



Ngarigo country
Khancoban dam wall



RESILIENCE: PROCURING

in the face of

Climate risk and disruption



Australia's Electricity Market

Challenges & Risks

- Market (NEM)
- Consumers – reliability of supply, price

Opportunities

- balance the equation: supply risk, demand, price & sustainability
- Products to procure, now and emerging

Resilience: People & Partnerships

Procurement Strategy 101 in the face of Climate Change

ELECTRICITY MARKET

Risks, challenges,
& opportunities

The NEM of the past

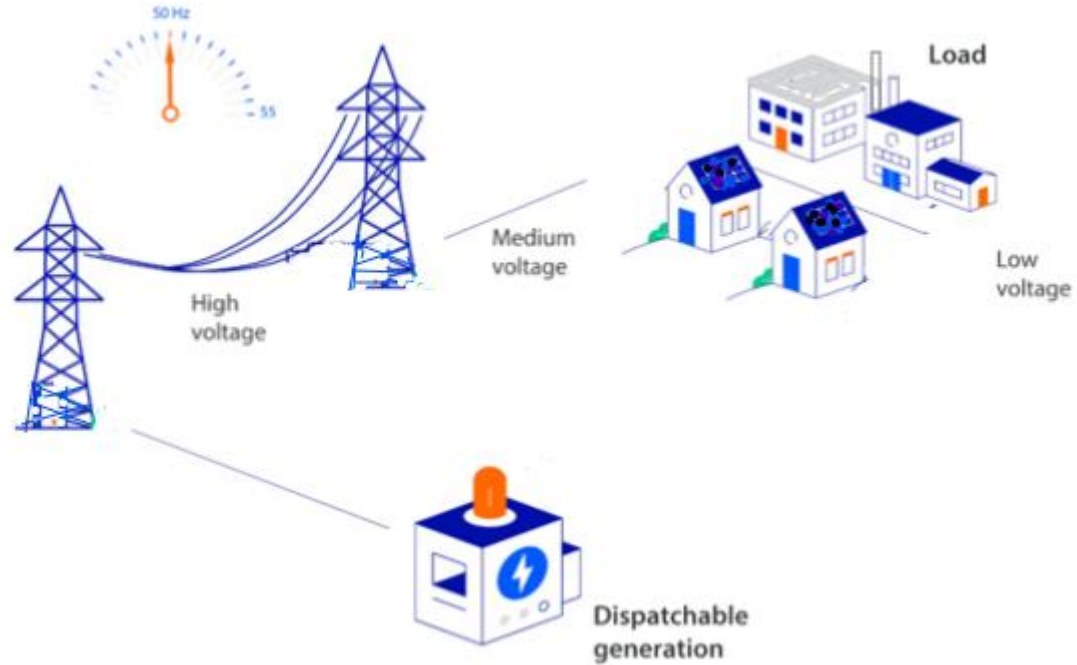


The SEC Control room, Vic, decommissioned in 1982



Snowy Hydro Corporation Control Room, NSW, 1966

The NEM of the past



The NEM

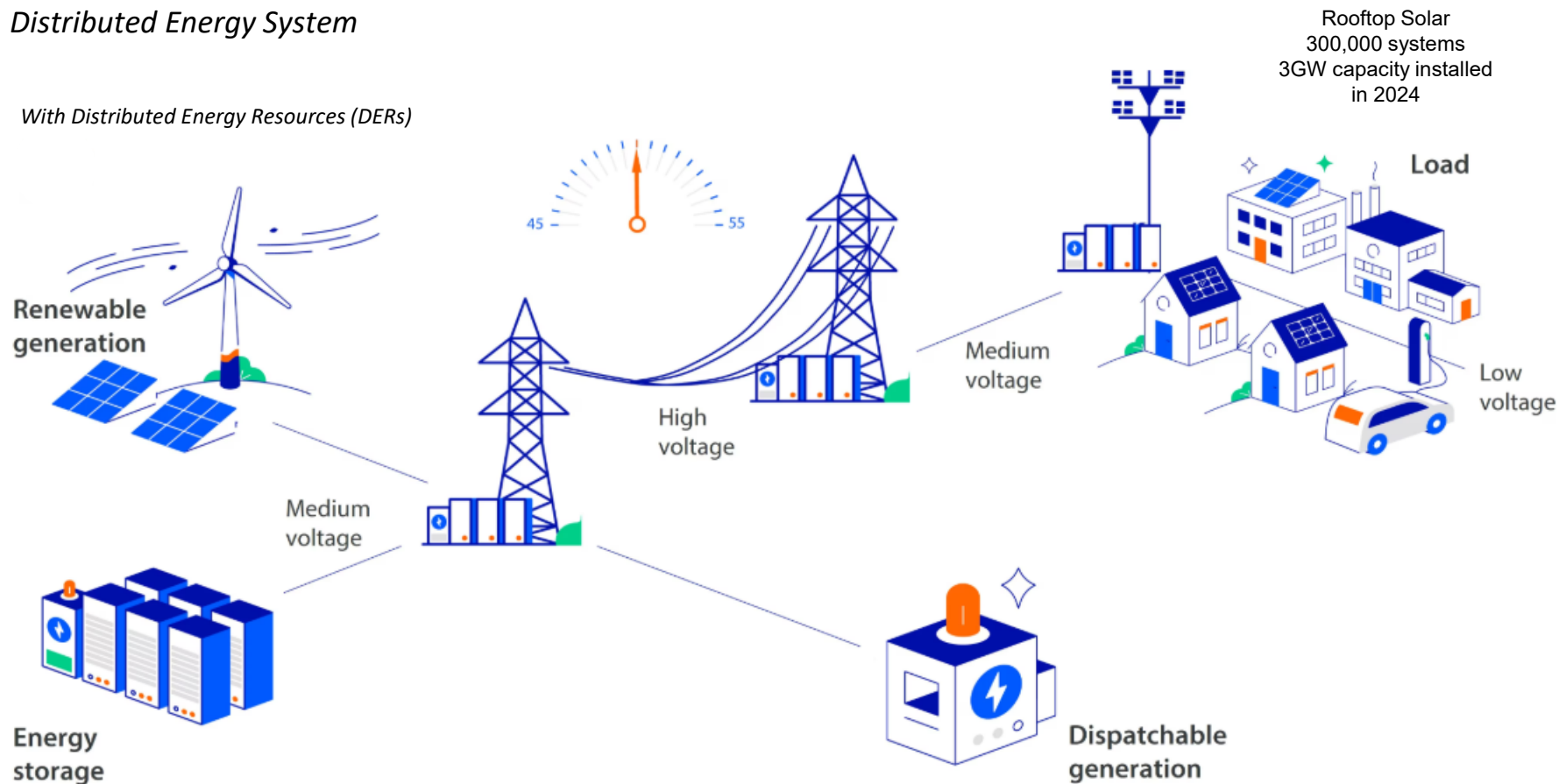


today

The NEM emerging

Distributed Energy System

With Distributed Energy Resources (DERs)



Key Challenges to 2035 +

1. Potential for delays in transmission infrastructure
2. Potential for delays in new generation assets, especially firming
3. AEMO to manage integration of DER achieve reliability + optimal prices



Procuring energy: Risks to consider

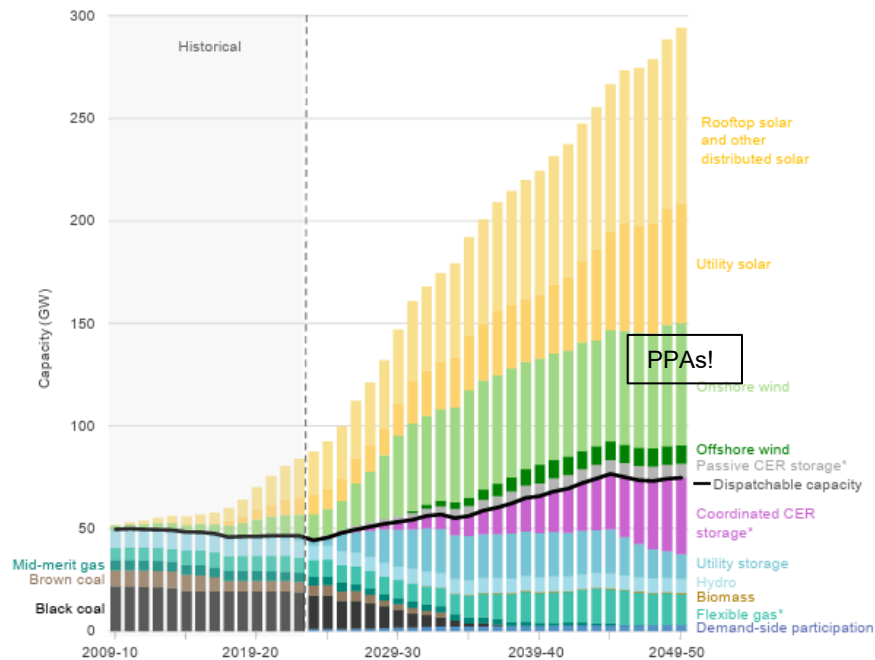
- Price – locked into high prices or suffering price shocks?
- Short term outages
- Medium term outages
- Major outages
- Achieving sustainability goals



Laverton Power Station – Gas Peaking

Generation capacity forecast

Figure 2 Capacity, NEM (GW, 2009-10 to 2049-50, Step Change)



Coal
leaving faster than
predicted



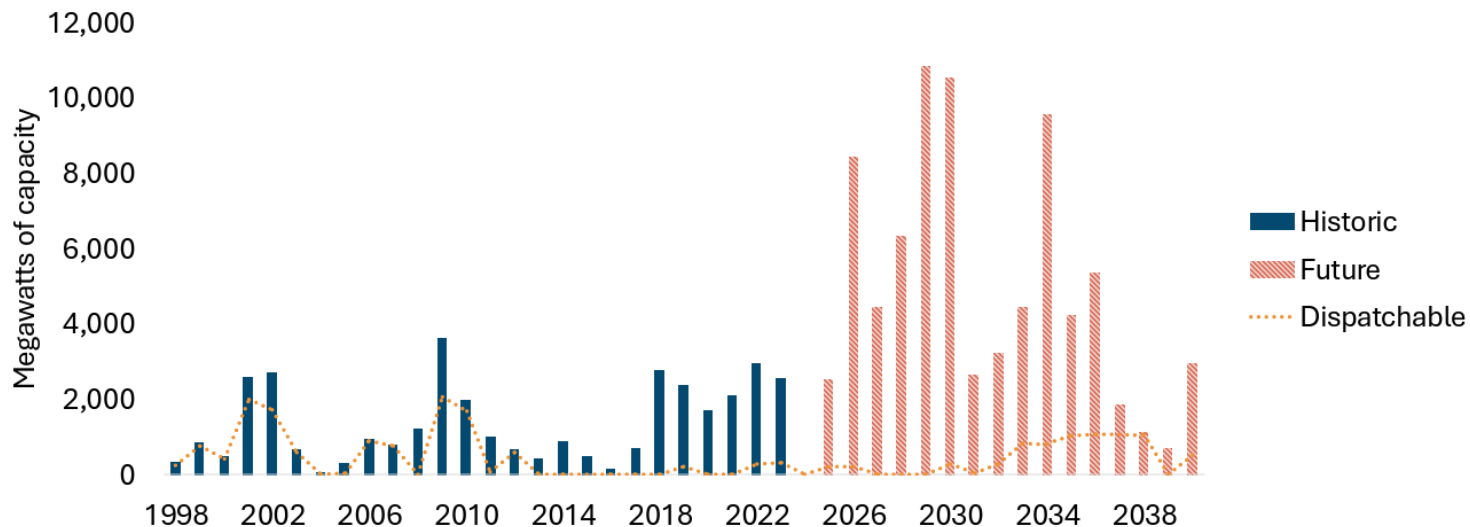
Renewables
cheap,
variable

~ 10GW gap
In firming
capacity

More expensive but
agile + firming

Generation Build

Historic and projected generation build, 1998-2040



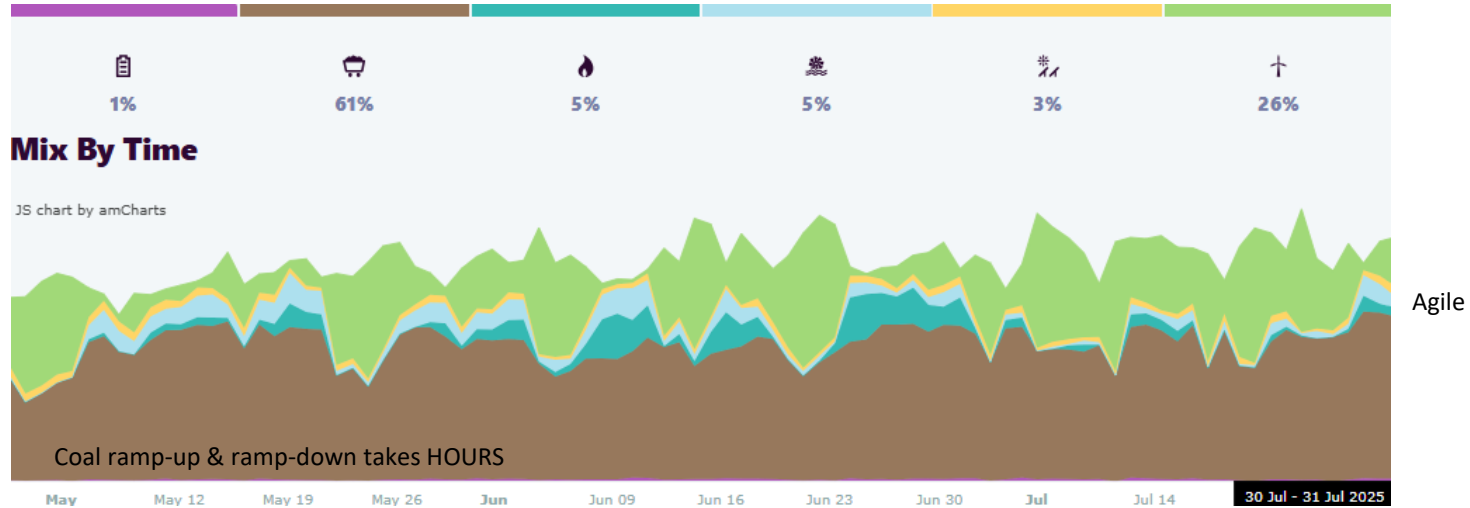
Sources: ISP (Step Change). Utility scale generation from coal, gas, solar, wind, hydro; excludes batteries, pumped hydro, rooftop solar or other small-scale resources, demand side participation.



Capacity by fuel

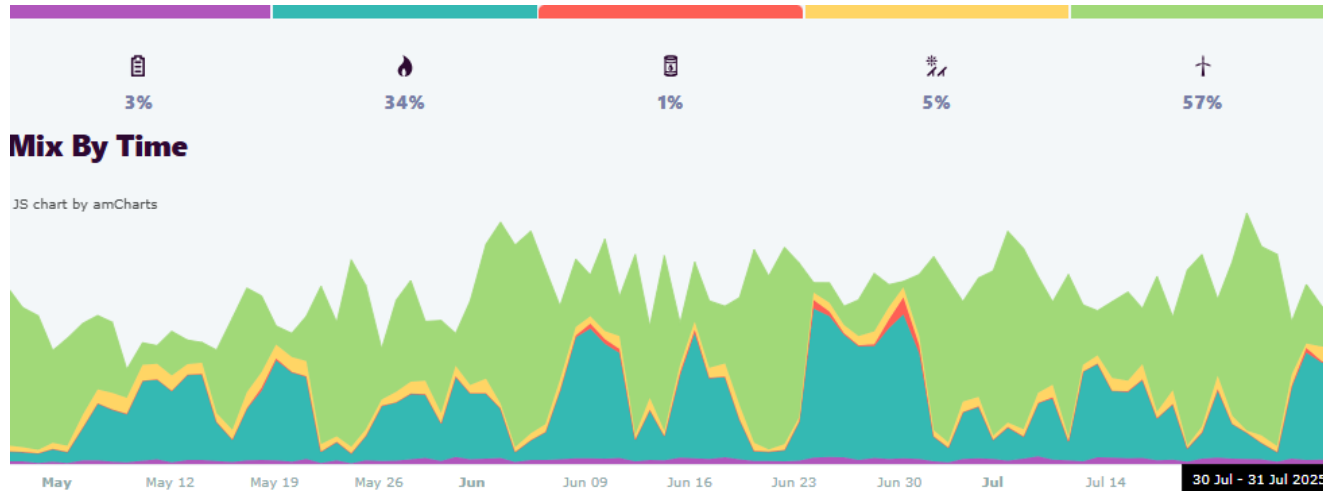
Victoria

– last 3 months



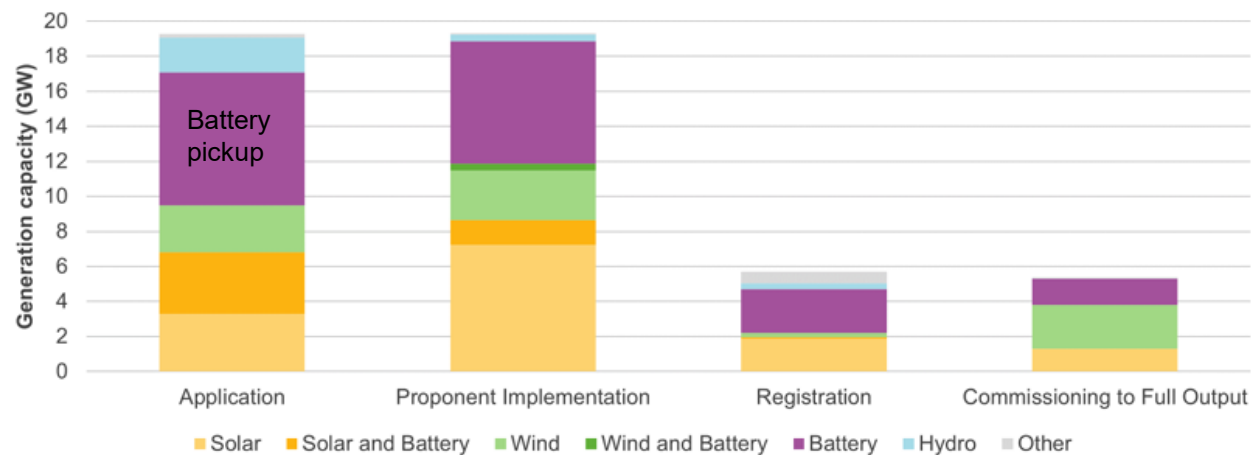
Capacity by fuel

South Australia – last 3 months



Transmission pipeline

Figure 8 Underway NEM connections projects by stage and type of generation or storage technology as of December 2024 NEM Connections Scorecard (GW)

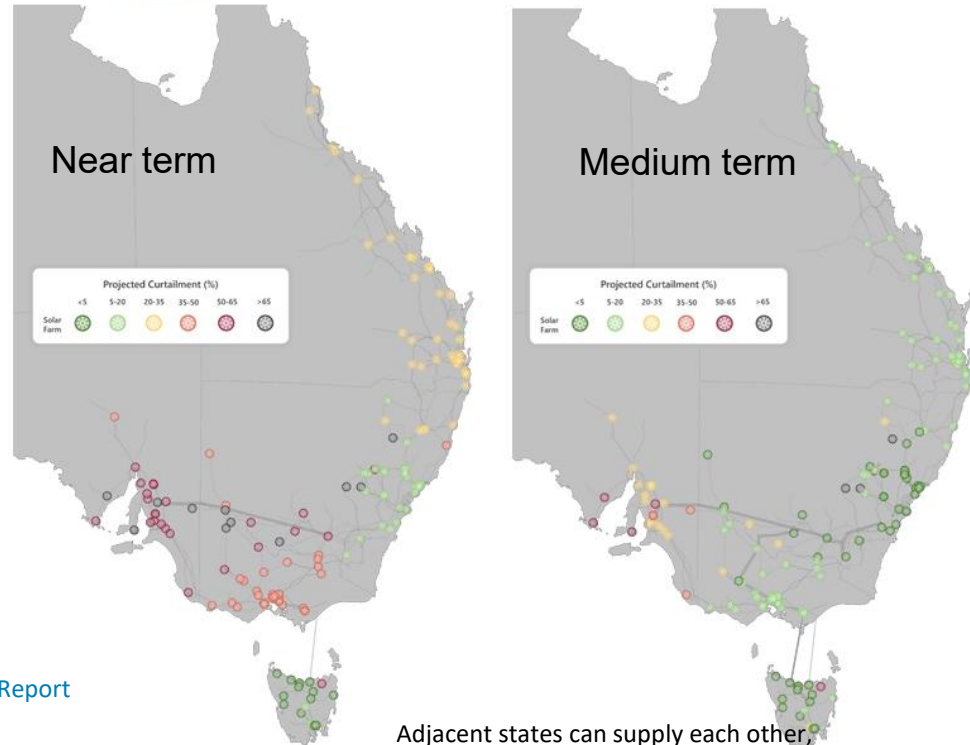


Transmission – rollout plans

Curtailment
= the intentional reduction or halting of electricity generation when the resource is available

where batteries / transmission / local demand would help buffer immediate term supply v demand

Figure 4 Projected curtailment outcomes for solar in near term (left) and medium term (right) operating conditions




RISK: OUTAGES




Lower Impact
Localised & shorter

Weather!
Esp regional/remote
Frequent
increasing with Climate ▲



Medium Impact
significant impact

Storms and fire
Esp regional/remote
Occasional
increasing with Climate ▲



Major Impact Outage

Widespread
Probability?
Causes ?— many contributing factors
perfect storm of circumstances

Australian Broadcasting Corporation

People sleep on pub floor waiting for NSW's wild weather to end

1 day ago



Great Lakes Advocate

Power outages and storm damage across Great Lakes

10 hours ago



Australian Broadcasting Corporation

'Never seen anything as ferocious as this': Why did so many trees fall in the recent storm?

A week after ferocious winds damaged swathes of forest in central Victoria some locals

The Sydney Morning Herald



Australian Broadcasting Corporation

Parts of NSW see deepest snow in 20 years as SES responds to hundreds of calls

2 days ago



The Sydney Morning Herald

Sydney train delays as it happened: Strathfield power outage; service disruptions continue today

Sydney commuters are facing train delays after a broken overhead live wire to power outage across most of the train network last...

21 May 2025

NZ Herald

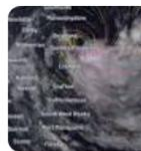
NSW floods: 18k without power, Warragamba Dam set to spill

8 hours ago

Cyclone Alfred tracking LIVE updates: Brisbane, Gold Coast BoM forecast heavy rain; Lismore, Mullumbimby, Bellingen flood: NSW, Queensland power outages widespread

Queensland authorities have ordered residents to take shelter as Cyclone Alfred nears, while the NSW Northern Rivers region is already...

8 Mar 2025



Victoria weather: 105,000 properties still without power and lines may not be repaired until next week

More than 100,000 Victorian properties are still without power after wild storms tore down power lines and damaged homes, causing widespread...

29 Oct 2021

News.com.au

State narrowly dodges power break down

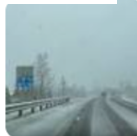
Australia's biggest state has avoided a major power breakdown after residents, businesses and government employees took steps to 'reduce demand'.

27 Nov 2024

Australian Broadcasting Corporation

Parts of NSW see deepest snow in 20 years as SES responds to hundreds of calls

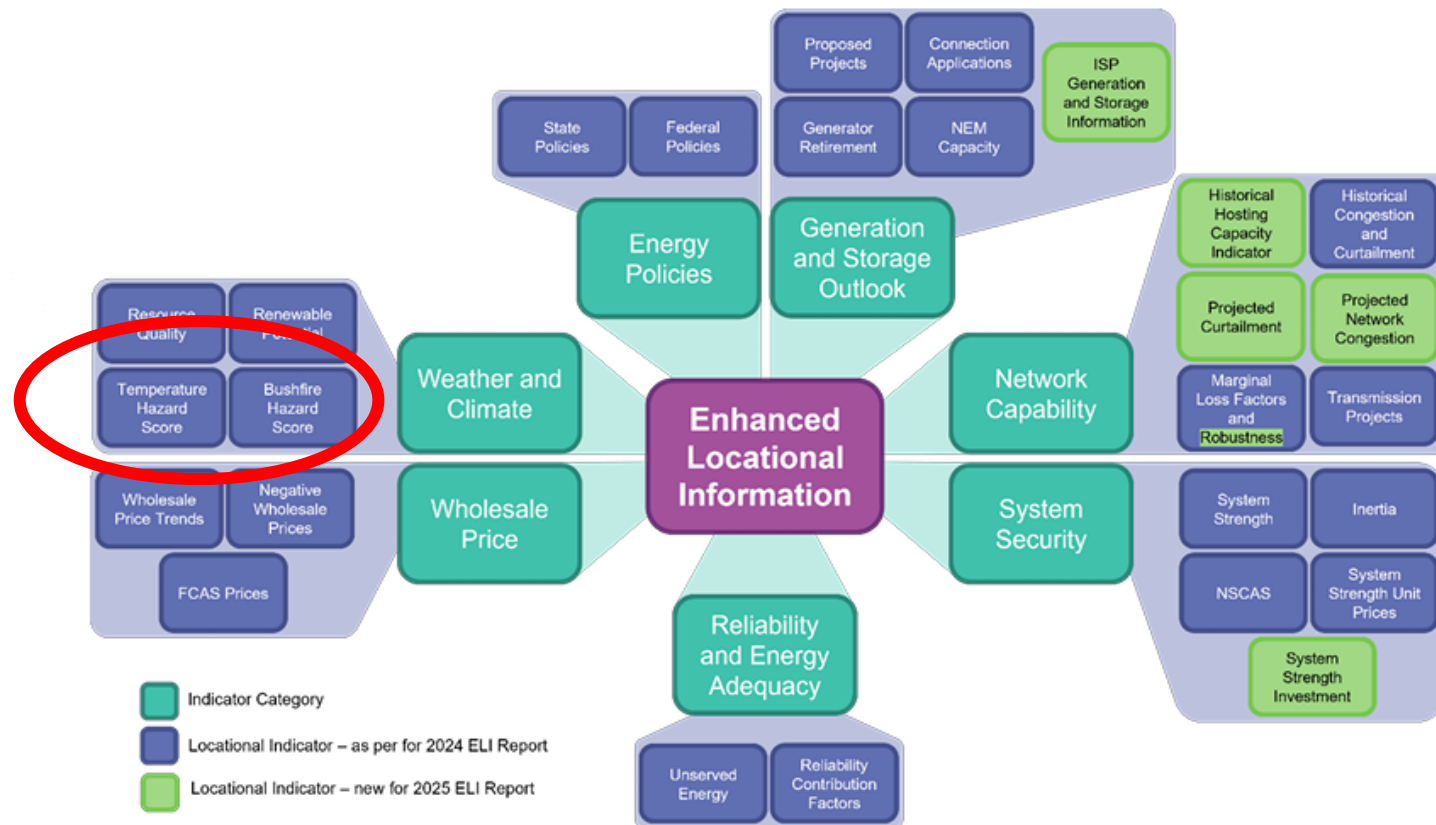
New England North West residents see some of the biggest snowfalls across the region, with dozens of warnings issued.



Victoria's power outage caught thousands by surprise

13 Feb 2024 — Tue 13 Feb 2024. Wind gusts of more than 120 kilometres per hour reduced...

Figure 1 Overview of indicator types considered in the 2025 ELI Report



OUTAGES



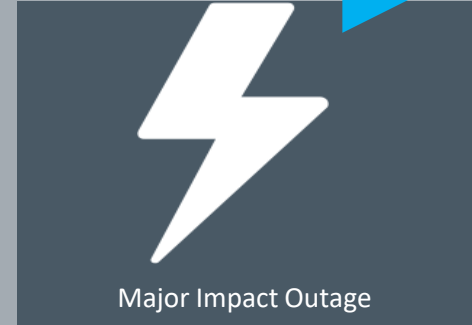
Batteries, own generation
Power-down, standby

Consider impacts on others



Batteries may not last
Standby power

People and safety #1
Respond, Reboot
Care management
Long term support, those affected
by disaster & loss of income



Mitigate by limiting demand
Anticipate widespread chaos, lack of
communication,
& services, people stranded

People and safety #1
+ Case by Case assessment
Respond
Restart
Recover

Good News:

- New regulations strengthen reliability
- Capacity Investment Scheme increased to target 40GW
- Batteries, EVs, +passive storage
- Technology – big data & AI

Opportunity for businesses:

- ⇒ to take active role in controlling price and supply risks
- ⇒ + contribute to renewable investments



PROCUREMENT OF ENERGY

OPPORTUNITIES – FRONT OF METER



Demand response product

Earn money for opting out when the NEM approaches critical shortage of supply

Signal 24 hours out

Opt in

- Can you power-down / off without adverse impact?
- How long are you prepared to stay off grid?
- Costs offset by \$ payment



Power Purchase Agreements (PPAs)

PPAs: long-term contracts between renewable energy generators and large energy consumers.

- Risk Adverse
- Price certainty
- Underpin confidence & therefore more development of Renewables.



Progressive Purchasing Agreement

– Take some price risk in the medium term, lock into prices on offer eg .3 monthly

PROCUREMENT OF ENERGY

OPPORTUNITIES – BEHIND THE METER



Energy Efficiency

Not to be underestimated!

- Lower consumption - equipment, buildings
- Scheduling time-of-use (TOU) price effective and also support the grid



On site Generation / Storage

By Site

Consider site's risk analysis of supply vs demand, appetite for risk & sustainability goals & ROI

- eg. Solar PV, small hydro, wind, biomass, emerging



Virtual Power Plants (VPPs)

Users share and trade energy via one shared node

DERs that are controlled centrally to function like a power plant.

Benefits :

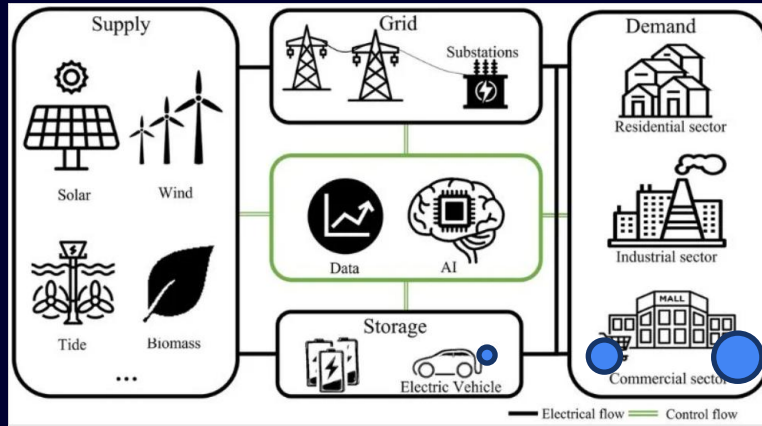
- cost savings (profits) for participants.
- increased grid stability
- better utilization of renewable energy

PROCUREMENT OF ENERGY

OPPORTUNITIES – NEW AND EMERGING

Energy as a Service (EaaS)

The EaaS provider is responsible for the design, installation, operation, and maintenance of the energy system.



Co-ordinated Battery Systems “CBCs”

Banks of Batteries + portal to AEMO market data & bidding + smarts

Benefits:

1. Self insure for outages
2. Lower electricity costs
3. Potentially be an energy trading (profit)
4. Grid Stability

Does Australia have minerals for batteries?

Yes, apparently, Just \$\$

PROCUREMENT OF ENERGY

Take advantage of opportunities in the new NEM

Tendering

- Your energy retailer should work with you to assess energy needs and appetite for risk
- Assist access to ARENA grants
- Partnership and knowledge sharing
- **There are opportunities to join organisations that are playing a lead role in underpinning the renewable future**



Ongoing

- Partnership and knowledge sharing
- Don't set-and-forget during contract term
- Evolving market and technology



We provide energy solutions delivered with passion, expertise, and decency.



Snowy's TrueGreen™ product is 100% renewable energy from our portfolio of wind, solar and our Hydro Electric Scheme, matched with 100% Large-Scale Generation Certificates (LGCs).



NetZeroMatch™ is 100% renewable sourced energy, matched with the mandatory LGCs (18.96% in 2023) with the remaining renewable energy matched with International Renewable Energy Certificates (I-RECs).

I-RECs can help businesses achieve their renewable energy commitments to transition to 100% certified renewable electricity as an economical alternative to purchasing 100% LGCs. Learn more about I-RECS:

https://drive.google.com/file/d/1EI-RS-h9V2W_bAEuLS_5lt0nVYQlqPUJ/view



Climate Change Resilience - Procurement

Climate Change Risk Assessment & Controls

New Accounting Standards Requirements



Climate Hazards
Analysis

Climate Risk
Assessment

Mitigation Plans

Financial Impact

Risks mitigation in procurement

Critical Suppliers

1

- Identify critical suppliers
+ key climate risks
- Strata,
 - Control specifically

2

- Address specific vulnerabilities
- their location
 - service/product offer
 - market forces, resources
 - Infrastructure & logistics

3

- Establish inventory buffers on critical components / stock

All Suppliers

4

- Prequalification :
Link to Controls
Work Health Safety
Major Accident Prevention
Business Continuity Plans
Emergency Response Plans

5

- Diversify where appropriate

Risk mitigation in procurement :

Sourcing

1

Know your organisations needs & wants

2

Write climate-change controls specifications into tenders

3

Ask questions, communicate
Do not set-and-forget

4

Foster transparency, collaboration, innovation

5

Post Event recovery:
Support, review, learn,
mitigate for next time
PAY

PEOPLE & PARTNERSHIPS

WE ARE ONLY AS STRONG AS OUR PEOPLE

Employees, customers, contractors, suppliers, & community

Clarity on sustainability :

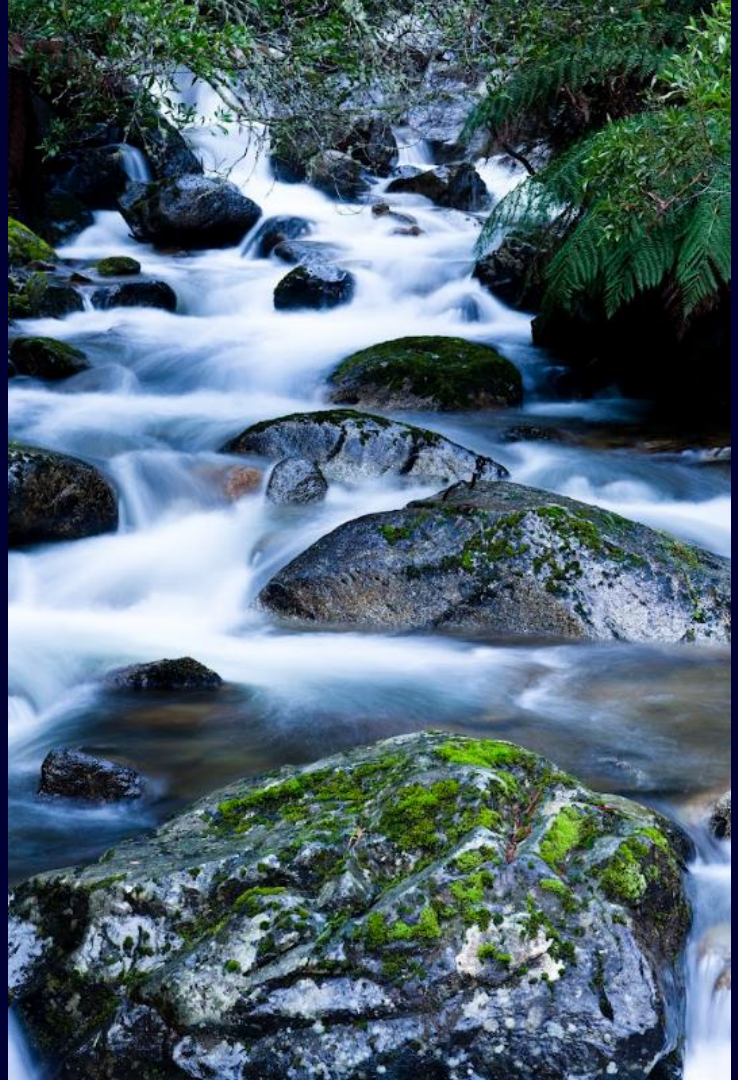
- Attracts & retains talent
- Fosters a culture of Innovation
- Underpins pride, purpose, community
- Produces positive customer and supplier relationships

= Resilience



THANK YOU

snowyhydro



Articles

[AEMO Integrated System Plan](#)

[ARENA funding](#)

[facts-and-lessons-learned-from-the-iberian-blackout](#)

[Australian Gov Dep of IS&R " National-battery-strategy"](#)

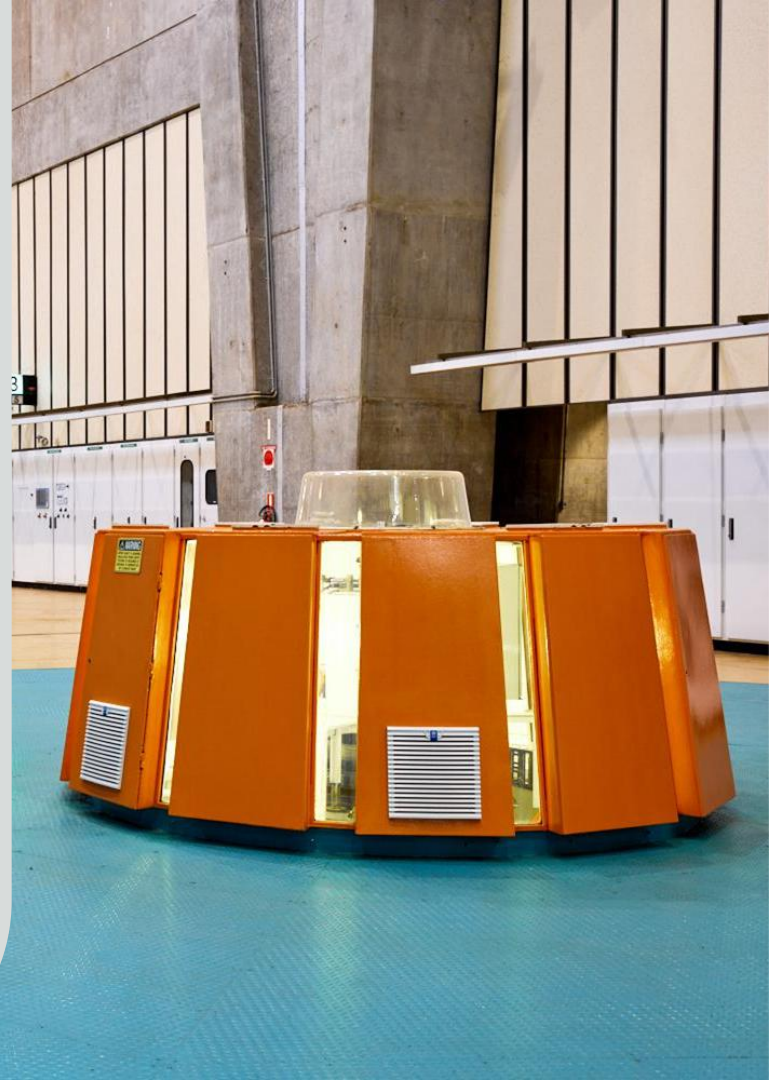
[Coordination of solar battery hybrid power plants and synchronous generators for improving black start capability](#)

[Lights Out: Ageing Coal and Summer Blackouts.](#)

[2016 South Australian blackout](#) (Wikipedia summary, with references)

<https://www.energynetworks.com.au/news/energy-insider/2025-energy-insider/watt-happened-unravelling-the-iberian-power-mystery/>

The expert panel in Spain has only just been set up to do a full investigation.





TrueGreen explained - <https://youtu.be/VUVCAzi-BMg>

NetZeroMatch explained - <https://youtu.be/1wUrY13cm-s>

I-REC's - <https://youtu.be/ySkM9HZtL0I>

<https://www.youtube.com/watch?v=2CAM-KZ8teo>

<https://www.youtube.com/watch?v=2CAM-KZ8teo>



