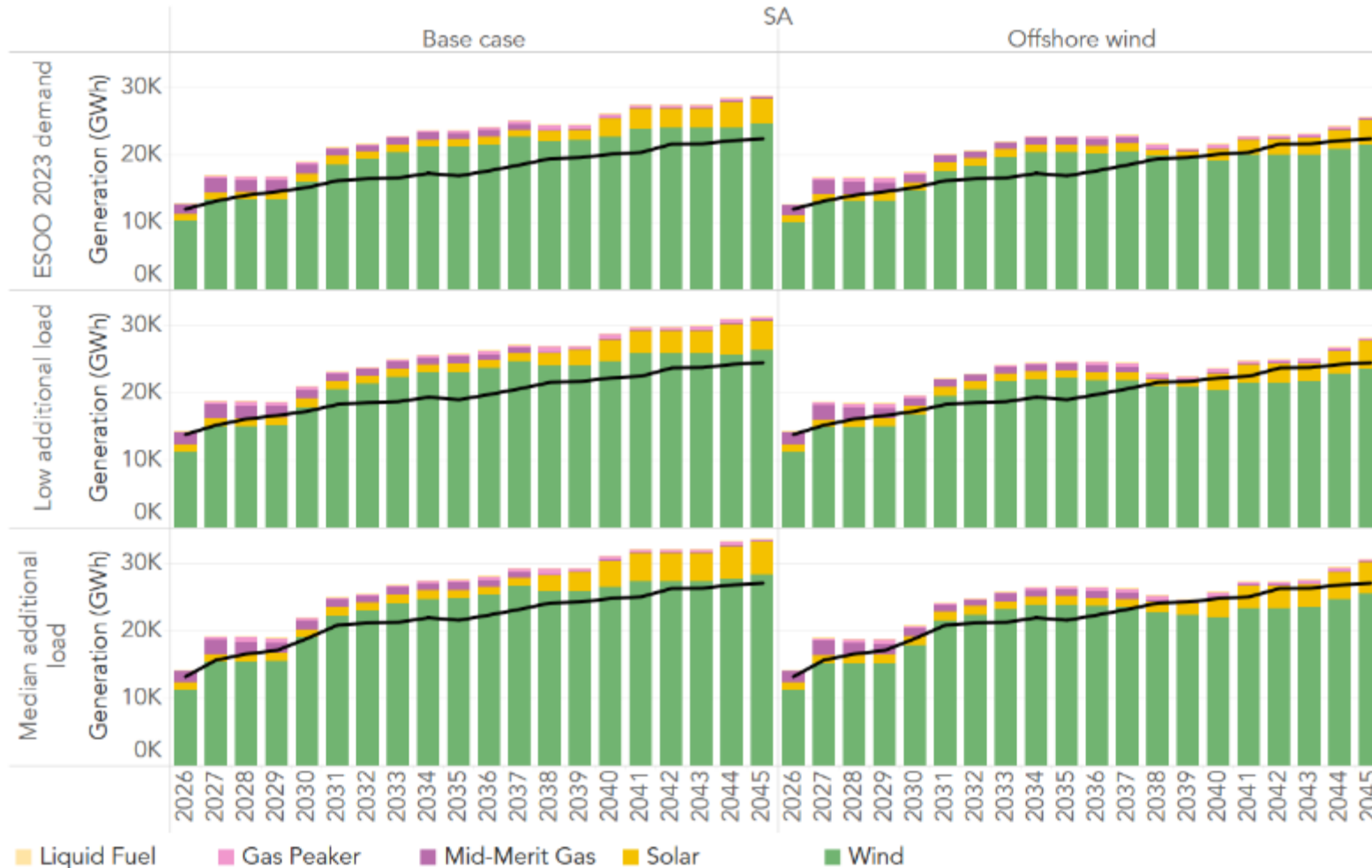


- Low additional load case (additional 2.7 TWh) sees ~500 MW of additional wind be built to meet it
- Median additional load case (additional 5.3 TWh) sees >1,000 MW of additional wind be built
- Additional Solar PV is built in the 2040s, once many of the high-quality wind resources are at capacity

Additional load does not necessarily inhibit the renewable target



Generation mix vs demand for South Australia, in all cases



- From 2030 onwards, renewable generation is always greater than demand in South Australia
- Additional load does not put the 100 per cent renewable target in jeopardy
- Offshore wind in Victoria does reduce the amount of exports from South Australia

Additional transmission does not necessarily increase TUOS



Although additional capital expenditure would be associated with transmission augmentations, this does not *necessarily* increase charges for existing customers

TUOS charges paid by the new industrial, mining and hydrogen loads could maintain, or even lower, charges for existing customers

For example, if network utilisation increases, all else being equal, those new customers may increase the consumption more than the additional costs



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and application of mathematical models.

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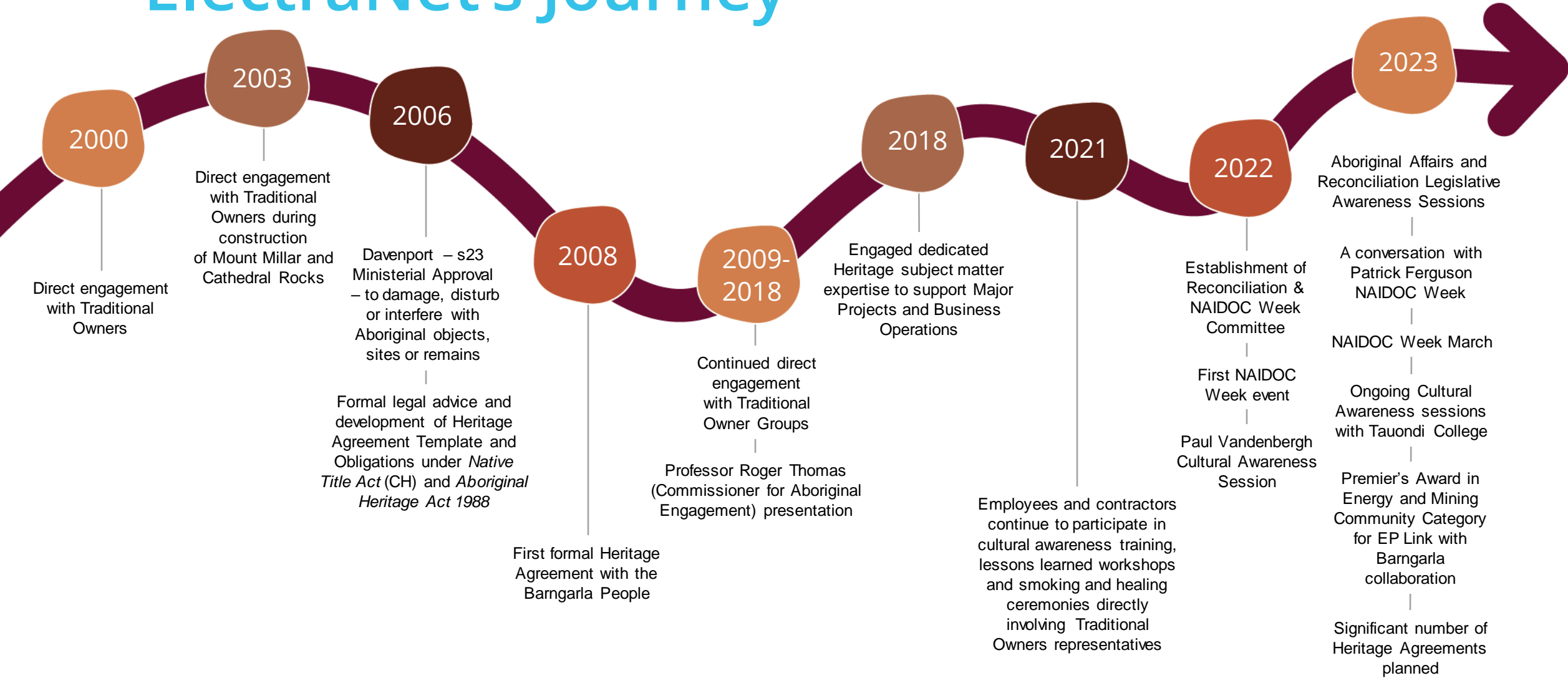
info@endgame-economics.com

7. Reconciliation Action Plan update

Nicola Buley

Executive Legal Risk & Governance

ElectraNet's Journey



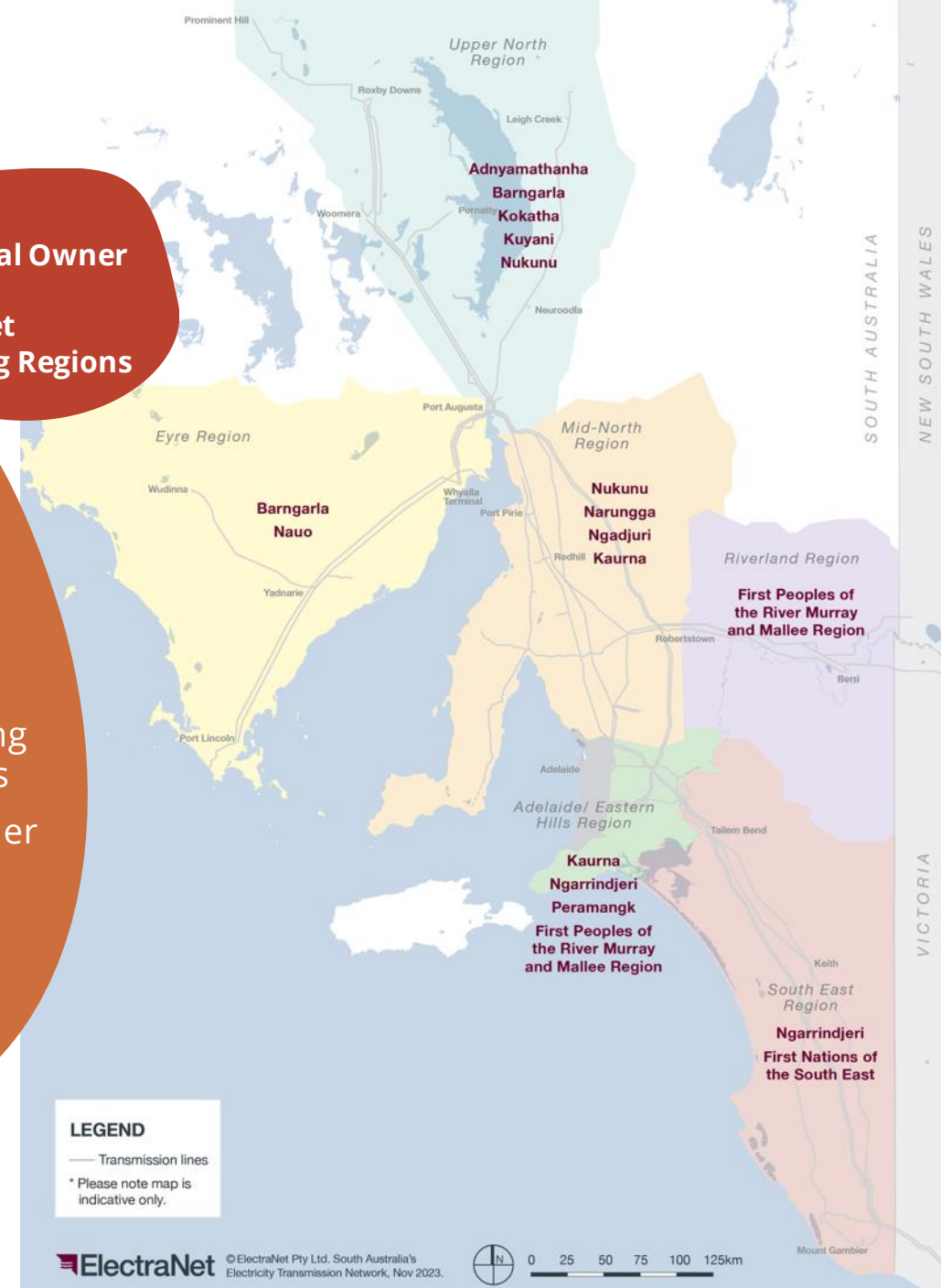
What is a Reconciliation Action Plan (RAP) and why do we have one?

- A formal commitment to reconciliation in line with our business objectives
- Provides a pathway for greater understanding and awareness of Aboriginal and Torres Strait Islander cultures and histories
- Support a workplace that welcomes, respects and values our Aboriginal and Torres Strait Islander employees and contractors

Our first RAP provides important opportunities to contribute positively to:

- Reconciliation
- Sustainable long-term economic empowerment
- Social and cultural well-being of Traditional Owner groups
- To advance Traditional Owner groups rights and interests
- Join 1,100 corporate, government, and not-for-profit organisations that participate in the RAP program

Traditional Owner Groups in ElectraNet Operating Regions





Artist Gabriel Stengle

Gabriel Stengle is an Aboriginal Contemporary Artist. She is a proud Ngarrindjeri, Narungga and Kaurna Woman from South Australia and is one of six children who grew up in a sporting and artistic family.

Gabriel sources inspiration from the Dreamtime and stories told to her by her elders as a young girl.

Her Nana Cecilia O'Loughlin and Uncle Jacob Stengle are both accomplished, globally recognised artists who inspire her work.

About the artwork

The concept / story I'm telling is that the main meeting place (ElectraNet) is connected to Journey Lines that lead out to more meeting places that ElectraNet service.

The Journey lines follow the same operational areas of the traditional owners of the lands. The kangaroo tracks represent ElectraNet moving forward and never backwards in the understanding of culture and their eagerness to learn.

How are we committing to contributing to Reconciliation?

Relationships

Establish and strengthen beneficial relationships with Aboriginal and Torres Strait Islander stakeholders and organisations

Build relationships through celebrating National Reconciliation Week (NRW)

Promote reconciliation through our sphere of influence

Promote positive race relations through anti-discrimination strategies

Respect

Increase understanding, value, and recognition of Aboriginal and Torres Strait Islander cultures, histories, knowledge and rights through cultural learning

Demonstrate respect to Aboriginal and Torres Strait Islander peoples by observing cultural protocols

Build respect for Aboriginal and Torres Strait Islander cultures and histories by celebrating NAIDOC Week

CAP only session: Forward Planning

Leanne Muffet
Independent Facilitator

Thank You

Next meeting