

IN-CONFIDENCE - EXTERNAL

SECURITY AND RELIABILITY COUNCIL

AGENDA

Meeting number: 56

Venue: Electricity Authority

Time and date: Wednesday 16 September 2026, 8:30am to 4:00pm,

	Start time	Length (mins)	Paper Author	Paper	Presenters/ attendance
1 Attendance and apologies	8.30	5	-	-	-
2 Changes to disclosure of interests			-	-	-
3 Members-only session	8.35	10	-	-	-
4 Minutes of previous meeting			Secretariat	Y	-
5 Correspondence	8.45	10	-	Y	-
6 Action list, updates & tracker			Secretariat	Y	-
7 Security of supply update	8.55	45	EA/SO	Y	EA/SO
8 Wrap-up on item 7	9.40	10	-	-	-
Break	9.50	10	-	-	-
Risk and Security Strategy Session					
9a Risk and Security Strategy presentations	10.00	60		Y	
9b Risk and Security Strategy panel discussion	11.00	120		Y	
10 Wrap session on item #9	1.00	10	-	-	-
Lunch	1.10	30	-	-	-
11 Annual Security of Supply Assessment/SSAD Update	1.40	45	SO	Y	SO and EA
12 EA Strategy	2.25	20	EA	Y	EA
13 Dry-year regulatory framework	2.45	30	MBIE	Y	MBIE
14 Wrap Session on Item #11, #12, #13	3.15	10	-	-	-
15 Risk Radar	3.25	20	Secretariat	Y	Secretariat
16 Next meeting and Forward work programme	3.45	15	Secretariat	Y	Secretariat
Meeting finishes	4.00	-	-	-	-

IN-CONFIDENCE - EXTERNAL

SECURITY AND
RELIABILITY COUNCIL

Attendance and Apologies

The meeting opened at 8.30am, Chantelle Bramley, Jeremy Cain and Zoë Jay joined at 8.30am.

1. Attendance and apologies

- 1.1. The Chair welcomed members to the 55th meeting of the Security and Reliability Council (SRC) and introduced newly appointed SRC members Tim Boyce and Mary Ollivier to their first meeting. A quorum was established.
- 1.2. The Chair noted Andre Botha attended remotely.

2. Changes to disclosure of interests

- 2.1. The Chair reviewed the interests register.
- 2.2. The secretariat noted no change of interests, and the introduction of Tim Boyce and Mary Ollivier.
- 2.3. There were no further changes disclosed. The Chair approved members to act despite those declared interests.

3. Members-only session

- 3.1. The members discussed their priorities for the meeting.

4. Minutes of previous meeting

- 4.1. Members discussed the minutes of the 23 February 2026 SRC meeting.
- 4.2. The minutes were accepted as a true and accurate record.

Chris Ewers moved to accept the minutes. All members approved.

5. Correspondence

- 5.1. The Chair noted the SRC's letter of 10 March 2026 sent to the Authority, the Authority's letter of reply dated 8 May 2026 and the SRC's letter of 1 April to the Minister for Energy. There has been no reply from the minister to date.
- 5.2. Member Comments Included:
 - i. Understand broader energy policy (specifically gas) and tree regulations are outside the Authority's remit, but both significantly impact electricity users, who expect the Authority to advocate and act in their interests and across perceived organisational boundaries.
 - ii. Discussed that the response exemplifies fragmented / siloed thinking and policy responses, the problem the SRC was highlighting in its advice to the Authority, and letter to the Minister for Energy and Resources.
 - iii. Highlights need for system thinking and cutting across institutional silos where required to support consumer and national interest.
- 5.3. Members noted the existence of a Council of Energy Regulators and resolved to engage with this group.

Action 1: Secretary to draft a letter to the Council of Energy Regulators and circulate to members for review.

6. Action list and updates

- 6.1. Discussed the actions trackers, providing feedback for the secretary to address for the next iteration.
- 6.2. Discussed the year in review report, providing feedback to the secretary. The year in review report is to be looked at in light of the feedback previously provided to the SRC, and how it has addressed those issues.

Action 2: The Secretary to address feedback from members on the year in review report with request for feedback

Action 3: The Secretary to address feedback on the tracker for the next iteration.

Viktor Nordstrom, Ramu Naidoo, Natalie Bartos and Hayden Glass joined the meeting at 9:15

7. Joint Security of Supply Update

- 7.1. The respective Authority and System Operator (SO) staff presented the security of supply update.
- 7.2. The May briefing covered the outlook for Winter 2026, including the current market conditions, forecast weather conditions, current hydro and thermal fuel storage, current supply and demand balance, current generation pipeline and regulatory and policy initiatives. The System Operator noted organisational changes that release capacity for dedicated focus on security of supply and forecasting.
- 7.3. Key points from presentations:
 - a) Hydro storage is above mean and thermal fuels (coal and gas) stocks are high – resulting in a better net energy position, by 528 GWh, relative to this time in 2025 – and well placed to firm a dry period if, necessary, over winter 2026.
 - b) The expected El Nino weather pattern is not predicted to have a material impact on hydro inflows nationally, noting the south and west of the South Island can expect higher while the rest of New Zealand can expect lower rainfall.
 - c) Demand appears to be growing with year-on-year increases in both industrial and commercial and residential groups (noting industrial demand remains lower than historical levels due to plant closure).
 - d) Spot prices are lower than in each of the previous six years, even with growing demand, and forward prices are following a similar trend.
 - e) A significant proportion of expected generation commissioning has been delayed, but only by 1-3 months, with most delayed plant still expected to come online during winter 2026.
 - f) Maui exit at the end of 2026 / start of 2027 is expected to trigger Methanex exit- two major shocks for the gas market, the effects of which are not yet clear.

7.4. In discussion with presenters the SRC:

- a) Noted the outlook for winter 2026 and falling futures prices as indicative of a system returning to balance after protracted period of unduly tight supply and high spot and futures prices.
- b) Cautioned against complacency, noting projections for demand growth necessitate continuation of current generation investment levels into the 2030s and beyond.
- c) Welcomed initial view of work by the System Operator to understand energy and capacity contribution of intermittent generation. Encouraged continued development to allow location and national views, splits by plant type and, in time, to support more reliable forecasting.
- d) Queried over optimism in the generation pipeline. Discussed methodologies used by the Authority and System operator, including relying on developer timelines, noted System Operator plans for sensitivity analysis to counter optimism bias.
- e) Noted that most focus is on energy adequacy, cautioned against complacency on capacity risk – in particular with strong hydrology (low thermal commitment) and less thermal flexibility (plant retirement).
- f) Queried whether patterns of thermal generation were changing to match potential constraints in daily gas market supply as it tightens. Encouraged a review of key plant generation forecasts with daily gas supply as a constraining input.
- g) Requested to review the Security Standards and Assumptions Document prior to consultation.

Action 4: The Secretary to organise with the Authority on a pre-read of the Security Standards review.

Chantelle Bramley, Viktoria Nordstrom, Ramu Naidoo, Natalie Bartos and Hayden Glass left at 10:13.

8. Wrap-up on items #7

- 8.1. The Chair led a Wrap-up discussion with members on item #7 including areas of concern and points to note in the letter of advice.

The SRC broke for morning tea at 10:20.

The SRC continued at 10:30. Ramu Naidoo, Andrew Renton, Sarah Gillies, Chantelle Bramley, Hayden Glass, and Natalie Bartos joined at 10:30.

9. Impact of Fuel Shocks

- 9.1. The Chair introduced this item and welcomed presenters. Since the last SRC meeting in February attacks by the US and Israel on Iran have resulted in the partial closure of the Strait of Hormuz. The SRC had asked presenters to provide an analysis of the resulting impacts to the New Zealand electricity system.
- 9.2. The presentation and discussion included the following points:

- a) For bare minimum needs for the electricity sector – transport, lights on – reported the 750,000 litres of liquid fuel is required a week. This does not include fuel for generation (including network support generation during maintenance outages).
- b) Current fuel crisis is not impacting ability to generate but has resulted in a moderate increase in the price of coal (for the three Rankine units) and a very large increase in the cost of diesel. It does make generation more expensive.

9.3. In discussion with presenters the SRC:

- a) Commended the sector, and NEMA lifelines group for proactivity.
- b) Briefly discussed longer term implications of the crisis, specifically reduced confidence in fuel security and international supply chains.

Ramu Naidoo, Andrew Renton, Sarah Gillies, Chantelle Bramley, Hayden Glass, and Natalie Bartos left at 11:00.

10. Wrap-up on item #9

- 10.1. The Chair led a Wrap-up discussion with members on item #9 including areas of concern and points to note in the letter of advice.

Chantelle Bramley, Sarah Gillies, Hayden Glass, Natalie Bartos, Shelia Matthews, Vong Nyuk-Min, joined at 11:10. Nabil Adam joined at 11:17. Nilesch Modi joined at 11:30.

11. Theme: Grid Stability

- 11.1. The Chair introduced presenters from Transpower, the Authority, and Bespoke Energy.
- 11.2. The presentation from Transpower covered a Grid Stability 101, the impacts of non-synchronous / inverter-based resources (IBR) including distributed energy resources (DER), and current plans to support integration of growing quantities of these resources into New Zealand's power system.
 - a) The key areas of grid stability risk as IBR increases (and synchronous generation falls as a proportion of total and in certain localities) are frequency stability, converter-driven stability and resonance stability. Changing load types may introduce or exacerbate risks.
 - b) A key tipping point for New Zealand is when generation from IBR reaches 2000 MW. At this point, IBR plus must run synchronous generation (geothermal and hydro) exceeds daytime load, requiring generation curtailment. This point is projected to be 2-3 years away.
 - c) Established tools and analytical techniques for a synchronous generator dominated system are no longer adequate to identify stability issues in an IBR system. Continuous development required to keep up with a rapidly changing environment.
 - d) Excursions outside the normal frequency band have increased steadily since 2025, driven primarily by increased IBR and is expected to continue.

- 11.3. The presentation from the Authority covered the regulatory frameworks and ancillary services to manage grid stability.
- a) There are currently a variety of tools to manage frequency stability, one to manage voltage stability, and one to manage converter driven and resonance stability.
 - b) The current future security and resilience work programme is focused on helping to address grid stability issues. The work programme engages with Transpower and industry representatives regularly.
 - c) Need to create appropriate signals to incentivise battery and other investments which support grid stability. These include changing the SO's tools and future ancillary services focused on fast frequency response, synthetic inertia from batteries and system strength services.
- 11.4. The presentation from Bespoke Energy focused on the Australian Experience, particularly on large scale solar farms.
- a) Case studies showing lived experience with large solar farms, challenges, opportunities and lessons for New Zealand. This covered many of the situations that New Zealand can expect to see as IBR scales.
 - b) Discussed similarities and differences between the respective electricity systems and what New Zealand, as a relative late comer to large scale solar, can learn from Australia's experience.
 - c) Highlighted need to scale governance and capability (tools, processes, resources) at the same pace as IBR deployment.

The SRC adjourned for lunch at 1:25. Andre Botha left at 1:25. The SRC returned at 1:45 Chantelle Bramley, Sarah Gillies, Hayden Glass, Natalie Bartos, Shelia Matthews, Vong Nyuk-Min, Nabil Adam and Nilesh Modi joined at 1:45

- 11.5. In a panel discussion with presenters the SRC:
- a) Noted the need for improved tools, technical guidelines and equipment to mitigate rapidly changing risks and the global shortage of qualified staff.
 - b) Welcomed progress and work underway by the EA, SO and participants. Expressed concern with the pace of work, potentially catastrophic risks and queried prioritisation of this work by both parties.
 - c) Encouraged the EA and SO to learn from experience of relevant jurisdictions, specifically Australia, as an islanded with a similarly 'long and stringy' transmission network.
 - d) Discussed need for new thinking by the EA and SO, for example, less reliance on perfect information provision environment and more reliance on sensing, use of advanced analytics / AI to predict stability issues. This is particularly important for anticipating dynamics beyond the grid exit point as the type and quantity of distributed IBR grows.

- e) Discussed presenter views of highest risk areas:
 - a) voltage stability ranked as 'amber' as, while a risk area, well-established methods exist to manage voltage stability
 - b) frequency stability ranked as 'light red' due to lead times and battery issues
 - c) convertor stability ranked as 'bright red' due to lack of control, preparedness, visibility and skilled personnel.
- d) Discussed grid stability risks associated with accelerating uptake of rooftop solar, particularly where installed without smart inverters. Noted the value of batteries, both small and large scale, for supporting grid stability as solar grows, provided batteries are operated appropriately, which under many inverter control systems, and / or retail pricing, is not a given.
- e) Queried the extent to which small-scale inverters settings support appropriate voltage and frequency management. Flagged the potential, even under latest standards, for excess reactive power demand from the transmission network in the future, as vast numbers of rooftop solar inverters attempt to control voltage, and the impact this might have on the transmission system and grid stability.
- f) While appreciating the need for a focus on large-scale solar inverters, encouraged to SO and EA to consider now the future impact of many small-scale inverters, to ensure they are set up correctly now. In turn, support electricity distribution businesses with appropriate requirements for rooftop solar inverter settings in their connection and operation standards.
- g) Encouraged the SO and EA to not lose sight of the challenge of coincident export from solar systems, or coincident demand from EV charging that may to challenge security of supply.
- h) Appreciated the frankness of both EA and SO teams and questioned both parties on prioritisation of initiatives to bring these risks under control. Noted both organisations consider mitigating grid stability risks as top priorities and are assigning resources and focus accordingly.

Chantelle Bramley, Sarah Gillies, Hayden Glass, Natalie Bartos, Shelia Matthews, Vong Nyuk-Min, Nabil Adam and Nilesh Modi left at 2:46pm

12. Wrap-up on Grid Stability (item #10)

- 12.1. The Chair led a wrap-up discussion with members on items 10, including areas of concern and points to note in the letter of advice.

Chantelle Bramley, Natalie Bartos, Hayden Glass, David Weaver, Simon Coates, Ross Parry and James Innes joined at 3:00pm

13. New Secretariat Arrangement (item #11)

- 13.1. The Chair introduced this item and welcomed presenters from Concept Consulting.

- 13.2. Concept Consulting discussed the new arrangement with the SRC and presented on their gas market report, electricity price forecast and generation pipeline.

Natalie Bartos, Hayden Glass, David Weaver, Simon Coates, Ross Parry and James Innes left at 3:50pm

14. Wrap up on item #7, Risk Radar, Next meeting and 2026 programme (items #12 and #13)

- 14.1. The SRC agreed to have a thorough discussion of the risk radar at the mid period meeting.
- 14.2. The Chair asked the SO when would be a good time to receive an update on Power System Stability to ensure it stays focused, and they agreed on 6 months.
- 14.3. The Authority asked for the SRC to make time to review their updated strategy and priorities.

Chantelle Bramley left at 4:09

- 14.4. Members considered and discussed potential items for their Q3 meeting for 2026:
- a) Annual Risk and Strategy Session: 2030 and beyond
 - review demand and supply projections and their implications
 - what security and reliability looks like in a high growth, high IBR electrified economy
 - b) Look at MBIE's regulated dry year solutions with an hour focused on the new SOSA.

Action 5: secretary to schedule grid stability follow up with the EA and SO for six months time.

Action 6: secretary to include a review the Authority's updated strategies and priorities in the next SRC quarterly meeting.

Action 7: secretary to prepare outline for Q3 meeting and circulate to members.

The meeting ended at 4:15pm

5 June 2026

Erik Westergaard
Acting Chair
Electricity Authority
PO Box 10041
Wellington 6143

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Dear Erik,

Advice from 20 May 2026 SRC Meeting

The Security and Reliability Council (SRC) provides the Electricity Authority Te Mana Hiko (Authority) with independent advice on the performance of the electricity system, the system operator and reliability of supply issues.

Thank you for the Authority's response to the SRC's March 2025 advice. The SRC is encouraged by your assurances that the future security and resilience programme is comprehensive and addresses challenges and opportunities of the energy transition, including increasing intermittency, a changing generation mix, declining system inertia, the adoption of new technologies, and evolving demand side behaviour. We comment further on these challenges and opportunities in this letter.

The SRC notes the Authority's comments on gas decline, energy policy and tree regulations. Each has significant – even profound – implications for the security, reliability and performance of the electricity system. The SRC encourages collaboration across the agencies and regulators to ensure these issues do not fall between the gaps of regulation and perceived organisational boundaries.

1. The May SRC meeting

The SRC met at a time when electricity supply conditions have eased, where futures prices have fallen and are coming into line with the long run cost of generation. In contrast, we see supply crises for gas and imported liquid fuels risking energy security and with knock-on effects to electricity supply.

The focus of the May SRC meeting was on maintaining grid stability amidst rapid scaling of inverter-based resources for generation and distributed energy resources.

In addition, the SRC received:

- a joint security of supply briefing from the Authority and System Operator
- a briefing on electricity system exposure to fuel shortages from Transpower.

The SRC acknowledges and thanks all the presenters to its May meeting.

Advice

This letter summarises the SRC's May meeting and its recommendations to the Authority. These are to:

1. **not relax efforts** to enable and incentivise generation build. Continued investment is required to meet demand growth and encourage further growth through lower prices.
2. **continue** to mature understanding and forecast capabilities for system demand and supply. This is a core capability for the Authority and System Operator.
3. **consider**, with the SO, the impact of daily gas delivery limitations on security of supply (both capacity and energy) in its modelling and monitoring processes.
4. **continue to prioritise** and keep a very close eye on regulatory enablers and System Operator readiness for accelerating system-wide deployment of IBR.
5. **explore opportunities**, with the System Operator, for increased use of sensing and AI to understand, forecast and predict system stability as investment in IBR and DER grows and perfect information provision becomes more challenging.
6. **act early** and ensure readiness for the potential for at-scale transition from gas to electricity (and alternatives) resulting from the Government's gas transition scheme.

2. Security of supply outlook

The May briefing covered the current market situation, forecast supply / demand balance and security of supply outlook for 2026, historical and futures prices, the expected El Nino climate cycle, fuel availability (hydro, gas, coal), generation plant availability, the 'generation pipeline', the BESS roadmap and planned regulatory and reporting changes.

In discussion with presenters, the SRC:

- welcomed the positive autumn energy situation, with above mean hydro storage, large coal stockpiles, adequate gas stores and expectations of significant generation coming online during winter 2026; noting the likelihood of a 'very strong' El Nino cycle from late winter with potential lower inflows.
- noted a more relaxed stance on generation capacity adequacy and encouraged caution noting favourable hydrology reduces the likelihood that slow-start thermal will be available to the market, thus reducing capacity margin for cold, still periods.
- noted the decline in forward prices, after a protracted period (impacted by Tiwai uncertainty and gas shocks) of prices well above long run marginal cost (LRMC). Recent investment needs to continue for prices to remain at these levels to restore consumer confidence.
- discussed enhancements to System Operator analysis and forecasting and pressed for ongoing focus in this area, specifically on temporal profiles for intermittent generation where smart forecasting is increasingly critical.
- Noted initiatives by the Authority to improve visibility of embedded generation and DER.

Falling futures prices are a welcome sign of an improving supply-demand balance. The extended period of tight supply and high energy prices will have slowed electrification.

There is now potential for falling forward prices to coincide with gas conversion assistance and insecure and costly liquid fuels, spurring long-anticipated electricity demand growth.

Recommendations 1-3 above relate to the security of supply discussion.

3. Navigating NZ's energy transition: maintaining grid stability

The System Operator, Authority and Bespoke Energy presented to the SRC on the implications, challenges and opportunities presented by an increase in inverter-based resources (IBR) on the system.

In discussion with presenters, the SRC:

- noted the growing role of IBR in the generation mix and utilisation of DER including 'beyond the meter' and the increasing complexity, uncertainty and risk this presents for managing grid stability – in particular frequency stability, converter-driven stability and resonance stability.
- heard that new problems require new tools to complement those already in use. That, in addition to analytical tools and monitoring systems, technical guidelines and technical expertise are required, but that expertise is in very short supply.
- acknowledged work by the System Operator and the Authority, while noting apprehension and uncertainty from both organisations that these efforts would satisfactorily address grid stability risks.
- agreed that New Zealand should learn from Australia's experience that, to minimise costly remediation and system risk, governance and capability (tools, processes, resources) must scale at the same pace as asset deployment on the power system.
- cautioned to not lose sight of the impact of small-scale roof-top solar inverters in very large numbers, and the impact they may ultimately have on the transmission network and system operation. Moreover, noted that the System Operator could take a leadership role in supporting electricity distribution businesses with appropriate voltage protection settings in small-scale inverters such that they do not contribute to excessive reactive power flows on the transmission network, if such reactive power flows are deemed detrimental.
- welcomed the frankness shown by all presenters, their wish to avoid conveying false confidence or any sense of complacency, and assurance that work to ensure future grid stability is a top priority for the Authority and System Operator.

This was an informative and positive but concerning discussion. Alongside significant opportunities, IBR and DER bring complexity, challenges and risks - that we do not currently have the tools and capability to manage confidently across all aspects of grid stability.

The SRC is encouraged that the Authority and System Operator understand this, viewing work to ensure future grid stability as a top priority and are assigning resources and focus accordingly. The SRC agreed to follow up with the System Operator and the Authority regularly regarding grid stability.

Recommendations 4 and 5 above relate to the maintaining grid stability discussion.

The SRC found the tutorial provided to it by Transpower and Authority staff very helpful and can recommend this to the Authority Board and leadership team.

4. Impact of liquid fuel supply disruption

Transpower's representative on the NEMA lifelines council and the System Operator presented to the SRC on the impacts of disruptions to global fuel supply chains on the electricity system.

The SRC heard that, in contrast to many jurisdictions and domestic liquid fuels markets, the electricity system had not yet been materially impacted by global fuel disruptions but has been affected, specifically through:

- a significant increase in price for the approximately 750,000 litres of diesel required to support the electricity system per week
- price pressures on coal as LNG shortages drive demand for coal.

In discussion with presenters, the SRC:

- Noted potential for the situation to worsen and for a protracted period of restricted supply and tight prices.
- Noted proactive approach being taken to understand sector wide fuel requirements.
- Discussed the potential for fuel insecurity and cost to combine with gas conversion assistance to spur electrification.
- Continued generation investment is essential both to restore confidence in the competitiveness of electricity and meet new demand.

Recommendation 6 above relates to the fuel supply disruption discussion.

5. The SRC's next meeting

The SRC's Q3 (September 2026) agenda is still being finalised. This is the SRC's annual risk and strategy session, the focus of which is expected to:

- be looking to demand and supply projections beyond 2030 and assessing their implications
- security, reliability and system performance in a high growth, high IBR, electrified economy.

The SRC also asked to meet with the council of energy regulators and to be briefed on MBIE's regulated dry year solutions and the new System Operator security of supply assessment.

Members are looking forward to meeting with the Authority Board in September.

Yours sincerely,



Hon Heather Roy
Chair of the SRC

cc: SRC members, Sarah Gillies, Natalie Bartos, Hayden Glass (Authority)

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24 June 2026

Chantelle Bramley
System Operator
Transpower

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Dear Chantelle,

20 May 2026 SRC - System Operator follow ups

The Security and Reliability Council (SRC) appreciates the substantial contribution made by the System Operator (the SO) team to the SRCs work, including the valuable briefing and discussion on system stability at the May meeting.

At the 20 May SRC, three issues were discussed that the SRC invites further thoughts on from the SO. These are summarised below.

1. Energy risk of losing a large thermal unit for a protracted period

In the Energy Security Outlook discussion, members asked how the energy risk would be affected if, say, one Rankine unit were to be unavailable for a prolonged period. The loss of a large thermal unit (Rankine or CCGT) is considered when analysing generation capacity margin, but it was not clear the extent to which this is the case for energy margin analysis. As you are aware, the progressive retirement of thermal generation increases reliance on the remaining plant and increases the impact, should that plant not be available.

In discussion, SO staff recognised the risk such scenario presented but it was unclear whether this is considered or has been quantified for energy risk analysis.

The SRC would appreciate the SO's views on this matter and clarification of whether single plant risk is – and if not, should be – factored into energy risk curve and associated analysis, forecasting and reporting.

2. Impact of small-scale inverter-based resources on system stability

Much of the discussion focused on system coordination and stability risk associated with large scale inverter-based resources, specifically utility-scale wind and solar.

It is natural and appropriate for the SO and Authority to place considerable focus on this large-scale plant and oscillations between solar farms. However, it was not clear how much focus is being given to the future risk presented by large quantities of small- and medium-scale rooftop inverter-based resources (residential and commercial rooftop solar).

In particular, the effect they may have on reactive power flows in distribution networks, and eventually the transmission network. The particular case of interest is represented by midday in summer when small- to medium-scale inverters may be consuming large amounts of reactive power to manage voltage coincident with high generation and low demand. In turn this could lead to a lagging power factor at GXPs and reactive and active power flowing in opposite directions.

The SRC recognises that distributors are best placed to manage and mitigate the risk and prevent it becoming an issue for the transmission grid, but that support from the SO may be necessary.

The SRC would appreciate clarification from the SO that the future risks presented by high uptake of small and medium-scale inverter-based resources are understood and/or are receiving appropriate attention and consideration.

3. Managing voltage stability

In the SRC discussion the SO team referred to resources available to it to manage voltage stability – asset owner performance obligations (AOPOs) and ancillary services.

While this is correct, the SRC understands the SO places most reliance on AOPOs, which asset owners bear the cost of, instead of voltage support procured as an ancillary service. This approach appears to have two consequences:

1. Relying on generators remote from load to manage voltage, for example, Ohau generators to manage voltage in Christchurch, and switching transmission lines in an out of service (which in of itself reduces security of supply).
2. Industry doesn't see voltage ancillary service revenue opportunities and therefore investors do not consider this as an opportunity when siting new assets. For example, batteries can manage voltage and if there was revenue in available, they might site them in CHCH).

The SRC queries whether the current reliance on AOPO's over ancillary service reduces incentives for investment in voltage support equipment to manage the greater need as inverter-based generation grows.

The SRC would appreciate further thoughts from the SO on this matter and encourages the SO and EA to consider what role greater use of ancillary services could make to manage this risk.

As noted above, the SRC appreciates the in-meeting engagement from SO staff. From time-to-time there will be post-meeting follow ups, such as those noted above, which we appreciate your consideration of and response to.

Yours sincerely,



Hon Heather Roy
Chair of the SRC

cc: SRC members, Natalie Bartos (Electricity Authority)


T R A N S P O W E R

Waikoukou
22 Boulcott Street
PO Box 1021
Wellington 6140
New Zealand

+64 4 495 7000
www.transpower.co.nz

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Heather Roy
Chair of the Security and Reliability Council

Via email

August 4, 2026

System Operator responses to 20 May 2026 SRC queries

Dear Heather

Thank you for your letter of 24 June 2026. Please find enclosed to the three requests for further information. We would be happy to discuss these further as required.

1. Energy risk of losing a large thermal unit for a protected period

The Energy Security Outlook (ESO) provides a view of National and South Island energy risks over the next 1-2 years. Thermal generation is an important part of managing our system energy risks and potential reductions in thermal generation availability is considered in our ESO risk assessments through ESO scenarios (e.g. quarterly stressed scenario or more frequently if needed). Reduced thermal generation availability for extended periods might also be due to the reduced levels of contracted fuel. This risk is now also captured within the ESO with the introduction of the "Contracted Fuel Case" introduced with the recent SOSFIP changes.

Recent examples of ESO scenarios that explored reduced thermal generation availability include:

- In 2025 when Genesis indicated potential that a Rankine unit could retire in 2026 (prior to the Strategic Reserve agreement for the Huntly Rankine unit)
- In June 2026, our quarterly assessment of stressed system scenarios explored the system impacts of reduced Rankine availability in 2026 and 2027.

May to October 2025 ESOs¹

There was an increased risk of reduced Rankine generation from 2026 prior to the Commerce Commission approval of the conditions of the Strategic Reserve of the Huntly Rankine unit. As a result, from May to October 2025, we included a scenario to the ESOs to reflect the impact of reduced Rankine generation availability and the increased energy risk to the market in only having two Rankine units available from 2026. This ESO scenario was removed from November 2025 when ComCom approval was finalised.

¹ See [here](#) for May 2025 and [here](#) for October 2025. The other historical ESO's can also be found [here](#).

June 2026 ESO stressed case²

As part of the recently implemented Security of Supply Forecasting and Information Policy (SOSFIP)³, the System Operator is required to consider scenarios that could result in supply disruptions. The June 2026 ESO assessed the increased risk from reduced Rankine availability⁴ under both the Fuel Capability Case⁵ (Base Case) and Contracted Fuel Case. These will be reviewed each quarter.

Contracted Fuel Case from May 2026⁶

The latest SOSFIP changes⁷ requires the System Operator to publish additional risk curves that take into account contract limits on thermal fuel supply. This allows the market to understand impacts on the ERCs and SSTs when contracted thermal fuels could restrict the operation of thermal generation below what could be provided physically (even after considering plant outages). By restricting available energy strictly to currently secured contracts, the Contracted Fuel Case intentionally highlights the physical capacity that remains uncontracted, and the ability for additional contracting to reduce risks.

We consider the current approach in the ESO of using a periodic (quarterly) scenario assessment, a more frequent assessment if there is an increased risk of reduced thermal availability (or other potential risks), as well as now⁸ including the effects of thermal fuel contracts, provides the market with a mix of physical and commercial risks to thermal generation availability that could impact security risks. This information is produced on a periodic basis or more frequently as required.

In addition to the ESO, the System Operator also assesses the impact of reduced thermal generation on energy risks in some of its other security of supply information provided to industry. This includes the:

- Annual Security of Supply Assessment (**SOSA**⁹) winter energy and capacity margins which includes a sensitivity with reduced Rankine availability.¹⁰ This sensitivity assesses the ability for the system to meet the security standards with reduced Rankine generation available over winter. The latest results (SOSA 2026) highlight challenges in meeting the efficient energy security standards with the current build pipeline and reduced Rankine generation until sufficient new generation comes online.
- System Operator analysis on “**Supporting resource adequacy in a highly renewable, islanded power system**”.¹¹ In this assessment, the impact of an extended thermal outage (in this case E3P¹²) was assessed during a very dry year.¹³ The trade-offs in unrestricted vs restricted access to contingent hydro storage (CS) was assessed. This analysis showed that while unrestricted access to CS could provide some efficiency benefits, there were potentially large load curtailment costs if there was insufficient CS under stressed system conditions (e.g. if an extended unplanned outage of a large thermal unit occurred in a very dry year). This highlighted the importance of additional generation (in this case CS) to reduced load curtailment risks in stressed system conditions.
- **New Zealand Generation Balance** (NZGB) provides scenarios on the impact of reduced thermal generation availability to meet peak demands for the next 200 days.

² See [here](#) for June 2026.

³ The most recent SOSFIP took effect from May 2026.

⁴ This scenario was aligned with the assumptions used in the SOSA which tested a scenario where there was only 2 Rankine units available for the remainder of 2026 and 1 Rankine available from 2027.

⁵ This assumes the market supplements the existing thermal fuels based on physical limits as opposed to contract quantities to maintain increased thermal generation during any extended periods of low hydro inflows.

⁶ See [here](#) for May 2026.

⁷ The SOSFIP in effect from 25 February 2026.

⁸ From May 2026.

⁹ See [2026 SOSA - Final Report.pdf](#)

¹⁰ This is one of the supply-side sensitivities we consult on and assess as part of the SOSA process.

¹¹ See [System Operator - Resource Adequacy - Dec2025.pdf](#)

¹² A 6-month outage was considered which broadly reflected the duration of the same unit outage in 2023.

¹³ A 1932 inflow sequence was modelled.

Thermal generation availability is an important part of the supply mix in managing our peak and energy risks until sufficient new resources come online. We will continue to monitor and report on these across various security of supply information¹⁴ provided to industry and stakeholders to better understand how the impact of these risks on our system is changing over time.

2. Impact of small-scale inverter-based resources on system stability

We recognise that small-scale and commercial rooftop solar can affect system stability; however, these resources do not directly affect reactive power flows through GXPs or the System Operator's management of transmission-level voltage.

Small-scale and commercial rooftop inverters must comply with AS/NZS 4777.2:2020, which includes a Volt-var response mode that controls reactive power absorption or injection based on the voltage at the inverter terminal. This mode helps regulate the reactive power balance in the low-voltage (LV) network and supports local voltage management. Other regulating mechanisms, such as transformer tap changers, also help maintain LV network voltage. Any remaining reactive power flows into the sub-transmission network, where it is managed by reactive power regulation devices installed at that level.

However, small-scale and commercial rooftop inverters can indirectly affect the grid by displacing grid-connected generation. This can reduce the grid's voltage regulation capability, and where synchronous generation is displaced, it can also lower system inertia, making frequency deviations more challenging for the System Operator to manage.

The System Operator is actively monitoring rooftop IBR uptake and adapting its stability assessment approach as needed. We recognise that increasing distributed energy resources (DER) including small- and commercial rooftop resources can affect reactive power flows at GXPs, with consequential impacts on grid-level voltages. Key points are noted below:

- The recent Code change assigning voltage support obligations to generating stations connected at GXP voltage level should improve voltage regulation capability at the sub-transmission level and reduce reliance on grid-connected assets for voltage management. It should also provide the System Operator with better visibility of GXP reactive power flows, supporting more effective voltage management at both grid and sub-transmission levels.
- The Electricity Authority is working with the System Operator to review the GXP power factor management mechanism. This work is expected to improve monitoring, awareness, and controllability of GXP power factors across a range of system conditions.
- Light-load conditions often coincide with high-voltage management challenges on the grid. A lagging power factor at GXPs with reactive power flowing into the distribution network during daytime trough conditions can help manage these high voltages at grid level.
- The System Operator plans to review how rooftop PV is represented in our analysis tools and assess the system impact of any aggregate behaviour. However, given the moderate uptake indicated by recent forecasts and indirect impacts on grid level voltage management, System Operator currently consider these risks lower priority than frequency and converter-driven stability risks associated with increasing large-scale wind and solar generation.

Both the System Operator and the Authority recognise the impacts of small- and commercial rooftop solar. We will continue to monitor uptake, assess its effects, and introduce operational measures as needed.

¹⁴ These include ESO, SOSA, NZGB and other System Operator analysis.

3. Managing voltage stability

The power system is shifting from centralised generation supplying remote loads to more distributed generation serving local demand. Voltage stability may not be a significant concern at present, as it is generally associated with heavily loaded transmission circuits. However, managing high voltages is likely to become more challenging as distributed generation increases, similar to the issue identified during the recent Iberian blackout.

Contracting ancillary services for voltage support remains an avenue the System Operator can take to manage voltage when needed. However as ancillary services incur an additional cost the System Operator views this as an option to take once other operational measures have been exhausted. Voltage support from generation/BESS fulfilling their AOPs and reactive support through grid infrastructure (shunt reactors, shunt capacitors, synchronous condensers, STATCOMs), are a first port of call and remain adequate to cover most operating conditions. Switching out of circuits during light load may be done on occasion while still maintaining adequate levels of security on the network. Ancillary services may be considered in situations where the above measures are deemed to be inadequate.

During the grid investment process, the SO understands that non-transmission solutions are considered before large investment into grid infrastructure is made. Developers may also consider this avenue to be incentivised to invest in voltage support equipment.

At this stage, the System Operator does not consider voltage support ancillary services necessary to maintain system security. We are also cautious about setting a precedent that may encourage other generators to seek similar voltage support arrangements.

I hope this addresses your key questions but please let us know if you would like anything further.

Yours sincerely



Chantelle Bramley
Executive General Manager, Operations

SECURITY AND RELIABILITY COUNCIL

15 July 2026

Hon Simeon Brown
Minister for Energy
By email: s.brown@ministers.govt.nz

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Dear Minister Brown,

SRC Year in Review Report

The Security and Reliability Council is established under the Electricity Industry Act 2010 to provide independent advice to the Electricity Authority on the performance of the electricity system and system operator and on matters of reliability of supply. Members are appointed by the Authority for their technical experience and expertise in electricity system performance.

Today the SRC published its [Year in Review report](#) for the year to 30 June. It summarises the SRC's focus, advice to the Authority and other parties, and the outlook for the year ahead. The report reflects the SRC's firmer and more direct stance in its advice and efforts to make that advice more accessible to stakeholders.

It will come as no surprise to you that the previous year has been one of change and challenge, but it was also a pivotal year for the electricity system. Falling spot and futures prices indicate a system better in balance than we have seen for quite some time while global events have brought greater focus to security of energy supply.

The SRC intends to continue its 'canary in the coalmine' role, taking advantage of its expertise and independence to identify, objectively assess and advise on longer term risks and opportunities. It also intends to continue challenging the Authority, System Operator and other participants on system performance and reliability of supply.

The SRC re-extends its invitation, offered in my letter of 1 April, and cordially invites you to our next meeting on 16 September. The scope of discussion could be key matters covered in the Year in Review report and the government's focus and agenda for the electricity sector.

Yours sincerely



Hon Heather Roy
Independent Chair, the Security and Reliability Council

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12 August 2026

Hon Heather Roy
Chair
Security and Reliability Council (SRC)

By email: heatherjroy@gmail.com

Dear Heather,

Re: SRC advice from its 20 May meeting

Thank you for your letter of 5 June 2026. The Electricity Authority Te Mana Hiko (Authority) Board considered the SRC's advice at its 9 July 2026 meeting. This response reflects that consideration.

Security of supply outlook**Continue to build understanding and forecast capabilities for system demand and supply**

We agree with the SRC that this will need to be a continuing focus.

Since the last SRC meeting, the Government has released a revised [Government Policy Statement \(GPS\) on Electricity](#). The GPS includes a new requirement for the Authority to report regularly to the Minister for Energy on the status of electricity supply security at a strategic level, with independent input from the SRC. We welcome this development and look forward to engaging with the SRC as we develop our approach for the report.

We expect that this work will require the Authority to model a range of demand and generation pipeline assumptions. The SRC's expertise and perspective will add valuable insight to the process for generating and testing future scenarios and assumptions.

To undertake this will mean we need to invest in enhancements to our modelling tools and capabilities. This will enable more mature forecasting of the system as suggested by the SRC. These enhancements would also be useful if the Government proceeds with its proposed Winter Energy Reliability Obligation, which involves the Authority making judgements about the adequacy of supply to meet winter demand up to five years in the future.

In the meantime, we continue to enhance our existing demand forecasting scenarios and actively track forecasts produced by other organisations to strengthen our understanding of system demand and supply. We are also continuing to improve visibility of the investment pipeline with:

- [our decision](#) to require distributors to regularly provide information on significant distributed generation and load connection developments, and

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- improvements to our [generation investment pipeline dashboard](#) – this is now published monthly and has been updated in response to participant feedback.

Enabling and incentivising generation build

Alongside this enhanced monitoring role, we agree with the SRC that measures to support investment in new generation remain central to strengthening security of supply. We note that participants continue to deliver a significant volume of new generation, and the Authority remains focused on regulatory settings that support efficient investment and timely connection.

Two recent milestones are especially relevant here:

- Our work on [unlocking the potential of battery energy storage systems \(BESS\)](#) is a key initiative to support security of supply. The role of BESS in supporting system security was demonstrated in late July and early August when the System Operator issued low residual notices.¹ We are on track to release a decision on improvements to the wholesale market arrangements for BESS in late September.
- Our decision to [extend the duration of baseload futures contracts from three to five years](#). Longer-dated futures can support price discovery and provide better insights into the extent to which prices are converging to the levelised cost of energy. Importantly, longer-dated futures can also help to price power purchase agreements for renewables.

Considering the impact of fuel availability on security of supply

We note the SRC's recommendation that security of supply assessments should consider the impact of daily gas delivery limitations. The System Operator's current modelling uses monthly deliverability values which, when converted to daily values, provide useful approximations. We will work with the System Operator to consider whether its modelling can be augmented with daily gas data from GIC.

Maintaining grid stability as more inverter-based resources come online

We support the SRC recommendation to prioritise regulatory enablers and ensure System Operator readiness for faster deployment of inverter-based resources.

Authority staff were pleased to have the opportunity to highlight the work of the Future Security and Resilience (FSR) programme to the SRC. This work has been underway since 2021 and is focused on how to ensure the electricity system remains secure and resilient in the coming decades. It is a project that requires close collaboration with the System Operator.

Our FSR work and our BESS work, mentioned above, are both important projects to support grid stability and a future with increasing inverter-based resources. These are priority initiatives for the Authority as highlighted in our [statement of performance expectations 2026/27](#).

We have recently started developing, with the System Operator, a [frequency management strategy](#). The strategy is intended to provide clearer direction to industry participants on how frequency management should evolve, while establishing a framework to address emerging challenges such as increased intermittency, the changing generation mix, declining system inertia, new technologies and evolving load behaviour. Its scope includes:

- reviewing the interactions between asset owner obligations and frequency-related ancillary services

¹ BESS added capacity over the peak periods and provided reserves to maximise northward HVDC flow.

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- identifying potential new ancillary services to provide for emerging system needs.

The Authority will continue to work closely with the System Operator to ensure regulatory settings and operational capabilities keep pace with emerging risks, as well as monitoring System Operator performance in this area. We recognise that unmanaged risks in this area could have significant consequences for the power system.

While we consider that our current work programme is appropriately designed to address these risks, we will continually scrutinise the rapidly changing technology and the deployment of this for implications on our future work. These emerging system challenges also reinforce the importance of ensuring the System Operator has the tools, capability and strategic direction needed for a more complex power system.

Explore opportunities for increased use of sensing and AI by the System Operator

We acknowledge the SRC's recommendations to work with the System Operator to mature its understanding and forecast capabilities for system demand and supply, and to explore opportunities for increased use of sensing and AI.

The System Operator has indicated in its draft [strategy](#) that it is looking to:

- enhance its forecasting tools to capture the effects of growing distributed resource and intermittency, and
- expand its capability to use tools such as AI to stress test a wider range of load and generation scenarios.

These enhancements are planned for the next System Operator Service Provider Agreement (SOSPA) period (ie, 2028 to 2031), and the System Operator is signalling that this will require investment in its tools and processes.

The System Operator Strategy, along with the [independent review of the System Operator](#) service, are important deliverables for ensuring that the System Operator is prepared for the transition to an increasingly complex power system. The Authority thanks the SRC for its input into the scope of the review and for the quick turnaround on feedback. We have kept the scope of the review focused to manage both time and cost pressures. However, we believe the SRC can add value through direct engagement with the provider and by independently assessing the advice once it is received.

Act early to prepare for an at-scale transition from gas to electricity

We note this recommendation. As we have mentioned in response to previous advice, encouraging or managing any transition from gas to electricity is not a role for the Electricity Authority.

The Authority and System Operator do consider the potential impacts of both increased and faster electrification through planning and assessment processes, including the annual Security of Supply Assessment (SOSA), which includes a high-demand sensitivity. And we note that electrification, particularly of process heat, is expected to be a key driver of changing electricity demand. Our updated strategy for 2026/27 sets out how we are responding to a changing system.

On one specific matter, the SRC's letter refers to an estimate that 750,000 litres of diesel are required each week "to support the electricity system". We understand that this reflects the diesel estimated to be required by essential service providers to operate vehicles used to

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maintain transmission and distribution infrastructure and respond to faults. The Authority will continue to monitor fuel availability and related operational risks closely.

Other matters

Update on tree regulation reform

We know that tree regulation reform has been on the SRC's radar for some time. We are pleased to advise that the updated [Electricity \(Hazards from Trees\) Regulations](#) came into force on 23 July 2026. These amendments will lower the risk to power lines from trees outside the immediate Growth Limit Zone. The changes will:

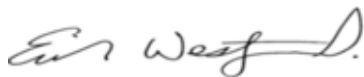
- enable lines owners to assess the likelihood and potential impact of a tree falling onto an adjacent line, and to issue a Treefall Hazard Notice for moderate and high-risk trees
- restrict the planting of new trees on land that is not already forested or part of a shelterbelt outside urban areas.

Looking forward

Thank you again for the SRC's advice, and congratulations on publishing the SRC's first year in review document. We consider it a useful and accessible summary of the SRC's work.

The Board highly values the role the SRC plays in contributing independent advice and sector insight to the Authority's work. We look forward to continuing our work with the SRC and to our meeting in person next month.

Yours sincerely,



Erik Westergaard
Deputy Chair
Electricity Authority – Te Mana Hiko

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Actions and Updates

Action List

#	Action	Date for Completion	Status / comment
1	Draft a letter to the Council of energy regulators and circulate to members for review	N/A	In progress/discussion
2	Address feedback for the year in review	End of Financial Year	Completed and Published
3	Address feedback on tracker for next iteration	September Meeting	Completed
4	Organise with authority pre-read of Security Standards review		In progress
5	Grid stability follow up with the EA and SO for 6 months time	November Meeting	In progress
6	Include a review of the Authority's updated strategies and priorities	September Meeting	Completed
7	Prepare outline Q3 meeting and circulate	Mid period meeting	Completed

From the Authority

- John Harbord has been appointed as the new Authority Board Chair, John [share his thoughts here.](#)
 - All EA Board member and leadership team profiles are available on the [Authority's website](#)
- Refreshed [EA strategy](#) released, [video](#) of Sarah Gillies talking to the strategy. (Iona Mylek, acting GM strategy and corporate will talk to September SRC on the refreshed strategy)
- [Issues decision](#) on 21 December 2025 under frequency event, Contact Energy was the causer when its Tauhara TAB G1 tripped.
- [Martin Jenkins review](#), commissioned by EA, of Transpower connection queue finds process is “generally effective, efficient and fair, and is working as intended.” [Link to EA release.](#)
- Published analysis of [2026 retail price rises](#) showing 6.8% average price rise, attributes 54% of increase to line charges, 44% due to energy costs.
- Published new ‘[solar installations map](#)’ allowing visualisation of solar installs
- The ‘[eye on electricity](#)’ explains the Dunkelflaute, the increasingly common and impactful phenomenon impacting high wind, high solar electricity systems

In the news

- [Energy issues are front and centre](#) in the election campaigns, and most parties have announced some version of a [solar policy](#).
- Reporting season with strong profitability by [Meridian Energy](#), [Gensis Energy](#), [Contact Energy](#), [Mercury Energy](#), [Vector](#) and [Transpower](#) accompanied by concern from [consumer groups](#) and [media coverage](#).
- [Methanex closure](#) confirmed for early 2027 with gas contracted to 20230 sold to Genesis, leaves option to restart production if new gas discovered.
- After [shutting down Huntly Unit 5 to free up gas](#) in 2026, amidst strong hydro and coal stocks, [Genesis opens review](#) into future of the 400MW combined cycle gas turbine after 2032 due to gas availability concerns
- [There has been record-breaking demand](#) during the last week of July and first week of August. The record was set for [eight of the top 10](#) highest demand peaks.
- There has been a [new pumped-hydro proposal](#) ([not to be mistaken](#) for the Lake Onslow project) announced in central Otago, with a focus on firming intermittent renewables. It has a price tag of \$3 billion.
- Outcomes of [MBIE's review of tree regulations](#) came into effect on 26 July
- Regulatory barriers are being removed for [plug in solar systems](#).

Updates from the Secretariat

- We are trailing a new format for papers for this meeting. The aim is for a more succinct (and Diligent friendly) format.
- We published the [Year in Review](#), note previously circulated with media coverage / stakeholder reactions.
- In the Diligent Resource Centre are three resources that may be of interest to members. They are Concept's:
 1. Electricity price forecast – **confidential (SRC purposes only)**
 2. NZ Gas outlook - **confidential (SRC purposes only)**
 3. An analysis of Winter 2024 - public

Links

- Links to the Authority's [news](#) and [projects](#) pages
- Link to the Authority's weekly [Market Brief](#) newsletter
- Link to the System Operator's Quarterly [Security of Supply Outlook](#)
- Link to Niwa's [Seasonal climate outlook](#)
- Link to [New Zealand Generation Balance](#) page (summary in SOS update)
- Link to Transpower's [Market Operations](#) weekly report
- Link to EMI's [Load Duration Curves](#)

Q1. Do the members have a preference on how the information in this pack has been presented?

Brief: item 7 – Security of Supply Update

- Good energy situation with high hydro and thermal stocks and well placed for 3-month dry period
- Outlook for energy and capacity remains finely balanced, susceptible to higher demand, slower commissioning or thermal outage, hydro / thermal fuel stocks
- Major events on system in this period:
 - Tripping of Rankine unit at peak time, while unit 5 not running
 - Tripping of LSI grid, major frequency drop and loss of supply
 - 8 highest historical peaks set in Jul/Aug cold snap. August 2021 peak (led to load shedding) looks modest at 7,122 MW vs new peak of 7,415 MW

Discussion points / questions for presenters:

- How are BESS systems operating in the market, how is this showing up in dispatch efficiency, system security and prices?
- One of the Rankine's tripped during July/Aug peaks when unit 5 also offline, how close were we to load shedding or worse?
- Lower South Island grid emergency was a major event with ~15% of national load shed, why so little coverage? At 48.07 Hz, how close were we to cascade failure in the South Island?
- How do capacity/energy margins look if unit 5 exits in 2032?
- Re the 3-month dry period, how does the 665 GWh vs 2024 compare to 2025?
- Are gentailers / independents 'looking through' lower forward prices to demand growth, or are you seeing easing off on generation build commitment? SOSA and this update highlight key risk of gen build slowing.
- For pipeline projections, how accurate have commissioning estimates been for 2026?
- What are your views on medium term hydrocarbon (petrol, diesel, LNG) and coal, how is this affecting NZ electricity demand / supply scenarios?

Security of supply update

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SRC 16 September 2026

Agenda

- Current situation update
- SoS outlook
- EA regulatory action underway

ELECTRICITY AUTHORITY UPDATE

Current situation

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Current Situation

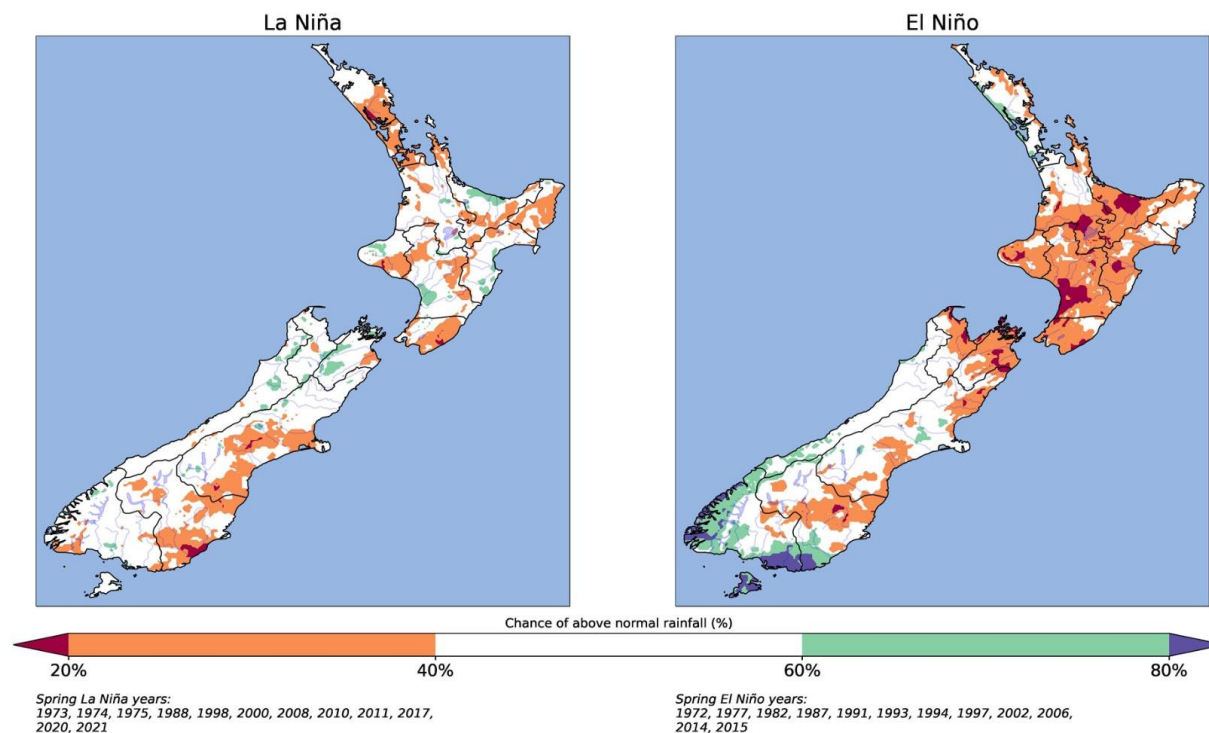
- **Strong hydro storage** - 128% of mean and 76% nominally full as of 2 September
- **Strong thermal storage** - 1,183kt coal + 5.2PJ in Ahuroa as of 30 August
- **Low thermal generation**

Future prices winter quarters have been decreasing following their mid-August spike :

- Ōtāhuhu September 2026 currently ~\$62/MWh compared to mid-August spike of ~\$95/MWh.
- Ōtāhuhu December 2026 currently ~\$39/MWh compared to mid-August spike of ~\$76/MWh.

El Niño spring impact on rainfall

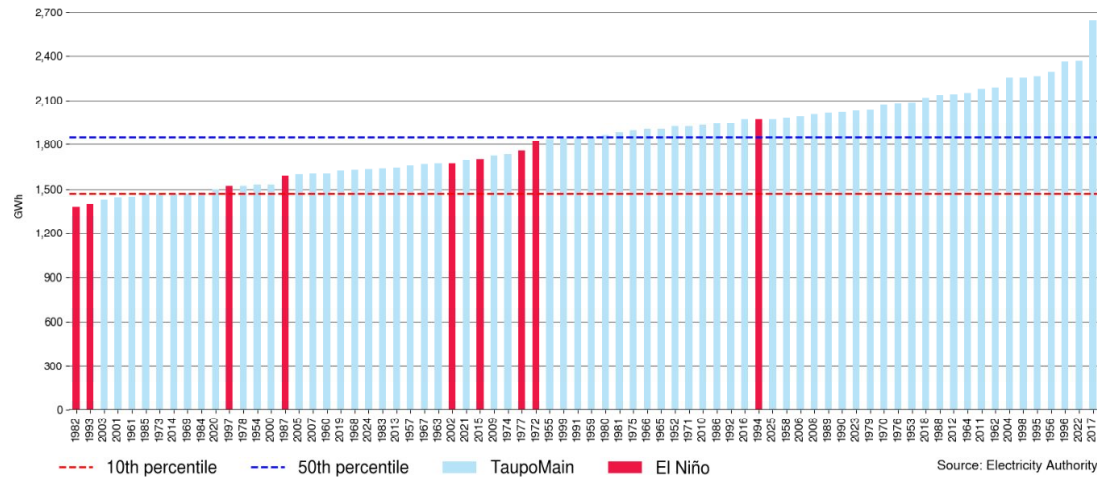
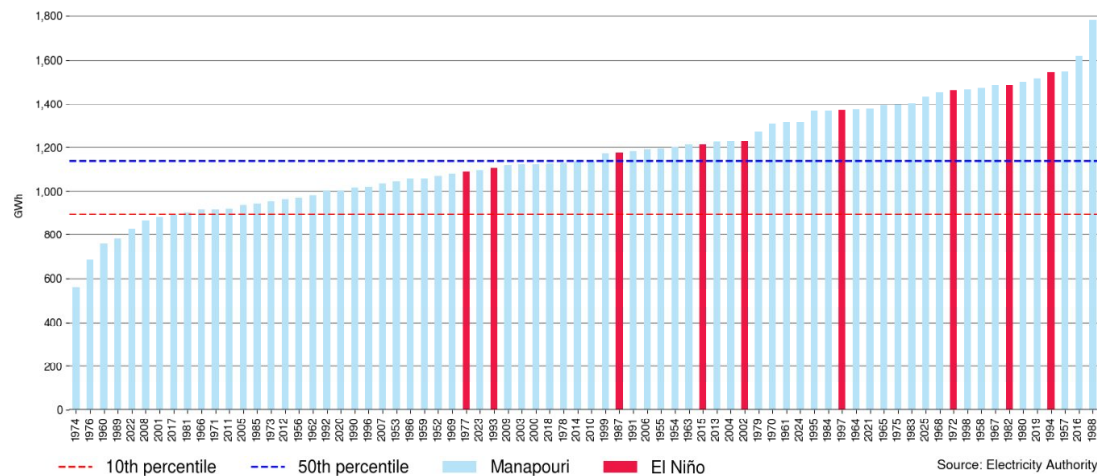
Chance of above normal spring rainfall during La Niña & El Niño



Data: NIWA Virtual Climate Station Network (VCSN). Anomalies are calculated with reference to a 1991-2020 climatology. Spring refers to the meteorological season which runs from September-November.

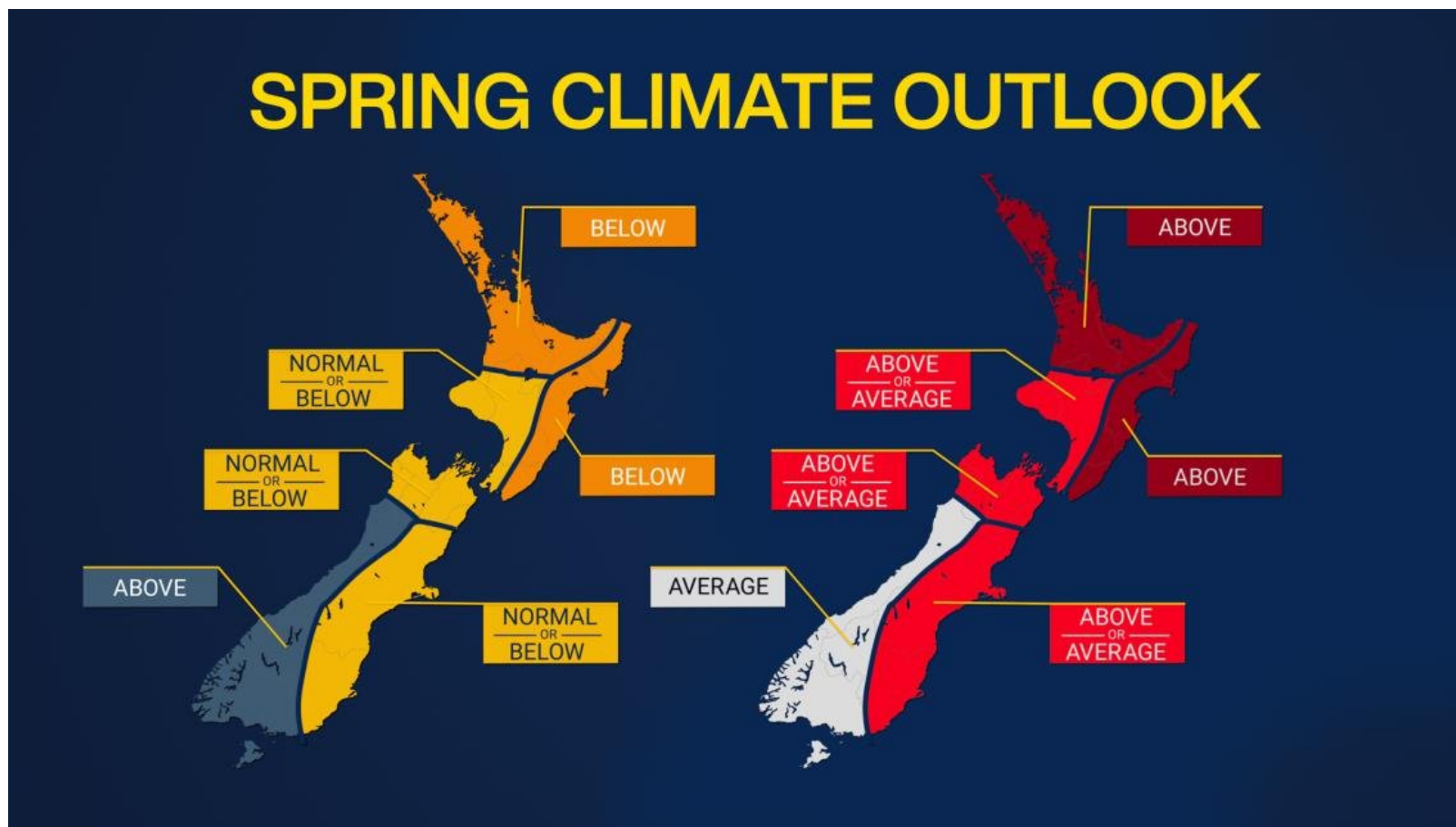
- El Niño conditions persist in the tropical Pacific atmosphere and ocean, strengthening considerably since mid-winter. Impacts on New Zealand's weather patterns have recently started to be felt.
- El Niño is expected to influence spring weather patterns, favouring periods of active westerlies, unusually windy conditions, and greater temperature variability. While these are typical spring features, they are expected to be more pronounced in 2026.

Historic September-November national hydro inflows



- South Island catchment lakes tend to show stronger inflows, but North island catchments tend to be drier.

Expecting a dry spring everywhere apart from the west and south and the South Island

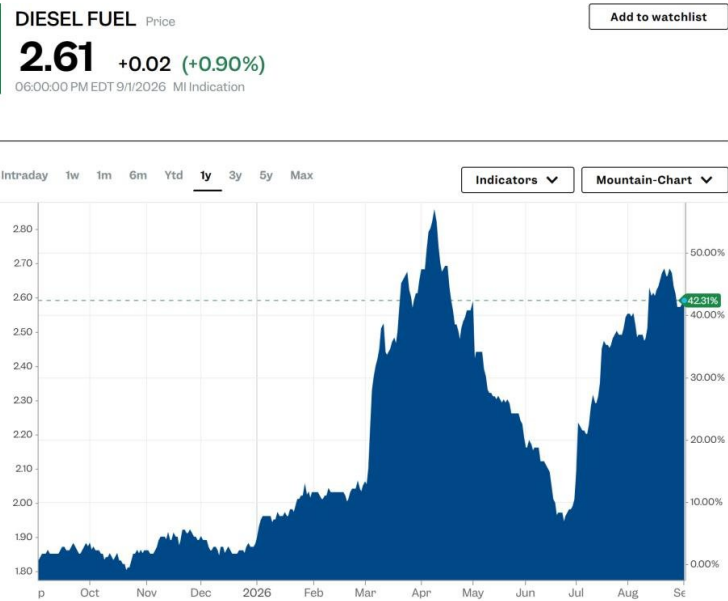


International thermal fuel prices have risen

Coal



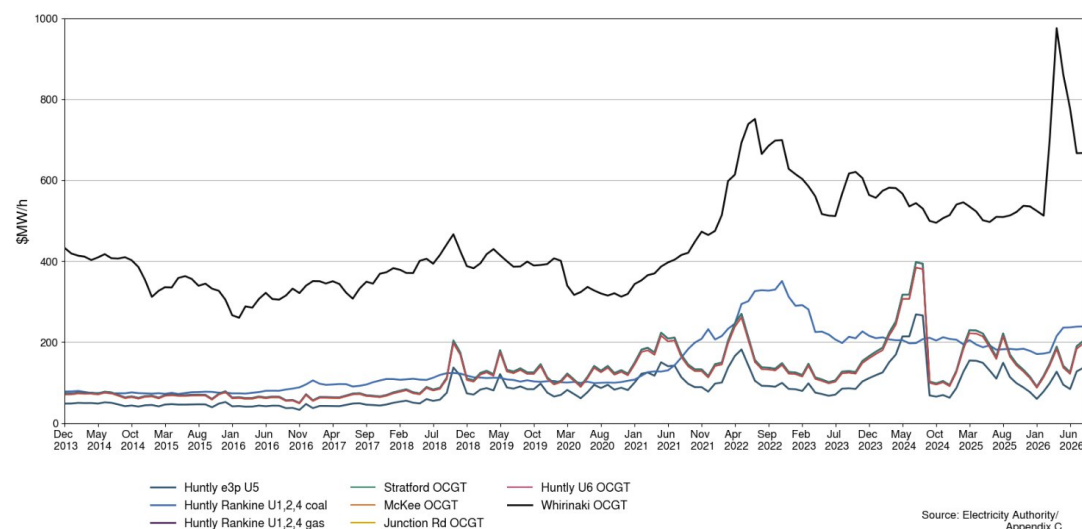
Diesel



Diesel prices

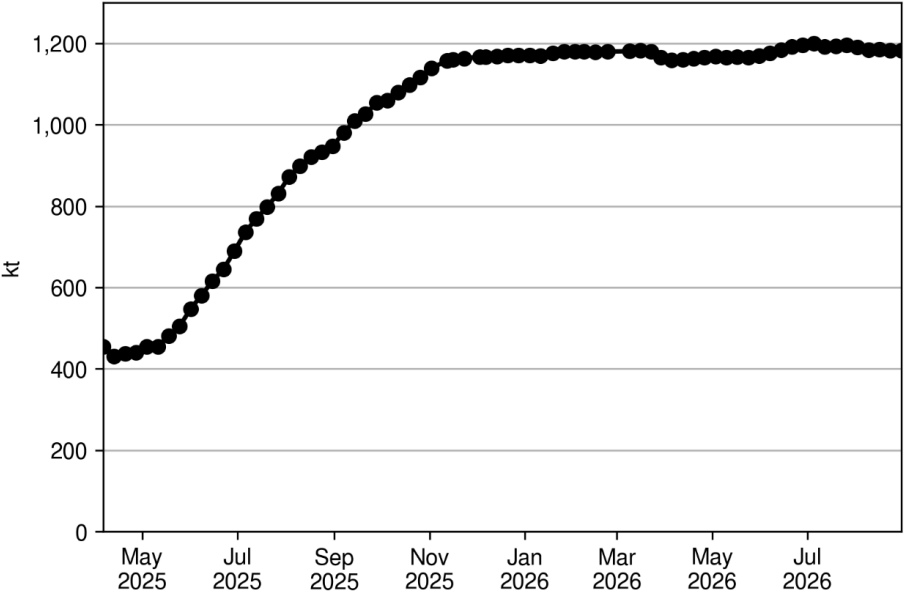
- SRMC of Whirinaki, using diesel, has decreased to by ~\$667/MWh after its March spike to ~\$883/MWh following ongoing international supply issues
- Whirinaki usually runs as plant of last resort

Estimated monthly SRMC for thermal fuels

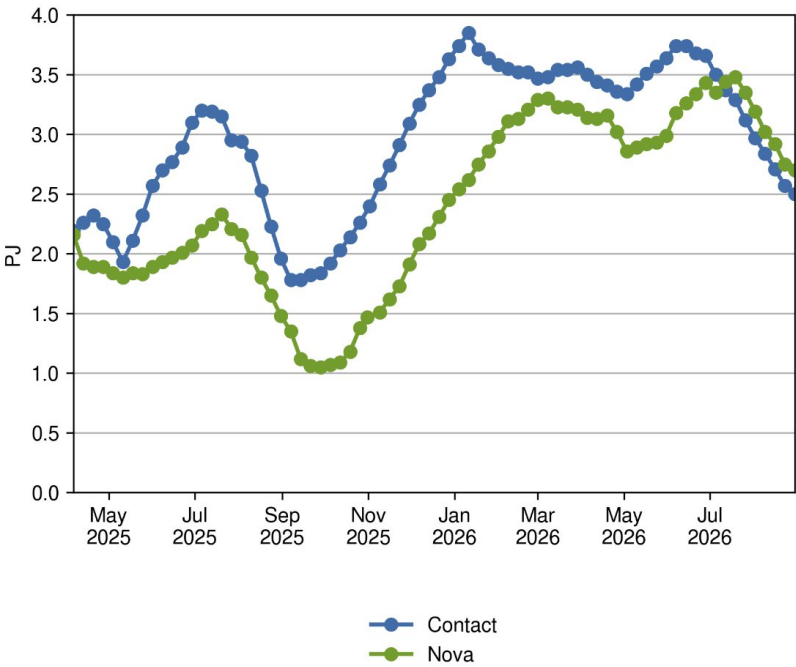


Strong coal and gas storage

Coal



Ahuroa gas



Contracted gas for electricity

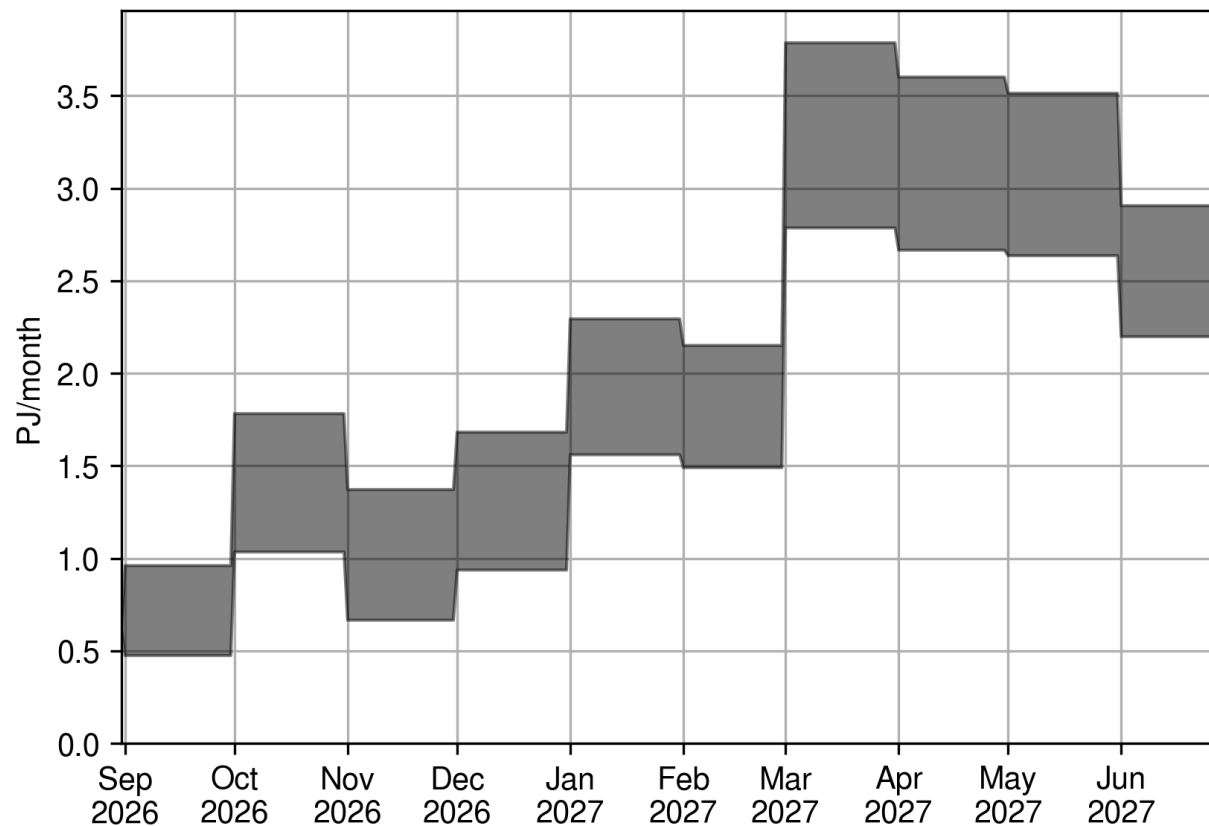
September minimum: 0.47 PJ

October minimum: 1.03 PJ

November minimum: 0.67 PJ

Huntly 5 likely offline until 2027.

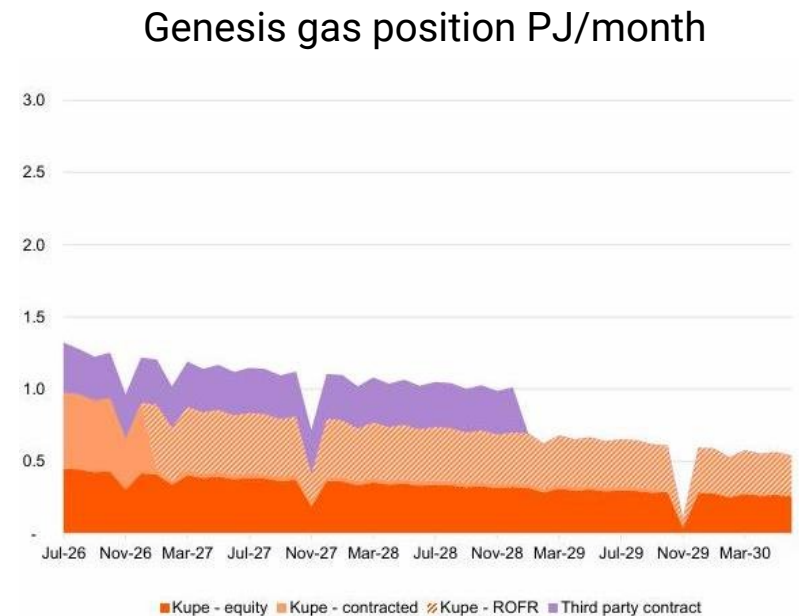
Contracted gas higher in 2027.



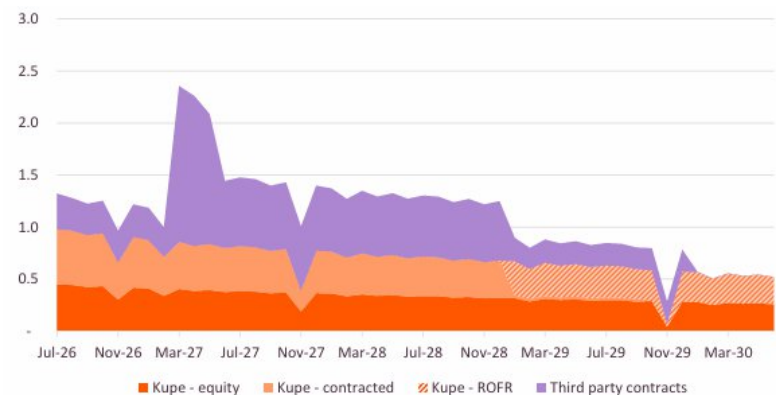
Methanex closure from March 2027

- 11.4PJ of gas to Genesis from March 2027-December 2029.
- Greater access to gas for electricity in the short-term.
- Possibility that this changes depending on hydro conditions. Genesis could idle Huntly 5 and on-sell gas similar to this year.
- 1.5PJ/month ~ 50TJ/day
- Huntly 5 at 400MW uses ~71TJ/day
- Without Methanex as a large baseload gas consumer, upstream gas development becomes less likely.

Before

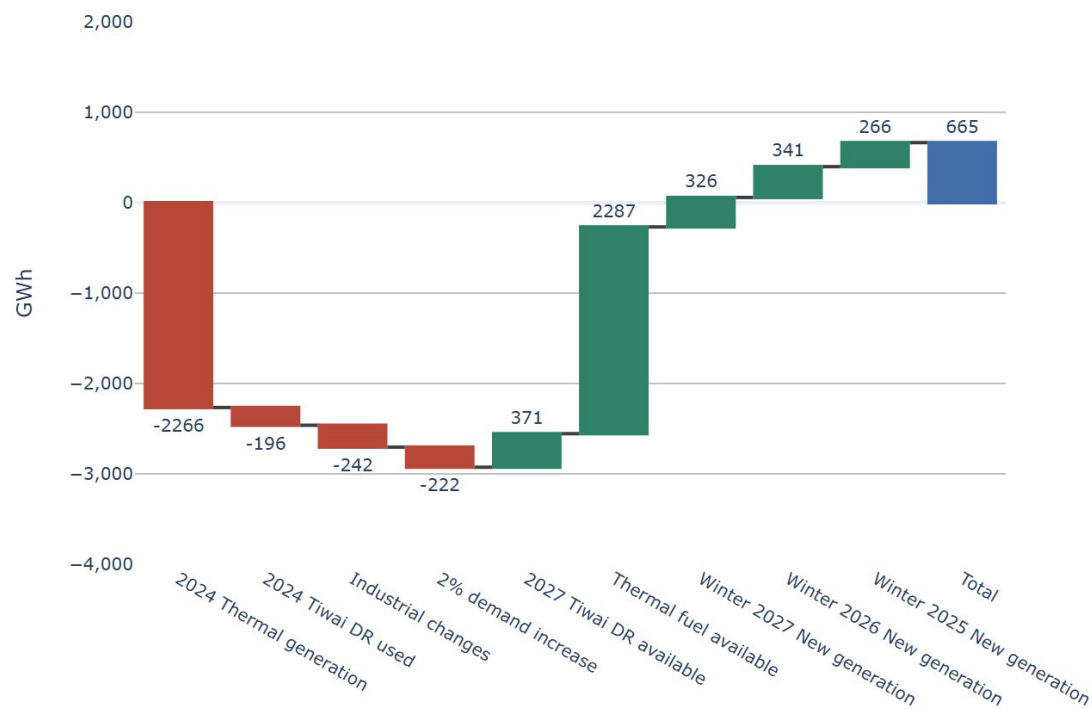


After



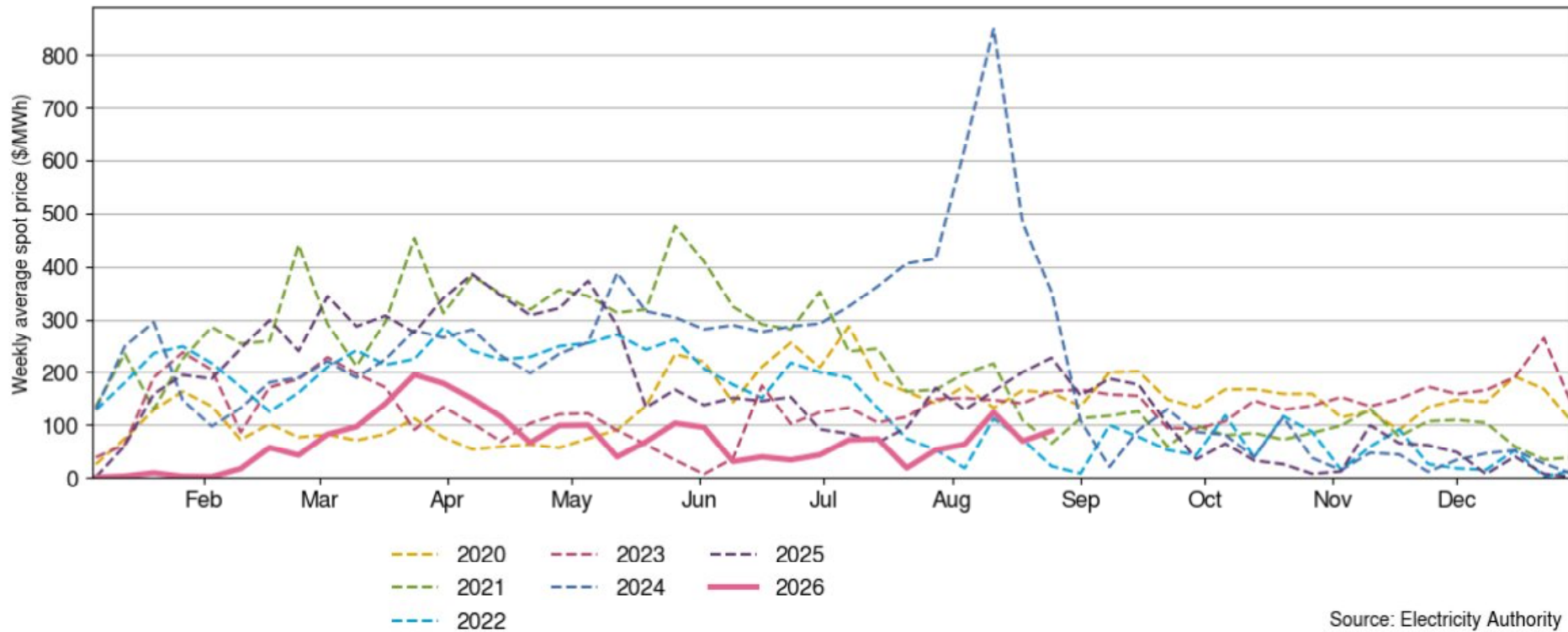
Source: Genesis Energy

Energy position to firm a dry 3 months vs 2024

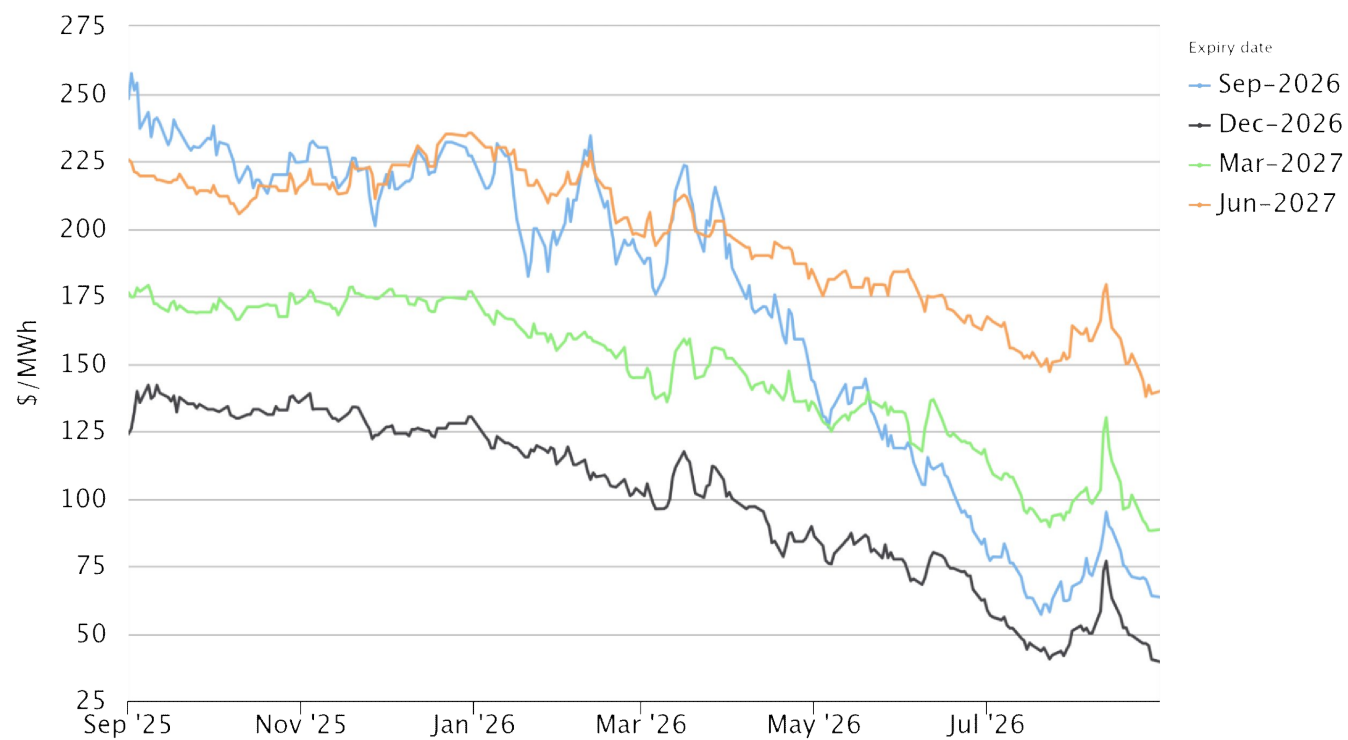


- Better placed to firm a dry 3-month period than in winter 2024
 - Current thermal fuel availability + new generation is greater than the thermal generation used in winter 2024 + changes in demand

Prices remain low due to continued strong hydro storage



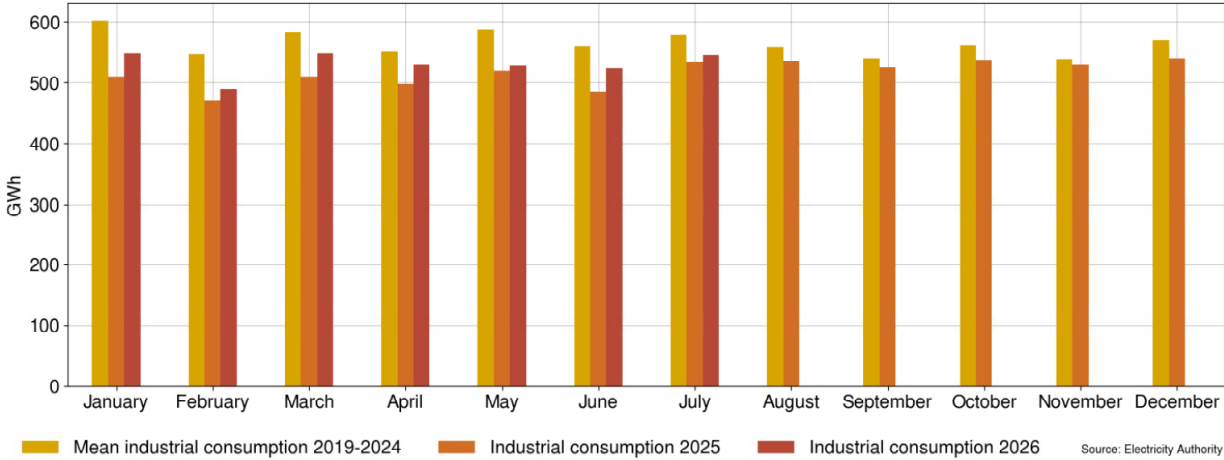
Ōtāhuhu Winter 2026 Forward prices have fallen after a mid-August spike



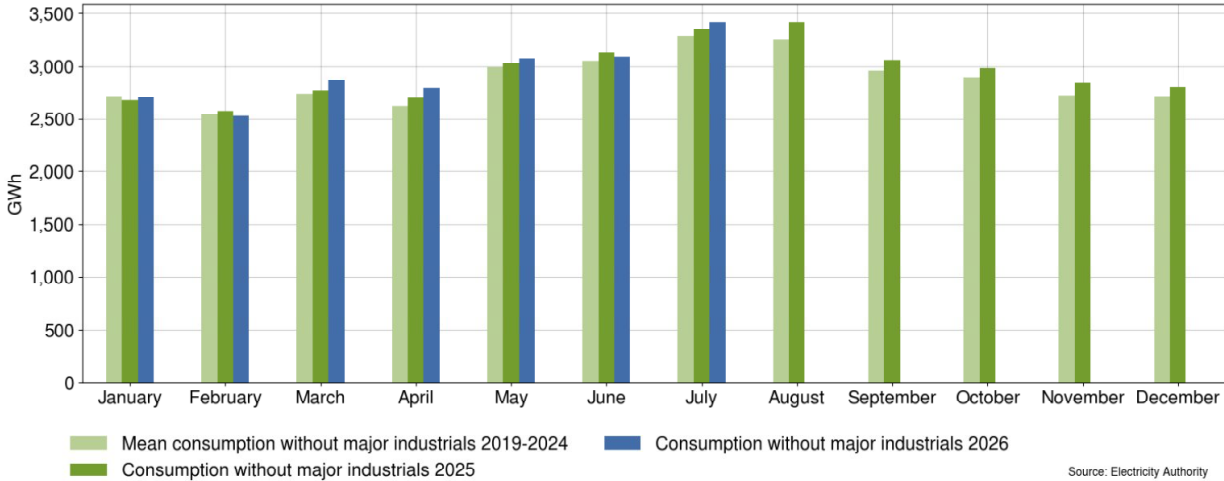
emi.ea.govt.nz/r/zjfxn

Growing residential demand and industrial demand up from 2025

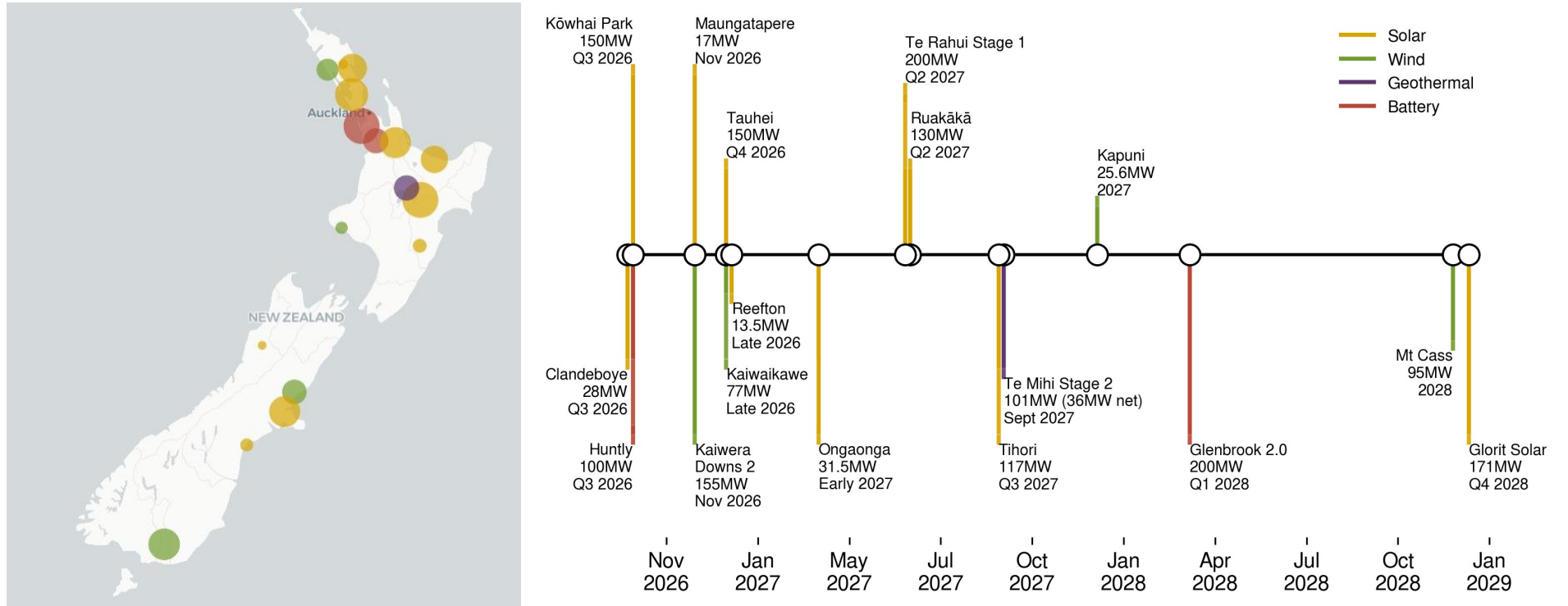
Industrial



Other



Timelines of projects under construction and their locations



1,401MW Major gentailers
361MW other developers

1,008MW Solar
353MW Wind
101MW Geothermal (36MW net)
300MW Battery



System Operator update

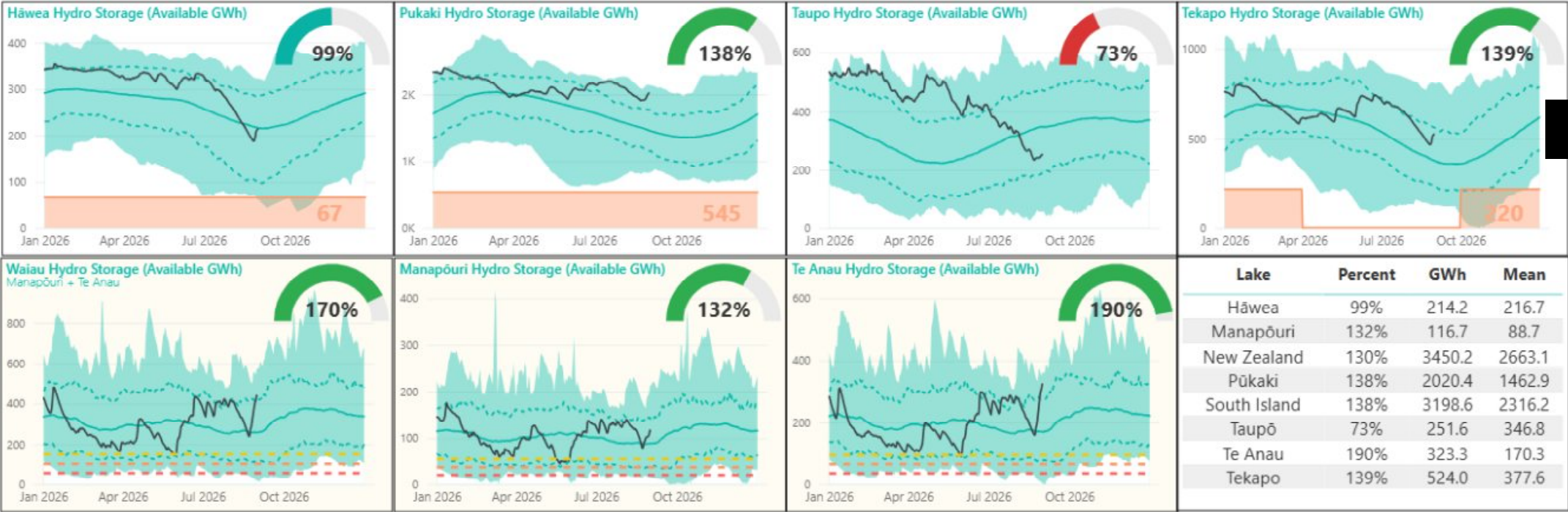
Security of supply outlook

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IN-CONFIDENCE: ORGANISATION

Hydro storage by catchment

31-Aug



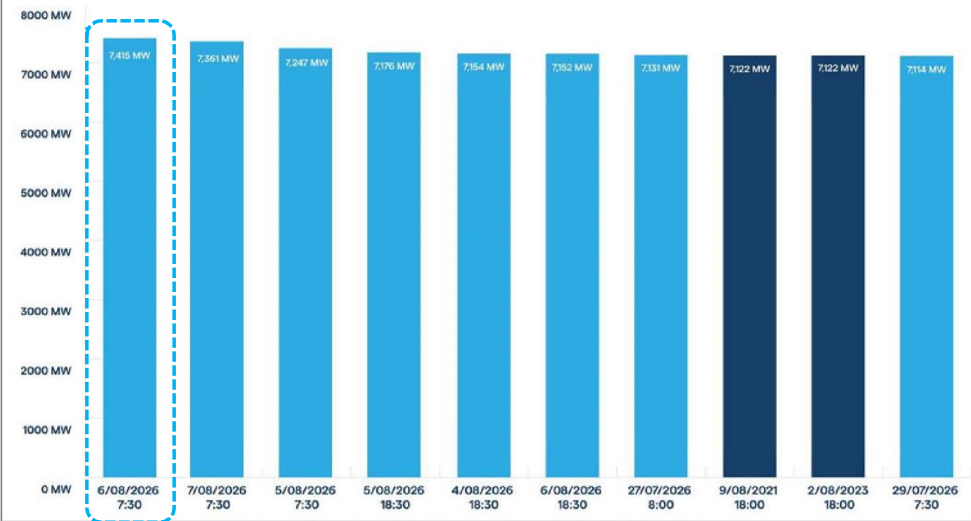
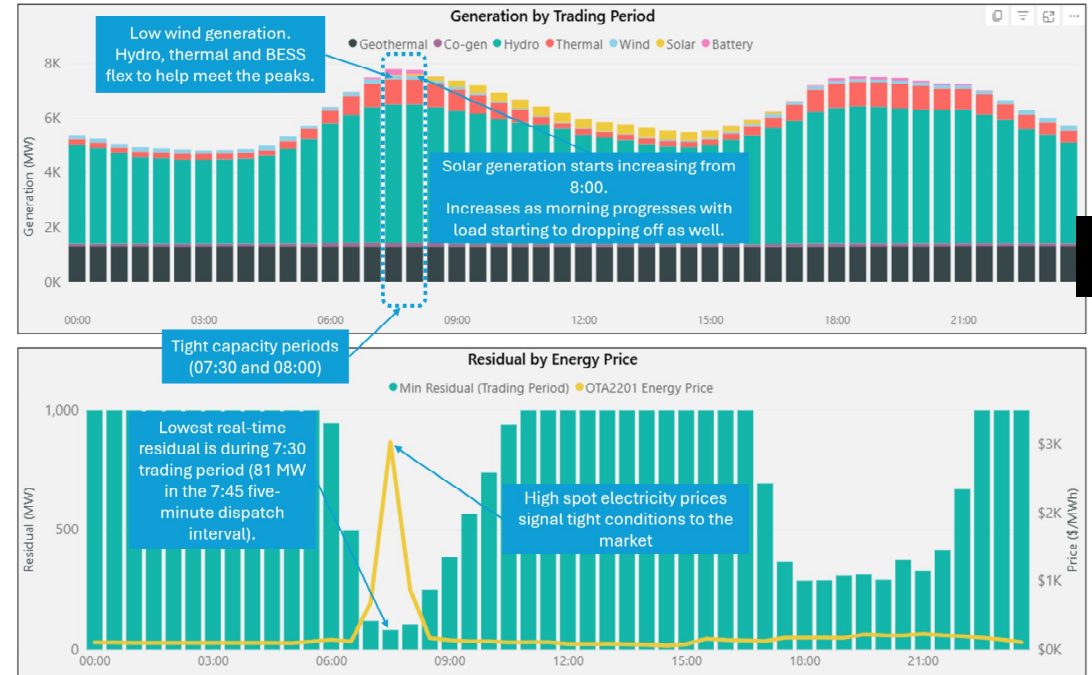
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IN-CONFIDENCE: ORGANISATION

New record peak load on 6 August 2026

Top 10 Electricity Demand Peaks – as of 9 August 2026



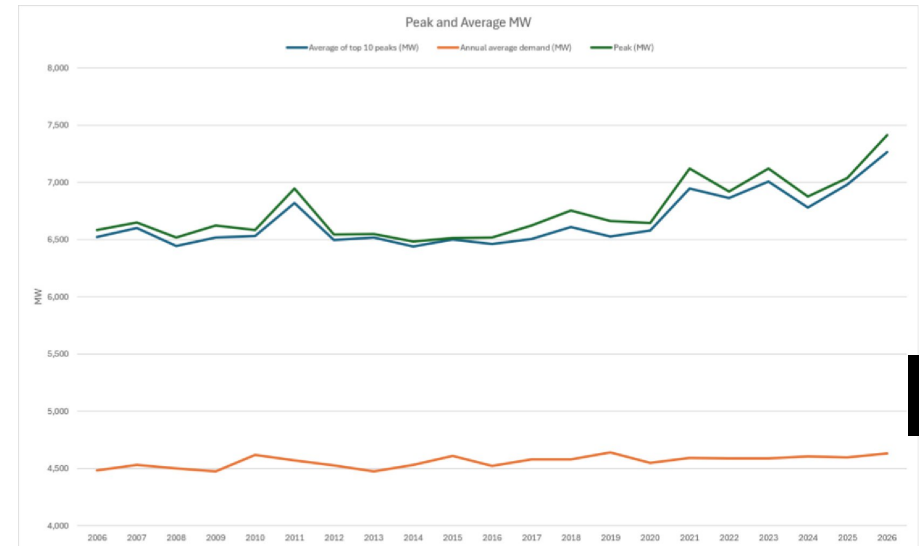
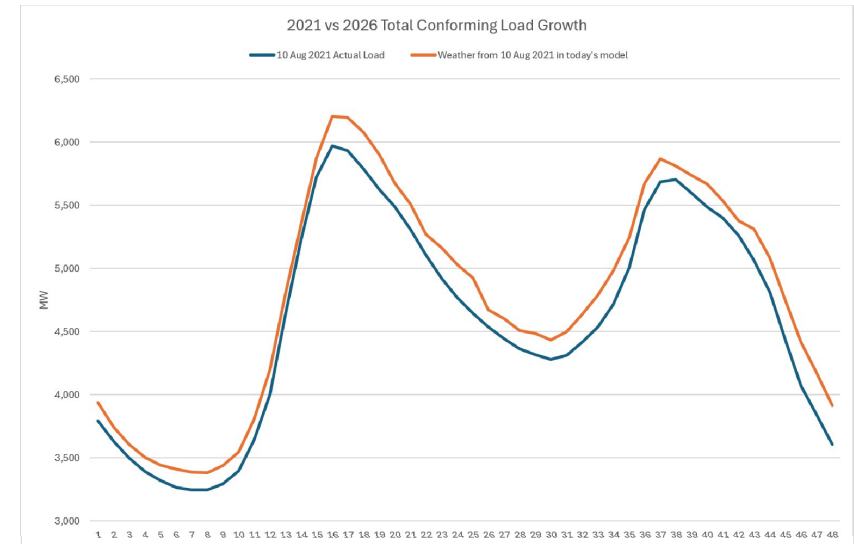
- Very cold weather across the country on 6 Aug
- Market prices signaled tightness – Supplemented with SO notices and industry briefing on physical risks
- Great industry response – Shift outages, offered additional plant, demand response
- Planned and unplanned outages during highest load highlighted importance of buffers, flexible plant and demand response.

Lessons learnt

- Early communication drove strong response.
- Naming/wording of the CAN highlighting a Potential shortfall or low residual and the actual Low residual CAN caused some industry confusion.
- Extending bids and offers beyond the 36-hour requirement would improve WDS accuracy and reduce potential-shortfall notices but requires a Code change.
- Daily MetService briefings improved risk assessment.
- Variations between half-hourly load forecasts vs actual half-hourly were ~50–120 MW. Reasonable considering the extreme temperatures. Difference between forecast and real-time within 200 MW buffer.
- Activation arrangements for some thermal commitment were unclear. We will work with the generators to better understand these to inform our risk assessments.
- Majority of controllable load were electronically submitted but some remain phone-based.
- Industrial response was strong; work with industrials to improve contact tracking.

Peak demand

- High peak demand in August 2026 due to very cold weather across the country
- Underlying peak demand growth contribution due to electrification and weather-sensitive loads
- Removal of peak transmission charges also a contribution over time
- Increases in rooftop solar reduces energy consumption but less impact on peak



Grid Emergency Notices



Grid Emergency Report

To: SO Notice NZ Participants
Sent: 19-aug-2026 08:11
Ref: 800000322

From: The System Operator
Telephone: 0800 488 500
Email: NMData@transpower.co.nz

Revision of:
Grid Emergency Notice ref:

Cause:	Voltage Stability Event Waihou
At:	Waihou
Starting:	19-aug-2026 06:55
Ending:	19-aug-2026 08:00
Action Taken:	Grid Emergency declared to disconnect Tauhei generation due to large voltage swings being caused by fluctuations in generator positive and negative MVars. Instructed the opening of Waihou circuit breaker 172.



Grid Emergency Report

To: SO Notice NZ Participants
Sent: 23-aug-2026 14:37
Ref: 800000332

From: The System Operator
Telephone: 0800 488 500
Email: NMData@transpower.co.nz

Revision of:
Grid Emergency Notice ref:

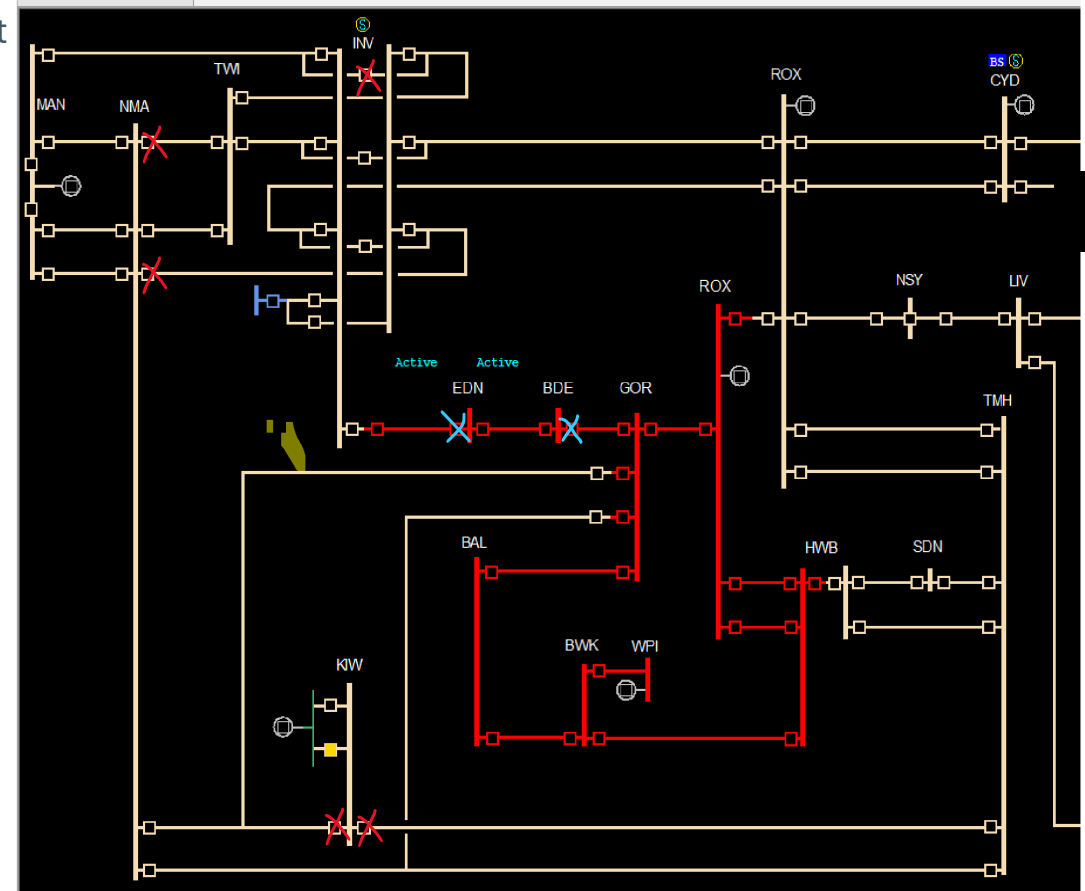
Cause:	Unplanned Outage North Makarewa, Brydone, Edendale
At:	
Starting:	23-aug-2026 11:52
Ending:	23-aug-2026 12:27
Action Taken:	Widespread unplanned outages across the lower SI caused loss of supply to North Makarewa, Brydone, and Edendale. Grid Emergency declared to reconfigure the grid and restore loads.

8

- Two GENs in August:
 - Grid emergency declared on 19 August to disconnect Tauhei generation due to large voltage swings on the network. Currently under investigation.
 - On 23 August at ~11:23 multiple trippings occurred in the Lower South Island resulting in disconnection of generation and load. See next slide

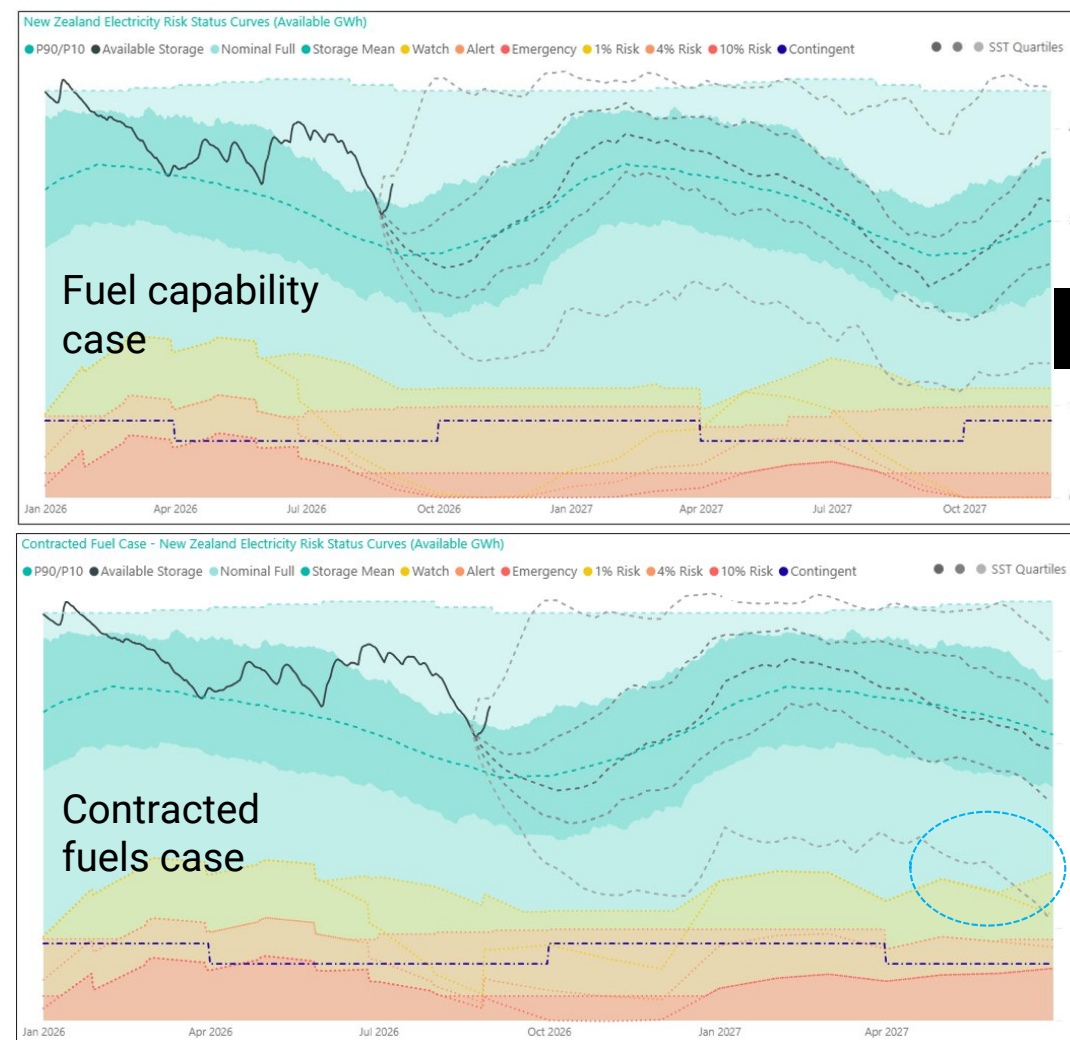
Lower South Island Grid Emergency – 23 August 2026

- A severe lightning storm near the Invercargill substation at about 11:24.
- Multiple circuits tripped throughout the lower South Island with load and generation loss.
- Loss of approximately 889 MW generation including all of MAN.
- Loss of approximately 500-550 MW of load including a significant portion of TWI load and Interruptible Load.
- Frequency dropped to 49.17 Hz in the North Island and 48.07 Hz in the South Island.
- Grid Emergency declared at 11:52 and restoration of all supply initiated.
- Grid Emergency ended at 12:27, with final instruction to restore load at 12:23.
- Next steps: SO currently investigating UFE causer of the event. Recommendation will go to EA for decision.



Energy Security Outlook (ESO)

- Latest ESO update published on 28 August.
- Fuels capability case:
 - Low energy risk over the next 12 months with one SST crossing risk curves.
 - Healthy fuel position.
 - Assumes thermal fuels will be replenished at the physical capacity
- Contracted fuels case:
 - Healthy contract position in 2026 – Similar to Fuel Capability
 - Less so in 2027. Eight SSTs cross the NZ Watch risk curve.
 - Reflects larger pool of physically available energy in 2027 that has not been commercially secured.

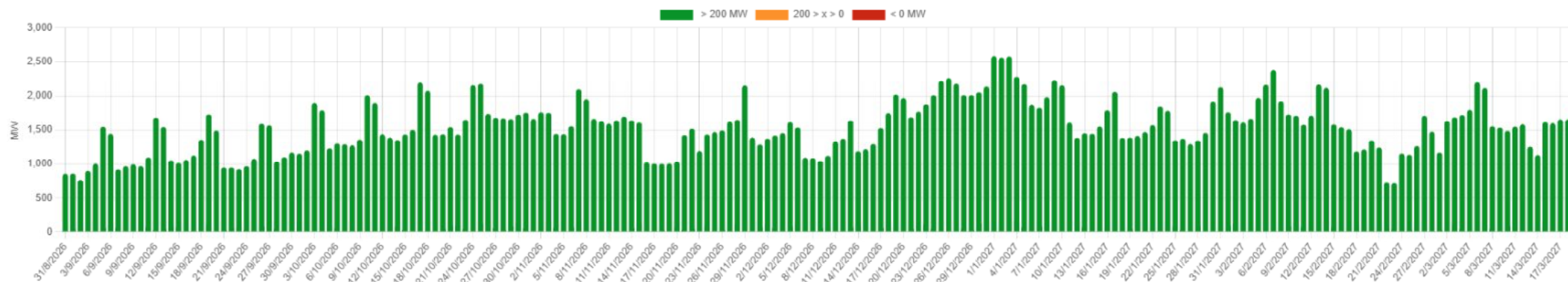


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NZGB update: Base capacity and high demand

- Generation capacity available to meet peak demand
- N-1 margins are looking healthy out to March 2027 provided:
 - Capacity not on outage is offered into the market over peak load periods
 - No other plant fails

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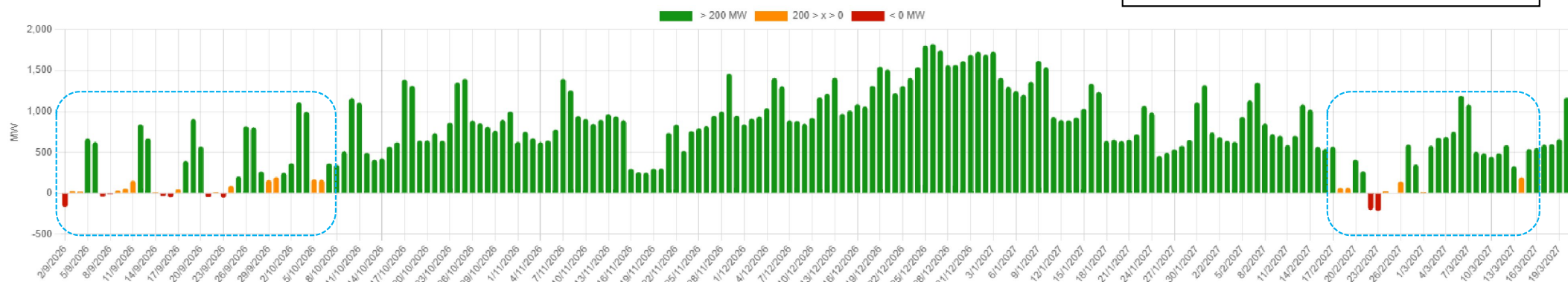


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NZGB update: Firm capacity and cold weather

- Lower thermal commitment more likely with reduced spot prices as a result of increased hydro storage, wind and solar generation coming online and declining demand as temperatures start increasing.
- Cold, still conditions not uncommon (e.g. 6 August)
- Impact of downside risks:
 - Cold snap = higher demand (P99)
 - Firm capacity = Reduced thermal generation and lower wind.

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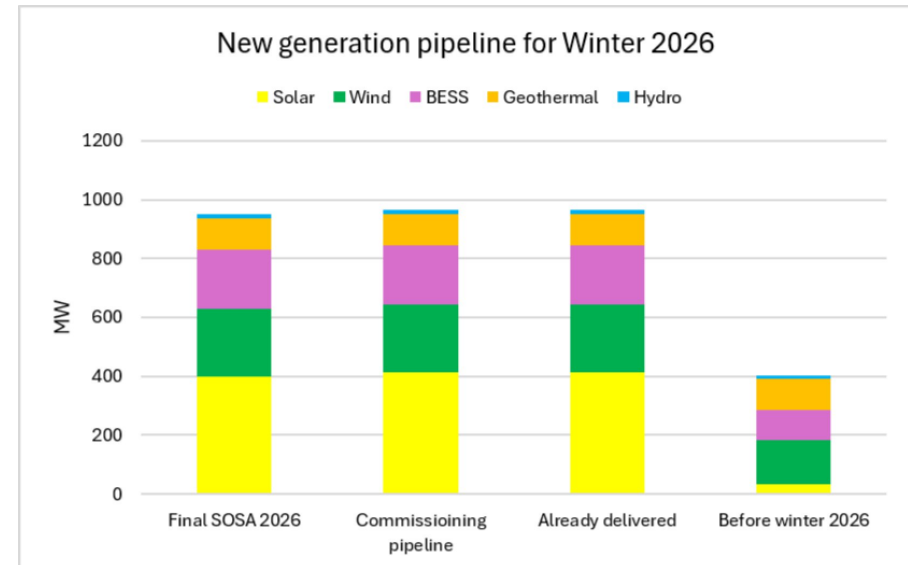
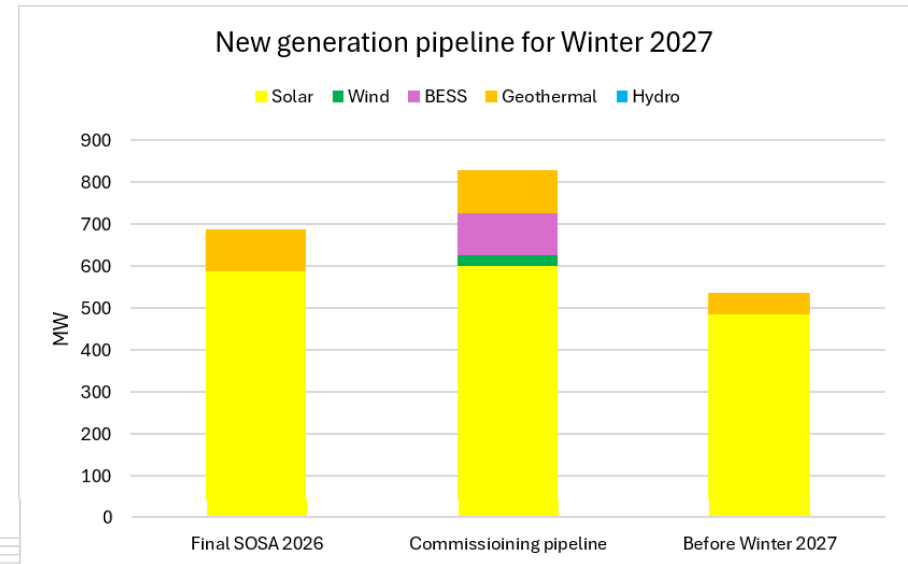
Firm capacity removes

- 1 HLY Rankine over winter, 2 x Rankines over shoulder and 3 x Rankines over the summer months
- It uses the lowest 10th percentile generation for wind (8% of total capacity)

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New supply

- Market delivering new capacity but behind SOSA committed pipeline coming into winter for next two years
- Winter 2026: SOSA modelled ~950 MW of new supply committed ahead of Winter 2026:
 - ~400 MW ahead of winter
 - ~550 MW during winter
- Winter 2027: SOSA modelled ~690 MW of new supply committed ahead of Winter 2027:
 - ~535 MW expected ahead of winter
 - ~290 MW expected during winter
 - Additional capacity expected to come online during Winter 2027 (some of which was expected by Winter 2028 in SOSA)



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SO initiatives

- Implementing the SOSFIP updates from May Energy Security Outlook – *Complete*
- Published the final SOSA 2026 report and supporting information on 30 June 2026 - *Complete*
- Incorporating the Low Residual Situations (LRS) process into the Policy Statement. Approved by the Authority and will come into force on 1 October 2026 - *Complete*
- Published latest Quarterly SoS outlook on 31 August 2026 - *Complete*
- Engaging with generators to understand operational constraints including with Meridian on progress towards consent to access Pukaki CS - *Ongoing*
- Undertaking Multiple Frequency Keeping trials to support the Frequency Management Strategy. Trial from 01 Sept to 30 Nov – *In progress*
- Providing input into the EA's Security Standard and SSAD review – *In progress*
- Development work on Emergency Reserve Scheme (ERS) - *In progress*
- Supporting government work on dry-year frameworks (together with EA) - *In progress*

ELECTRICITY AUTHORITY UPDATE

Regulatory action underway

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Near-term regulatory action underway

Initiative	Wholesale market	System security	Flexibility
Tools and incentives to manage risk			
Standardised super peak product	✓		✓
Standardised demand flexibility product	✓		✓
Wholesale products for long duration firming investment	✓	✓	✓
Resources to ensure system security			
Future Security and Resilience (FSR)		✓	
Battery Energy Storage System (BESS) enhancements	✓	✓	✓
Multiple Frequency Keeping (MFK) review		✓	✓
Emergency Reserve Scheme		✓	✓
Frameworks and settings			
Security standards review	✓	✓	
Support Government's energy package (dry-year framework)*	✓	✓	

*Government initiative, supported by the Authority and System Operator

Near-term regulatory action underway

Initiative	Update
Tools and incentives to manage risk	
Standardised super peak product	Market making obligations took effect 31 July
Standardised demand flexibility product	Publish co-design group recommendations in October
Wholesale products for long duration firming investment	Consultation in October*
Resources to ensure system security	
Future Security and Resilience (FSR)	Asset owner performance obligations for BESS and hybrids – consultation late 2026*
Battery Energy Storage System (BESS) enhancements	Decision late September*
Multiple Frequency Keeping (MFK) review	SO has started MFK trial . Work started on Frequency Strategy
Emergency Reserve Scheme	With SO for implementation by May 2027. SO consultation on Procurement Plan in September
Frameworks and settings	
Security standards review	Consultation in October*
Support Government's energy package (dry-year framework)	MBIE to provide update at September SRC meeting

* Subject to Board approval

Wrap Session – Item 7

Security of Supply Update

Risk and Strategy Session

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Overview

- The purpose of the annual strategy and risk session is to inform advice to the Authority, as it heads into its annual planning, and the SRC's focus for the year.
- The theme for this session is *the 2030s and beyond*. Informed by presentations (and this briefing), the aim is to cast forward to the mid-2030s, debate how choices made today can ensure the electricity system best meets NZ's needs.
- It will begin with short presentations from 4 experts who can offer insight on key opportunities and challenges likely to face the NZ electricity system and join SRC for an in-depth discussion. Presenters will receive this briefing.
- The session has some inputs, followed by discussion, to generate some outputs:



PRESENTATIONS AND
DISCUSSIONSECURITY AND
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Presenters

Four expert presenters will join SRC. They each have broad based expertise but have been asked to bring special focus to one area as part of their presentations.



Wendy McGuinness

Wendy is the CE of the McGuinness institute, an NZ think tank focused on what a sustainable NZ would look like in the mid 21st century



Tim Nelson

Tim is an energy transition executive. He led the “Nelson review” of the Australian National Electricity Market (NEM)



David Reeve

Dave is an NZ electricity system expert. After a long career with Mercury Energy he co-founded WhiteBoard Energy and is a principal at consultancy, Sapere.



Vincent Smart

Vince is an electricity system expert. He is a senior strategy advisor at EECA with a background in trading and regulation at Genesis Energy and Smartwin Energy Trading.

Suggested focus

What NZ needs from its electricity system, key risks

Market settings for highly renewable system

Medium and Long duration storage

EV and DER uptake, integration and optimisation

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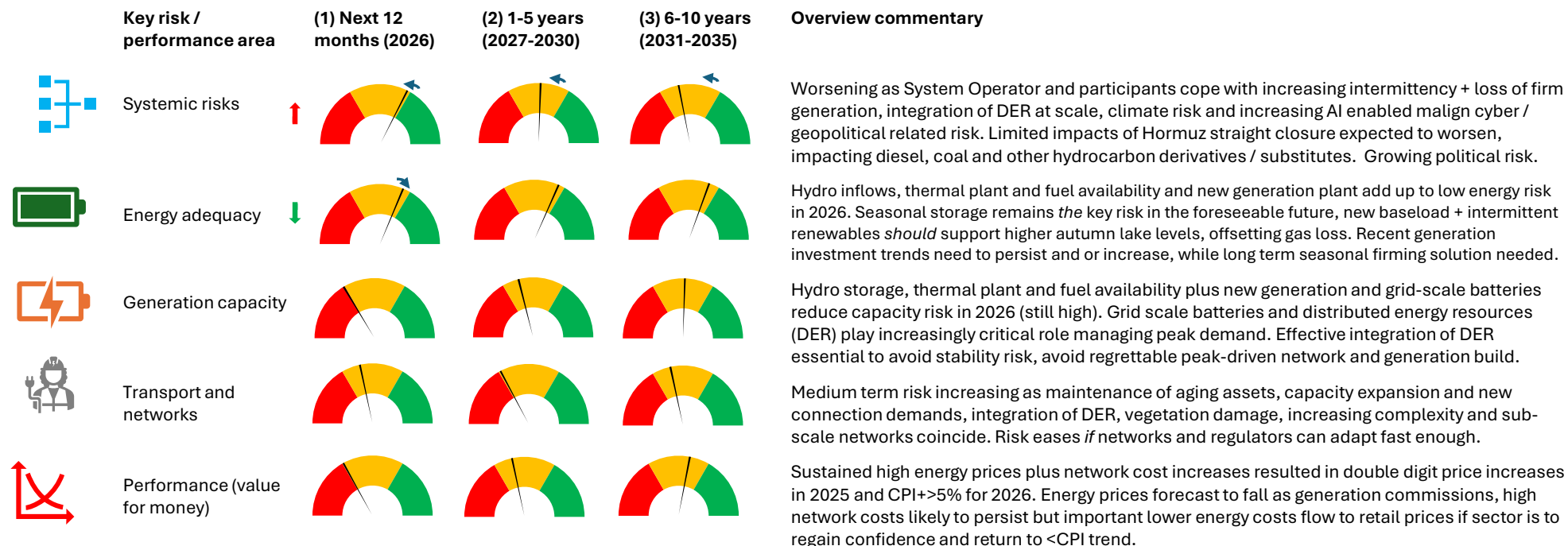


RISK RADAR – CURRENT
DASHBOARD AND TOP
TEN

The purpose of the SRC's 'risk and performance radar' is a point in time snapshot of high-level view of risks to electricity system security, reliability and performance. It is used by the SRC to inform its own focus and priorities.

The risk and performance radar is the SRC's aggregated view in five key areas across three time horizons. It reflects SRC members own knowledge and insight and that shared by various experts who meet with the SRC each quarter.

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The SRC is limited in its ability to act or advise on real-time or very short term matters (where a risk has or is becoming an issue) but can influence policy making and sector risk management through its advice and actions.

In particular, the SRC has a system wide and long-term perspective so can identify potential blind-spots, acting as a 'canary in the coal mine'. In this capacity the SRC calls attention to risks (and opportunities) that may fall through the cracks or drift, increasing the likelihood of future harm to electricity consumers.



RISK RADAR – CURRENT
DASHBOARD AND TOP
TEN

The table below is not intended to capture every risk facing the electricity system and is used to inform SRC focus rather than as a corporate like risk-register. It focused on risks with potential system level impacts to the security, reliability or performance of the electricity system.

Time horizons
1 = with 1 year
2 = 1 to 5 years
3 = 6 to 10 years

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ID	Risk description	Consequence	Likelihood	Time horizon	Mitigations	SRC actions
1	Decreasing gas production reduces fuel for peaking and seasonal firming	Capacity + energy shortage, high prices	High	2, 3	Drilling, gas conversion, LNG, batteries, coal, hydro mgmt.	Deep-dive into medium-long term supply demand balance risks, options
2	Politicisation / policy / regulatory uncertainty delays or misdirects investment	Chills and or misdirects investment (capital and focus), impacts SOS and cost	High	Persistent	Clear policy and priorities, national multi-fuel energy strategy. Lower forward prices need to show in bills.	Continue calls for focus on important over urgent (latest shiny object tendency)
3	DER growth not well integrated into system / supported by clear rules	Increases system risk and cost / waste, lost opportunities	Medium	2,3	Clear rules and standards, effective integration into network / system ops	Continue calls for action on rules and standards, risk mgmt. as DER scales
4	Increasing severity of weather events / climate related hazards (fire, flood)	Material, worsening. Particular impact on networks	High	Persistent		Deep-dive into climate risks / mitigations for key system elements
5	Unfit for purpose tree regulations	Unnecessarily high loss of service, restoration cost	High	Persistent	Regulatory change	Maintain pressure for reform
6	Dry sequence / extended / back-to-back dry sequences	Energy + capacity shortage, very high prices, voluntary and involuntary rationing	On average 1 in 4 years	Persistent	Contracting firm thermal plant and fuel, grow generation fleet, hydro flexibility	
7	Intermittent generation not properly integrated into system	Grid stability, peak load and seasonal energy risk	High	Persistent	Adapt Code, SO tools and processes, address ahead of time	Deep dive in May 2026
8	Consumer dissatisfaction with system performance	Knee-jerk political action impacts investment	High	1		
9	Cyber attack, physical attack, geopolitical risks impact global supply chains	Asset damage, loss of supply, potential blackout	High	Persistent, escalating		
10	System capacity constrains demand / imperils electrification	Loss of economic activity, delayed decarbonisation	High	2,3	Strategic outlook informs investment needs and capability requirements	Strategy focus for September 2026
11	Aging assets, aging workforce	Increased risk of failure, delay to restoration	High	Persistent	Asset owner performance obligations, contract to support Rankines	Review periodically

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ENVIRONMENTAL SCAN
AND ALTERNATIVE
WORLDS

Environmental scan

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New Zealand's energy system is entering a period of rapid and profound change. Choices we make today will influence the future security, reliability and performance of New Zealand's electricity system.

The aim of this environmental scan is to help identify key trends and developments with potential to materially affect New Zealand's electricity and broader energy systems over the 10+ year horizon we are considering.

The scan draws on a combination factual information and forecasts and in some cases connects trends and developments to tease out insights or potential outcomes. Its aim is to shift focus to the mid 2030s, provoke discussion, help identify critical challenges and opportunities to inform SRC's advice and focus.

The scan has two parts:

- A look at the **current state** briefly assesses NZ electricity system, public perceptions and digs into the cost 'stack' to understand price drivers in the early-mid 2020s (and what we might expect next)
- looks at six (possible) **macrotrends** shaping the future for electricity in NZ

Disclaimer: these are secretariat's research and thoughts – intended to provoke discussion (not for everyone to agree). We've also used AI to create some images to convey complex / interdependent issues.

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ENVIRONMENTAL SCAN
AND ALTERNATIVE
WORLDS

Current state

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A spotlight has been on energy and electricity in recent years as the sector has faced some challenges after a prolonged period of perceived stability.

We have prepared a brief assessment of the current state of the NZ electricity system, including looking at the price drivers in the early-mid 2020's.



**The system in
2025**



**Public
Perception**



Retail Prices



**Share of the
bill**



**Retail
Squeeze**

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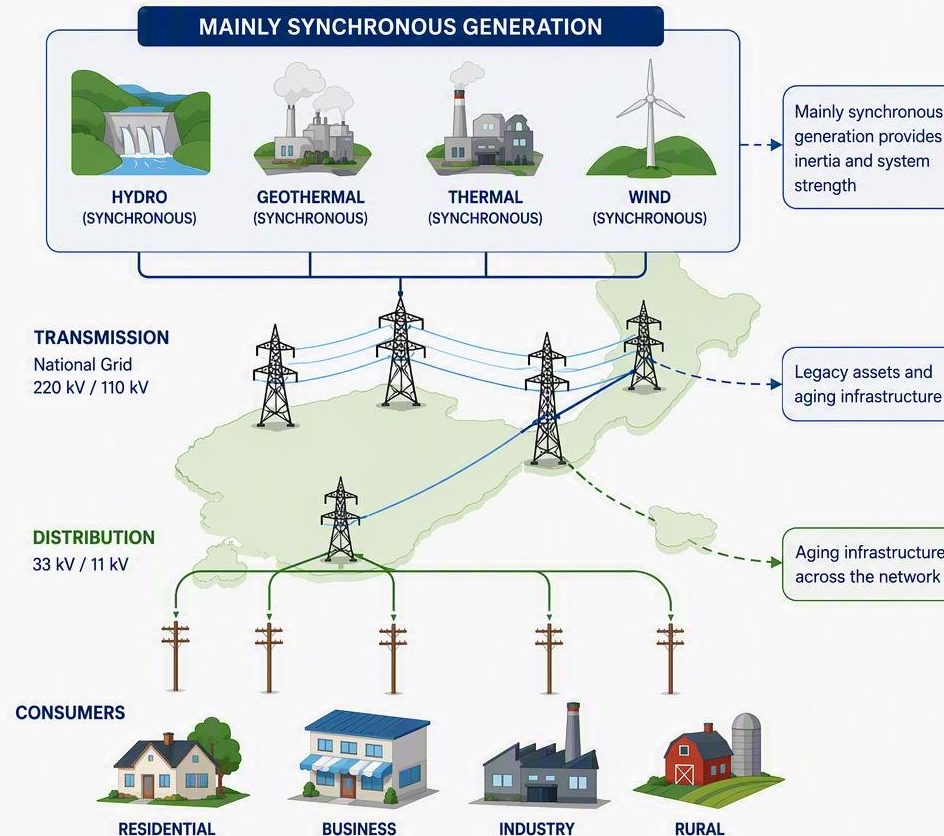


In ~2025

- Legacy challenges
- Optimised for steady state, low growth
- Not configured for rapid growth, change
- Slow to react to tightening supply from ~2019
- “Perfect storm” as dry year combines with gas crisis and under-investment (2024)
- Electrification stalled ...
- Early signs of change, but yet to really hit

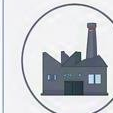
New Zealand Electricity System – 2025

Secure, reliable system built on legacy assets and optimised for just-in-time investment



Secure and reliable (just)

The system is secure and reliable – just.



Legacy assets

Many assets were built decades ago and remain in service.



Aging infrastructure

Infrastructure is aging and requires increasing maintenance and renewal.



Optimised for 'just in time investment'

Investment is timed to the minimum needed, when needed.



Steady state, low growth

Demand growth is low and relatively stable.



Mainly synchronous generation

The system is predominantly synchronous, providing inertia and stability.

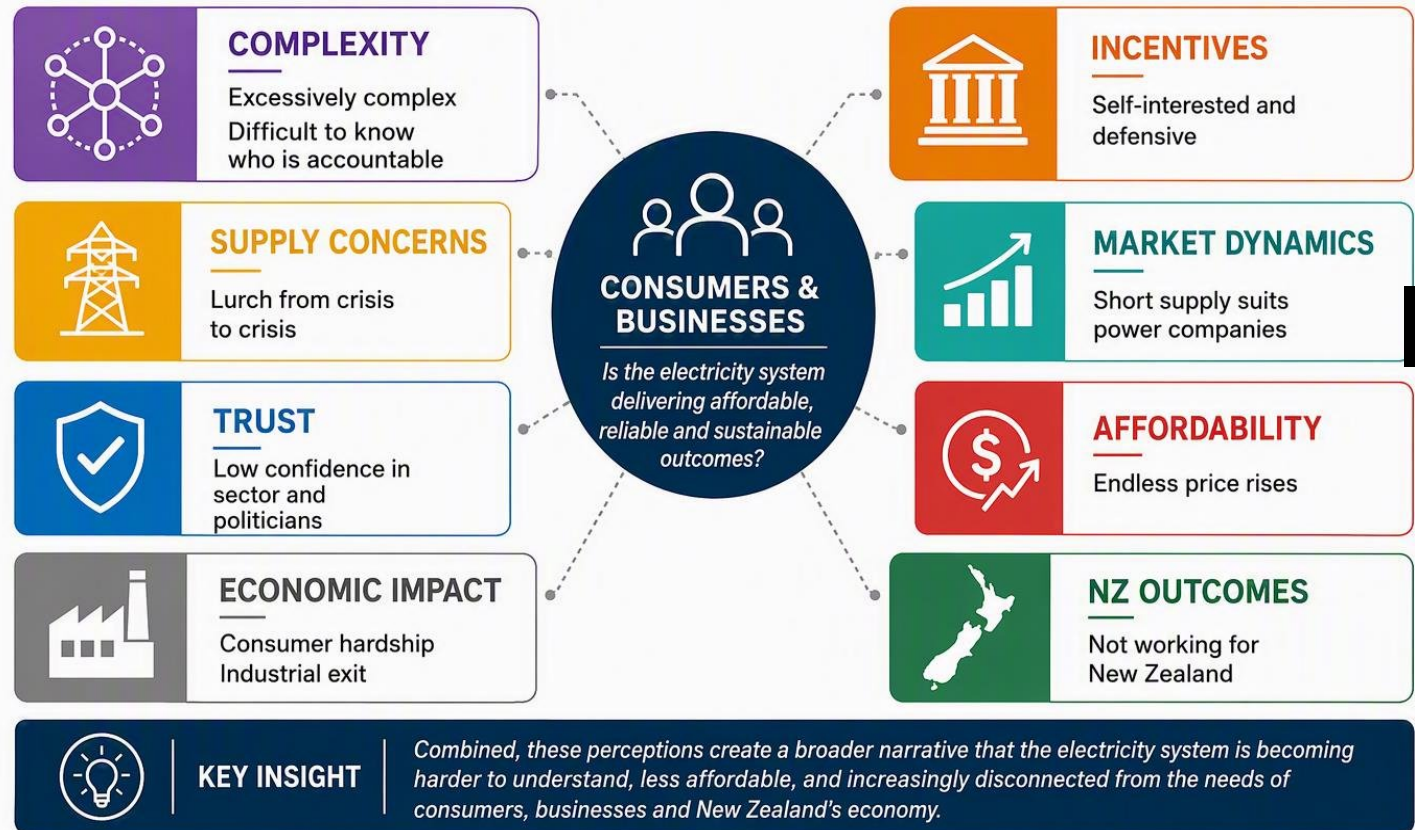


Public perceptions

- Not interested in sector's problems, just want reliable supply at 'fair' price
- Public focuses on outcomes not narratives
- System is secure and reliable, but, in the last ~decade:
 - seen sustained price pressure on commercial / industrials (and exit)
 - negative margins for retailers (especially independents)
 - set scene for 2025 retail price shock
- Price shock coincided with cost of living crisis
- Electricity become highly politicised (again)

New Zealand Electricity System Consumer & Public Perceptions

Many consumers and businesses perceive the electricity system as becoming more complex, less affordable, and less aligned with New Zealand's long-term needs.



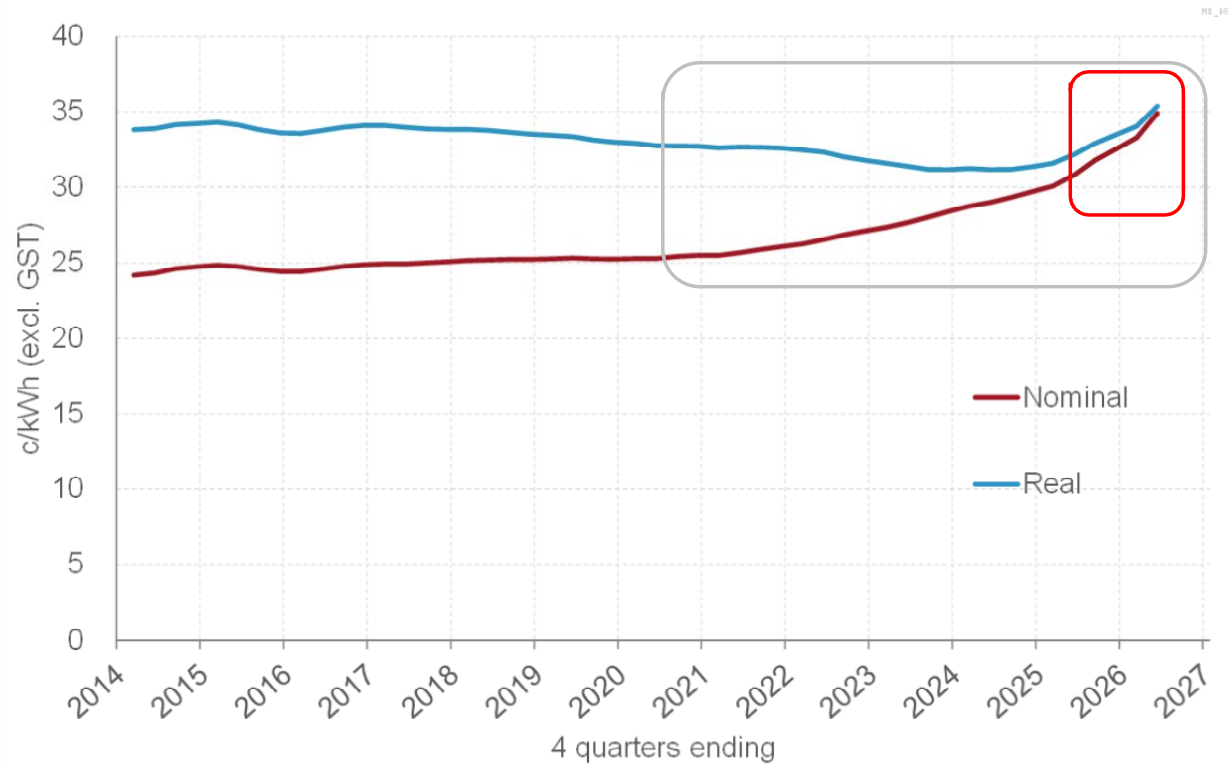
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Behind public perception – retail prices

- Retail prices declined in real terms 2015-2024.
- But, high inflation masks the scale of price rises (in nominal terms) – prices increased:
 - from 20c kWh in 2020
 - to 30c kWh in 2026.
- These price increase coincided with broader cost of living crisis
- Puts electricity squarely in the political spotlight.

... the next slide shows how 2025 made transparent very large increases in the energy component (obscured by lower line charges for the first half of the 2020s).



Source: Concept analysis



Behind public perception – “share of the bill”

- Low WACC reduced line charges from 2020-2025
- Served to obscure rising energy hedge costs
- Return to mid-range WACC in 2025 combined with still elevated energy hedge costs to ‘slam’ small consumers in 2025*
- Graph is normalised to changes in total charge.

*large commercial, industrial users more directly exposed to hedge costs (so impacted earlier than small consumers)



Source: Concept analysis



Disconnect: contract prices vs estimated costs for new baseload supply

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Early 2020s saw material divergence between:

- contract prices paid by large users and independent retailers, and
- the estimated of new baseload supply

While one would not necessarily expect contract prices to = cost of new supply, scale and duration of this divergence is:

- very large relative to the preceding 25 years
- concerning

There are differing views on reasons for this divergence

Chart is from April 2026 (hedge prices have fallen further – see “what next” slide for latest hedge prices)



Source: Concept / NZ Infrastructure Commission

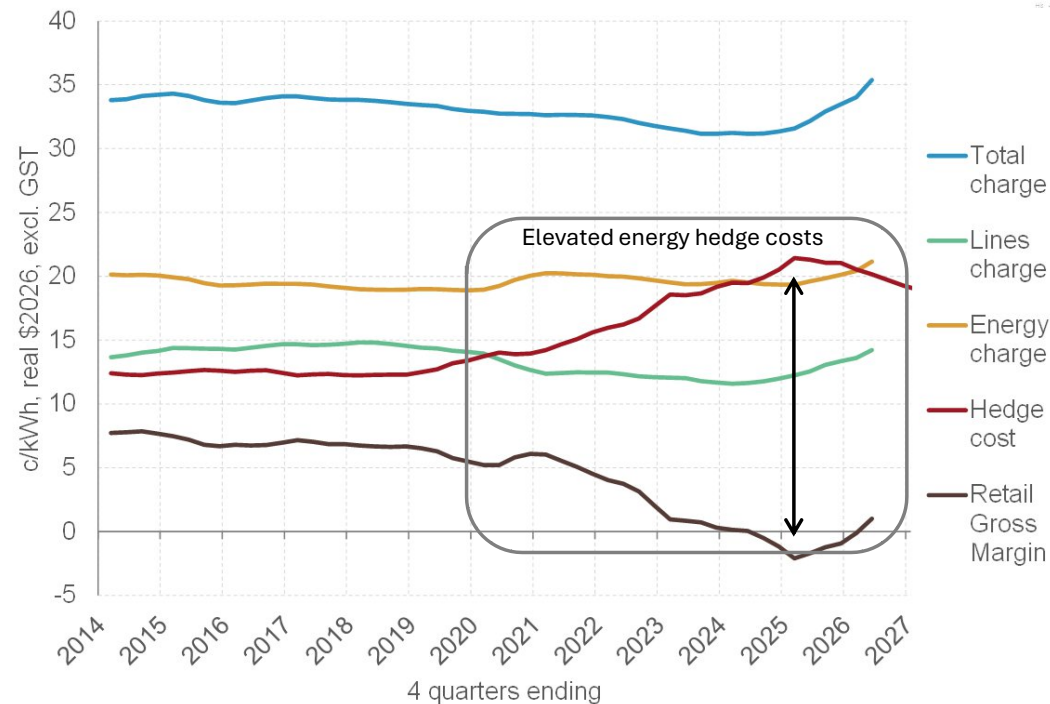
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Behind public perception – retail squeeze

- Retailers absorbed high energy hedge costs, likely being loss making for much of last decade
- Retail gross margin falls from 2019, recovers slightly in 2021*, then falls as hedge costs keep growing

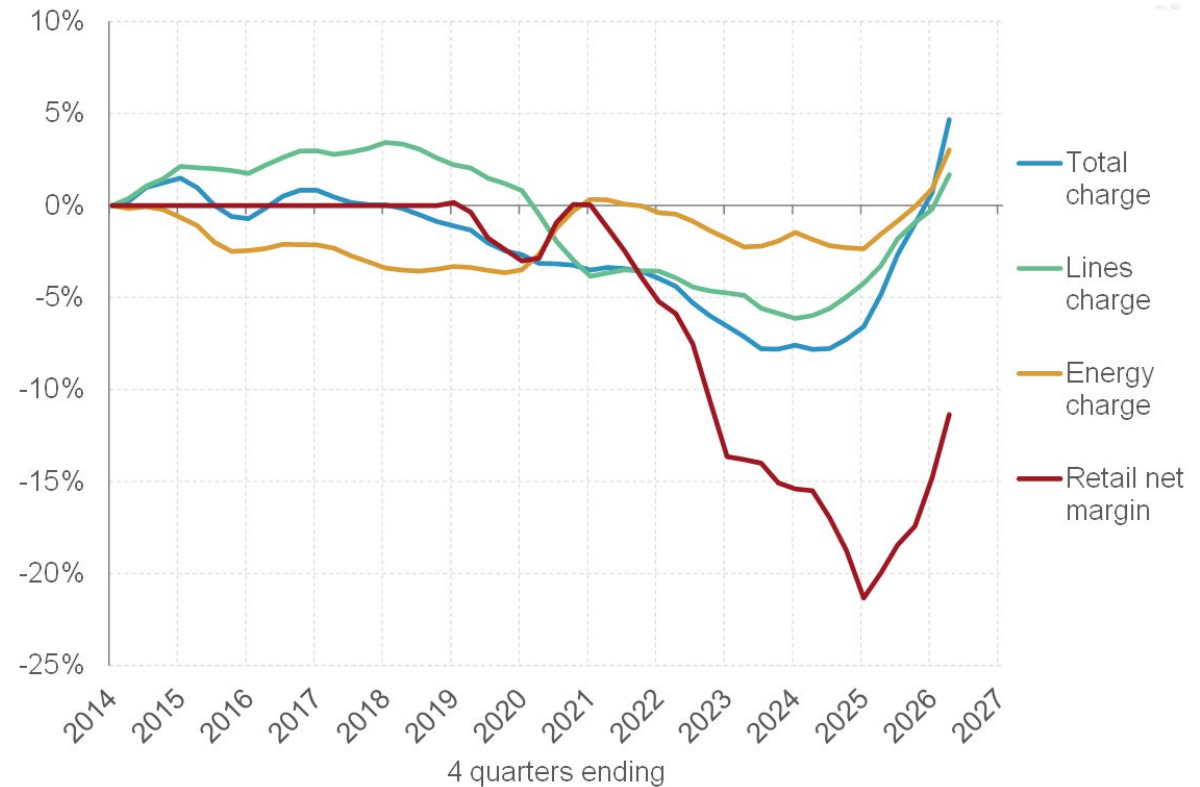
* Likely as retailers retained line charge reductions in 2020.



Source: Concept analysis

Behind public perception – retail squeeze 2

- This chart shows retail profit after removing (estimated) costs for 'cost to serve' and metering costs.
- Likely retail has been / is loss-making, i.e. a difficult time to be an independent retailer.
- Falling energy hedge costs + rising retail prices starting to erode retail losses
- Uptick in red line shows losses are easing, but still in negative territory



Source: Concept analysis

How will falling hedge prices show up for consumers?

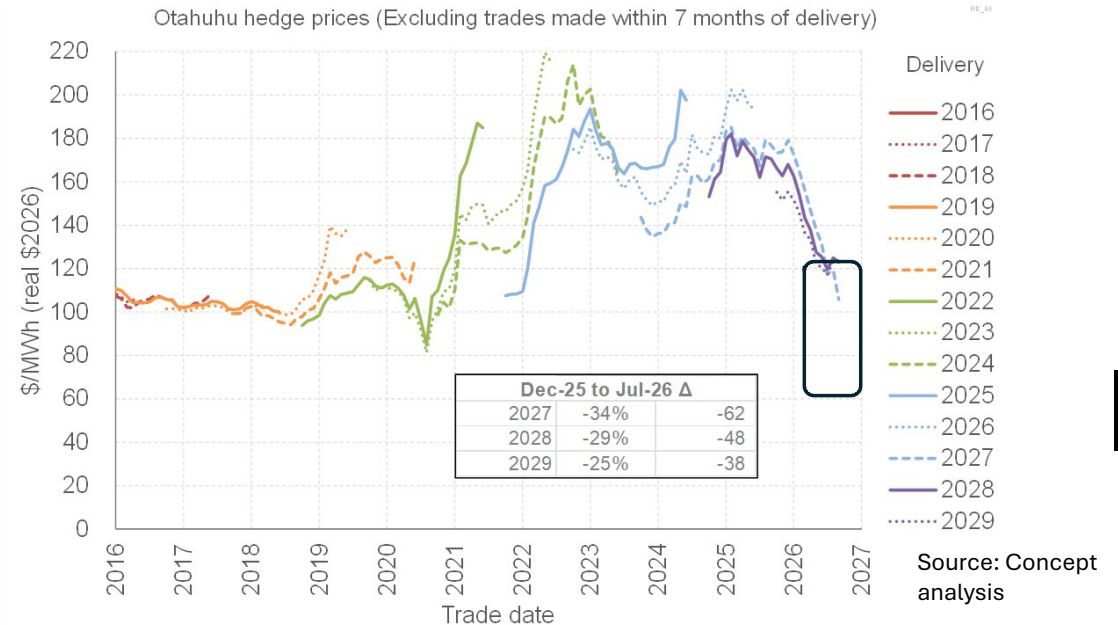
Since December 2025, NZ electricity futures have fallen markedly. As at July*

- 2027 futures have fallen by \$62 MWh (34%)
- 2028 futures have fallen by \$48 MWh (29%)
- 2029 futures have fallen by \$38 MWh (25%)

*This date limits impact of current hydrology on 2027 prices.

Forward prices are returning to around the cost of new firmed generation, this reflects:

- Generation (supply) catching up with demand and returning to balance
- Renewables reducing the need for (expensive) thermal generation
- Agreement to preserve 3rd Rankine unit, maintain fuel stocks



Key questions:

- If/when falling forward prices show up for consumers (industrial, commercial, residential)
- Will some / all savings be retained by retailers (restore margins)?
- Will this restore confidence (and ease political risk)?
- Can forward prices stay at/around this level?

Macrotrends?

Energy and electricity systems globally are in a period of profound change. That change is driven by geopolitical, economic, environmental and technological challenges and enablers.

For this session we identified six macrotrends – trends that have potential to drive profound change, are arguably inescapable and our response to which will shape the success of our future energy system.



Increasing focus on energy security: as geopolitical instability combine with tightening long term hydrocarbon supply environment and AI enabled malign actor risk to make energy security a national security priority.



A return to rapid growth in energy: as technological, economic and energy security concerns combine with falling gas supply to drive electricity demand growth.



Changing demand profile: with residential demand (electrification of transport and gas conversion) combining with population growth to accelerate the recent trend of peak demand growth exceeding energy demand growth.



An increasingly intermittent, inverter-based generation mix: altering system dynamics and presenting new system security and grid stability challenges that the system operator and distribution business are not currently prepared for.



Evolving firming need + solutions: for week to week (dunkelflaute / wind drought) and seasonal firming (winter peaking system, dry year cover) converting excess renewables generation into stored energy.



Smarter networks optimise for DER: with potential to reduce cost by complementing traditional network solutions with smarter use of distributed generation, home storage, vehicle charge / discharge and demand management.

Increasing focus on energy security

- In an increasingly uncertain geopolitical landscape energy security at forefront of national security
- Security imperatives necessitate strategic risk management, reduce reliance on foreign energy
- Doubtful oil / hydrocarbon prices will fall as hoped (need to refill strategic reserves, increasing costly production)
- Electrification the strategic response?

Source: AI generated image

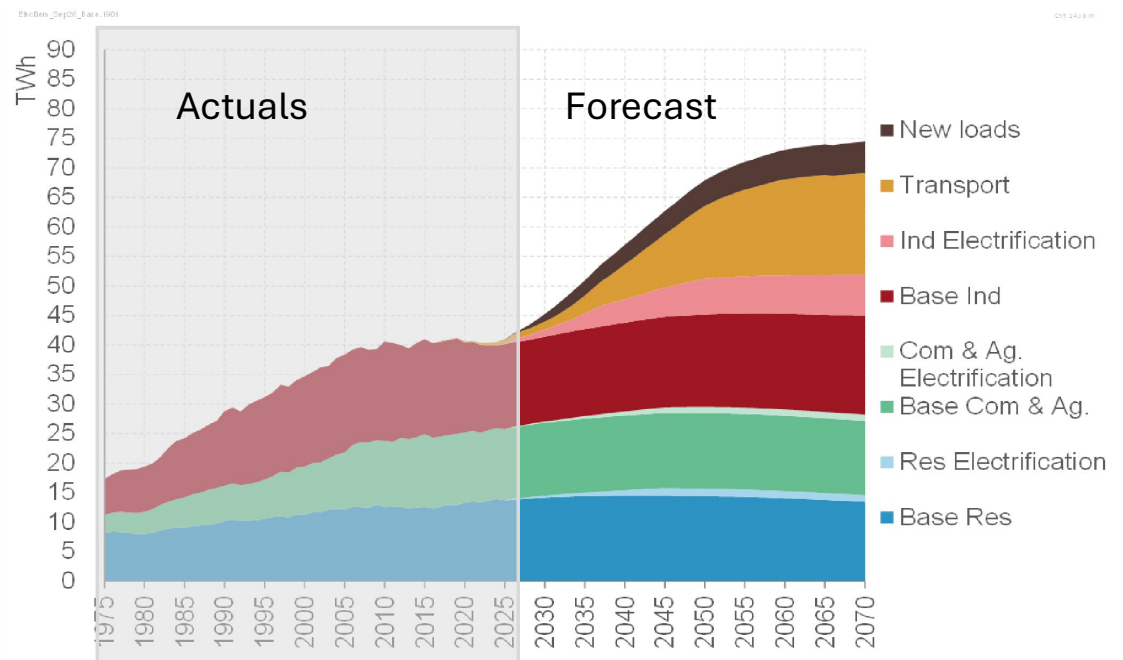




Return to rapid growth

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- Forecasts indicate return to levels of growth seen from mid 20th century until ~2010
- ~10TWh forecast growth for the next decade will see growth equivalent to the period from 1995-2025
- That growth is driven by economic fundamentals *so should occur* but can still be disrupted by policy or sector performance
- Growth is primarily:
 - electrification of transport
 - industrial electrification (mainly decarbonisation)
 - new loads (mainly data centres)
- Demand *profiles* for new demand will have as much (or more) impact as raw growth



Source: Concept's whole of economy energy model, ENZ. Forecasts are economically driven and the model is internally consistent.

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EV's – big opportunity, big risk

Technology, economics and fuel security trigger ICE to EV shift

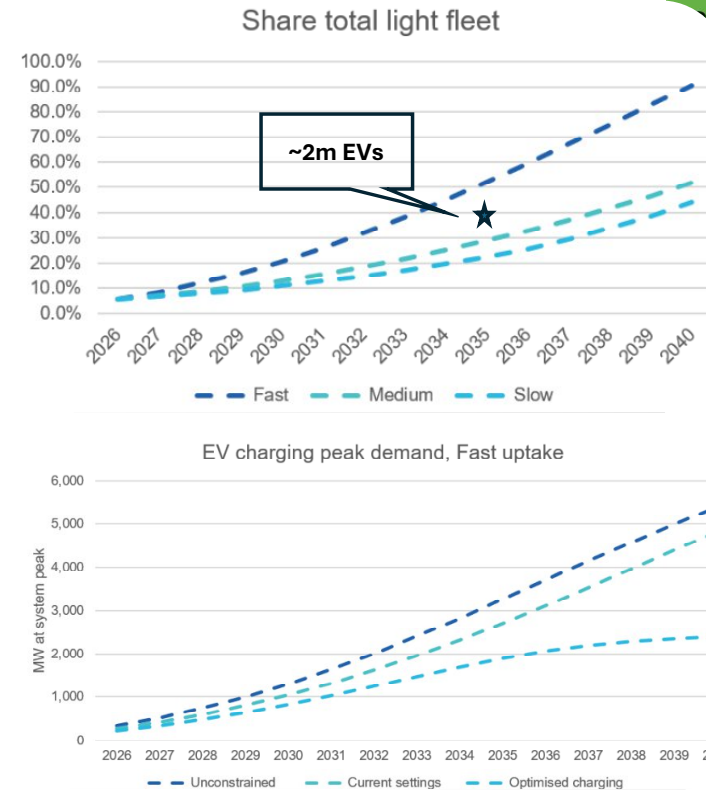
- Since the strait of Hormuz closures, NZ has seen a significant increase in light EV purchases, at number not seen since the end of the Clean Car discount
- This trend likely continue, inflection point as EV reach price parity with ICE vehicles, fuel security and cost concerns increase and consumers overcome inertia / range anxiety etc
- EV adoption could plausibly reach 2m vehicles by 2035. This is uncertain, can test fleet mix scenarios using [EVDB EVs on the road scenario tester](#) (scroll down page)

The opportunity

- 2m EVs equates multi-GW charging demand and/or DER.
- Smart chargers enable temporal optimisation of charging to avoid / minimise peak demand periods (peak periods are the main driver of cost for transmission and distribution networks)
- EV's have significant system optimising and consumer resilience potential as a DER *if* vehicle to grid enabled and *if* pricing, network access terms and communications protocols enable and incentivise EV use in this manner.

The risk

- EV purchasers not informed, enabled, incentivised to (a) install smart chargers (b) optimise charging patterns.
- Multi GW difference in peak demand depending on smartness of charger deployment, education and pricing, for the identical EV charge outcome
- Transpower estimates 1GW peak demand increase = \$1.5bn system cost



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Source:
Secretariat
analysis

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Notes: the impact of EV take up on peak demand is function of charger type / capacity / smartness, strength / clarity of price signals, user education and any "command and control" options employed for instructed demand response.

The unconstrained / current settings / optimised charging scenarios above should be viewed as indicative (incorporate secretariat judgements and assumptions)

Residential solar + BESS

What we expect to see

- Uptake is growing as costs fall and electricity prices rise. Public subsidies, on offer from most of the political parties, will boost uptake while more cost reflective pricing and distribution pricing reform may push in the other direction.
- Current residential installs appear to be 75k systems with 419MW, 5.6kW average installed system size is increasing so faster system growth + bigger systems will combine for potentially rapid MW growth. 2000MW appears realistic by 2035.
- We are seeing a major shift from solar only to solar paired with batteries for residential installations. Average battery size is 10-13kWh, with potential for ~9GWh residential energy storage.

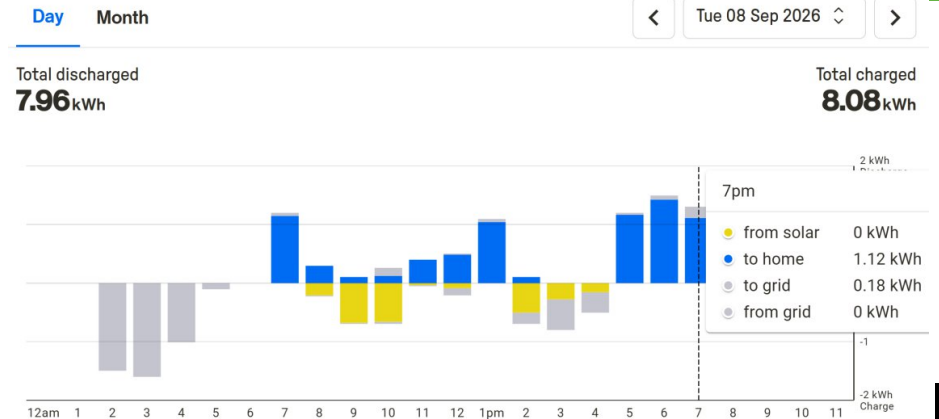
The opportunity

- Pairing with batteries significantly improves the value of residential solar, adding resilience, enabling use of more self generation and option to reduce grid use at peak times.
- Multi GWh residential storage provides a powerful DER for peak smoothing, *if* pricing, network access terms and communications protocols enable and incentivise battery use in this manner.

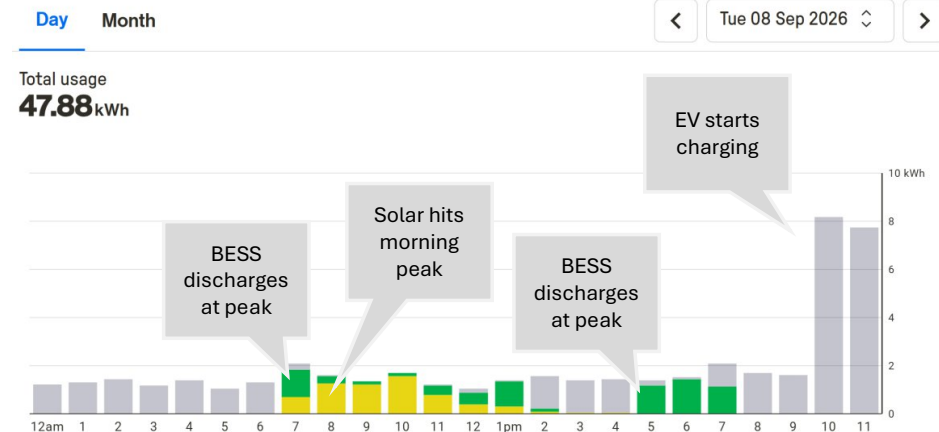
The risk

- Very low midday demand, residential export exacerbates impacts. Note: this residential solar needs to be added to distribution + grid connected where BESS pairing is currently very low.
- Current solar + BESS pairing trend weakens (we end up with high solar / low BESS >> repeating the Australian experience).

Battery performance



Home usage

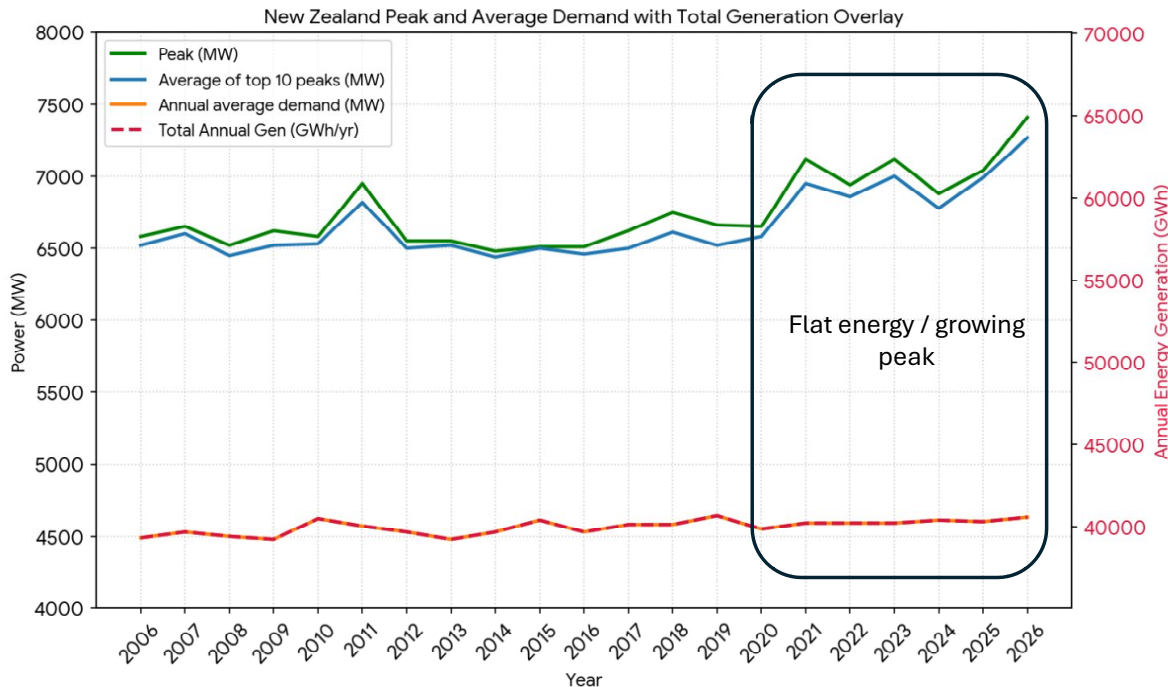


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Changing demand profile: peakier peaks

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- Peak demand has grown 'sharply' in the first half of the 2020s, not matched by energy demand growth
- Contributing factors:
 - Changing demand: less industrial (day time / baseload), more residential (peak weighted)
 - Removal of transmission peak price (less incentive to manage peak demand)
 - Residential solar (reduces daytime demand, less impact on peaks)
 - Weather – can be major influence for one off events e.g. Aug 2021, Jul/Aug 2026

So what?

Potential for less peaky / higher network utilisation not yet evident. Peak demand is a/the key driver of cost (especially for distribution and transmission networks).

If divergence between peak growth and energy growth continues we may see *higher and more volatile prices*.

This could be a temporary adjustment or could be a sign current settings (pricing, standards, network access terms and communications protocols) not adequate.

Source: Transpower + secretariat

10

Increasingly intermittent, inverter-based 1

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- The EA's generation pipeline shows solar dominating 'planned' generation build, followed by wind.*
- Concept's ENZ model** projects what generation will actually be build.
- Either way, on current configuration*** the NZ system becomes increasingly dependent on intermittent / inverter base generation.

So what?

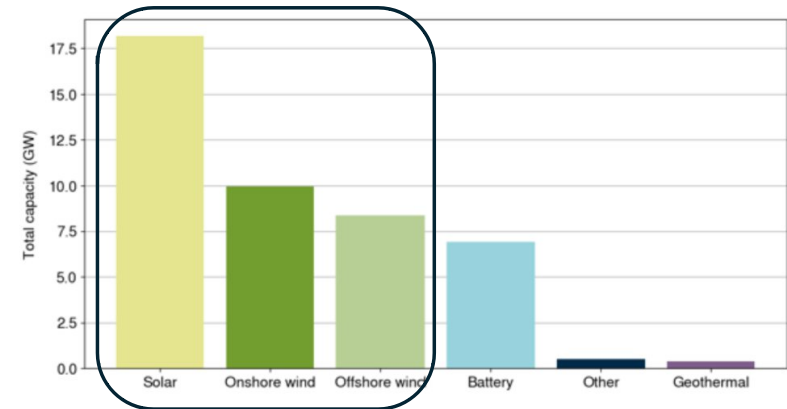
This growth in intermittent / inverter based grid-scale generation (in combination with residential solar / batteries, EVs and other DER) presents serious challenges for system operations (dispatch + stability management).

Notes:

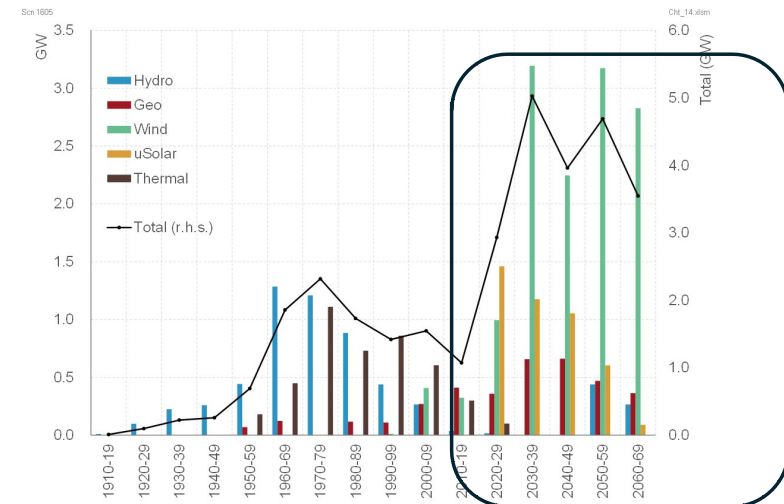
*This reflects all projects in the pipeline, the EA is clear not all of will be built.

**ENZ is a whole of economy energy model, these projections reflect expected build cost and revenue by generation type. It shows solar 'capping out', with wind makes dominating from the early 2030s (wind has 'better' generation diversity so is more likely to generate when needed (peaks and winter) while solar revenues fall as daytime supply > demand + short term storage).

***"current configuration" means current levels of medium to long duration storage i.e. current hydro storage. Additional hydro / pumped hydro or alternative (economic) technologies may change the most economic generation options projected by ENZ.



Source: EA generation pipeline – entire pipeline, all project statuses



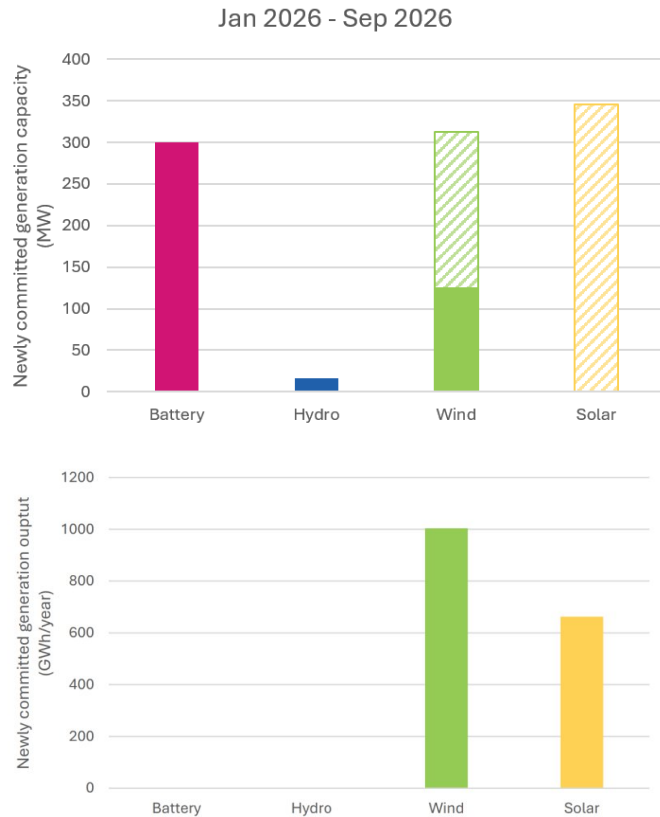
Source: Concept ENZ model

10



Increasingly intermittent, inverter-based 2

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- The trend described on the slide above is reflected in current generation commissioning – as shown in the top chart
- The dashed bars indicate potential contribution at peak (judgemental), noting solar appears to be contributing to morning peaks
- The bottom chart shows that of nearly 1GW newly committed (reached FID and/or started construction) between January and September 2026, 100% was wind or solar.

Note:

- Solar capacity is growing fast, this likely brings forward the point the point where daytime generation > demand, impacting prices.

Source: Concept Generation pipeline

10



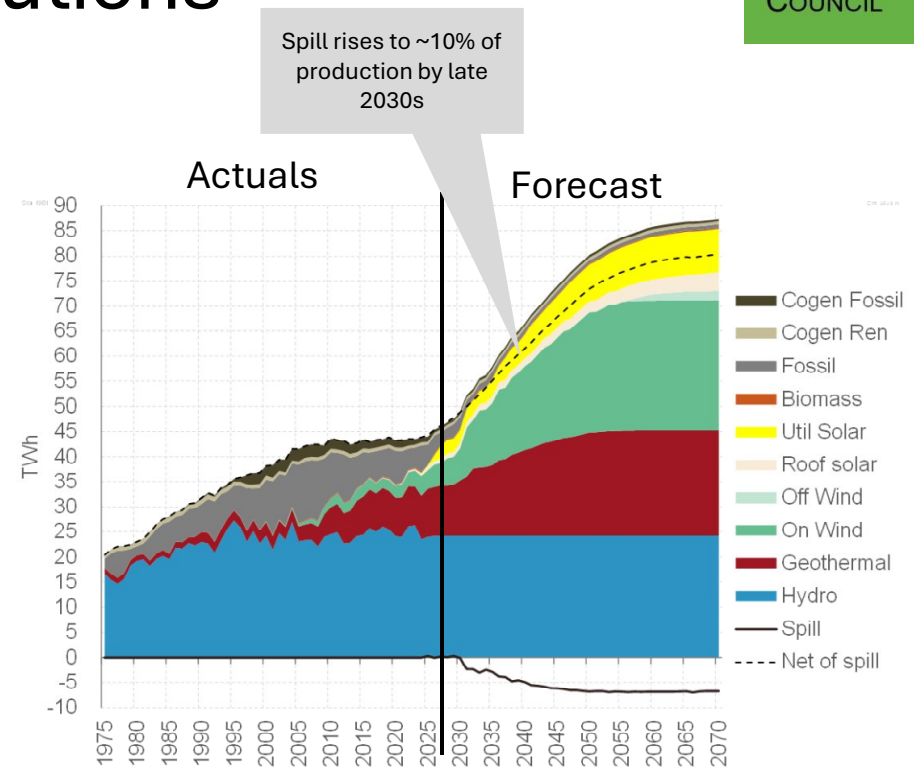
Evolving firming needs, solutions

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Maintaining security of supply as the trends described above play out.

This presents choices for New Zealand. For example:

- Current path: high thermal reliance + high (economic / strategic) renewables overbuild. This is shown in the chart to the right, as indicated it results in high 'spill'. It assumes no change to existing hydro storage/access, no new long duration storage (thermal/hydro).
- More storage / flex: adjusting storage levels plus operating ranges may reduce thermal reliance for peaking / dry year cover. Would reduce the level of spill (less overbuild needed), but spill remains material.
- New storage options: could allow excess solar generation to be stored and used when needed e.g.:
 - short term (daily peaks, large drop off in intermittent)
 - medium term (calm and or cloudy period i.e. dunkelflaute)
 - long duration (seasonal / dry year)



Source: Concept ENZ model

10



Evolving firming needs, solutions

- Grid scale and distributed batteries are scaling rapidly.
- These are an incredibly valuable resource for short term supply / demand balancing and grid support.
- The resource pool is growing quickly and, based on NZ evidence + global trends, likely to continue.
- The key question is *how well NZ integrates these into its system to capture the value on offer for energy and grid stability management and avoiding network capacity investment.*

How BESS is operating as of April 2026:

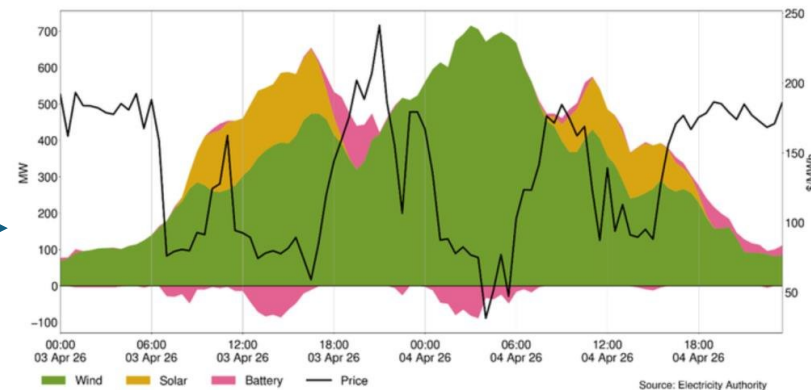
- shows energy arbitrage (charge off peak, discharge at peak)
- doesn't show role of BESS in enabling better use of generation and HVDC / transmission (ref security of supply update to August SRC)



Installed BESS of 235MW / 435 MWh expected to increase to

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RELIABILITY
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Source:
Meridian
Energy



10



Evolving firming needs, solutions

- Existing hydro lakes provide short term, medium term and long term flexibility. While an incredibly valuable resource – but have capacity limitations.
- There is potential to increase capacity by amending operating ranges (higher lake levels) and or ‘contingent storage’ access.
- New medium to long duration storage: research / testing of mechanical and chemical long duration storage technologies is occurring internationally. For NZ, the most proximate and obvious new long duration storage options are:
 - More thermal storage: natural gas, coal / biomass, diesel
 - Pumped hydro: a new to NZ option that transforms excess generation into stored energy for later use. Two solutions with different characteristics are in the media at present.



Onslow: Long duration optimised

Sutton: short duration optimised

Both: concept stage only, very high capex

SECURITY AND RELIABILITY COUNCIL



10



Smarter networks: optimising for DER

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The changes we are beginning to see have huge potential for networks.

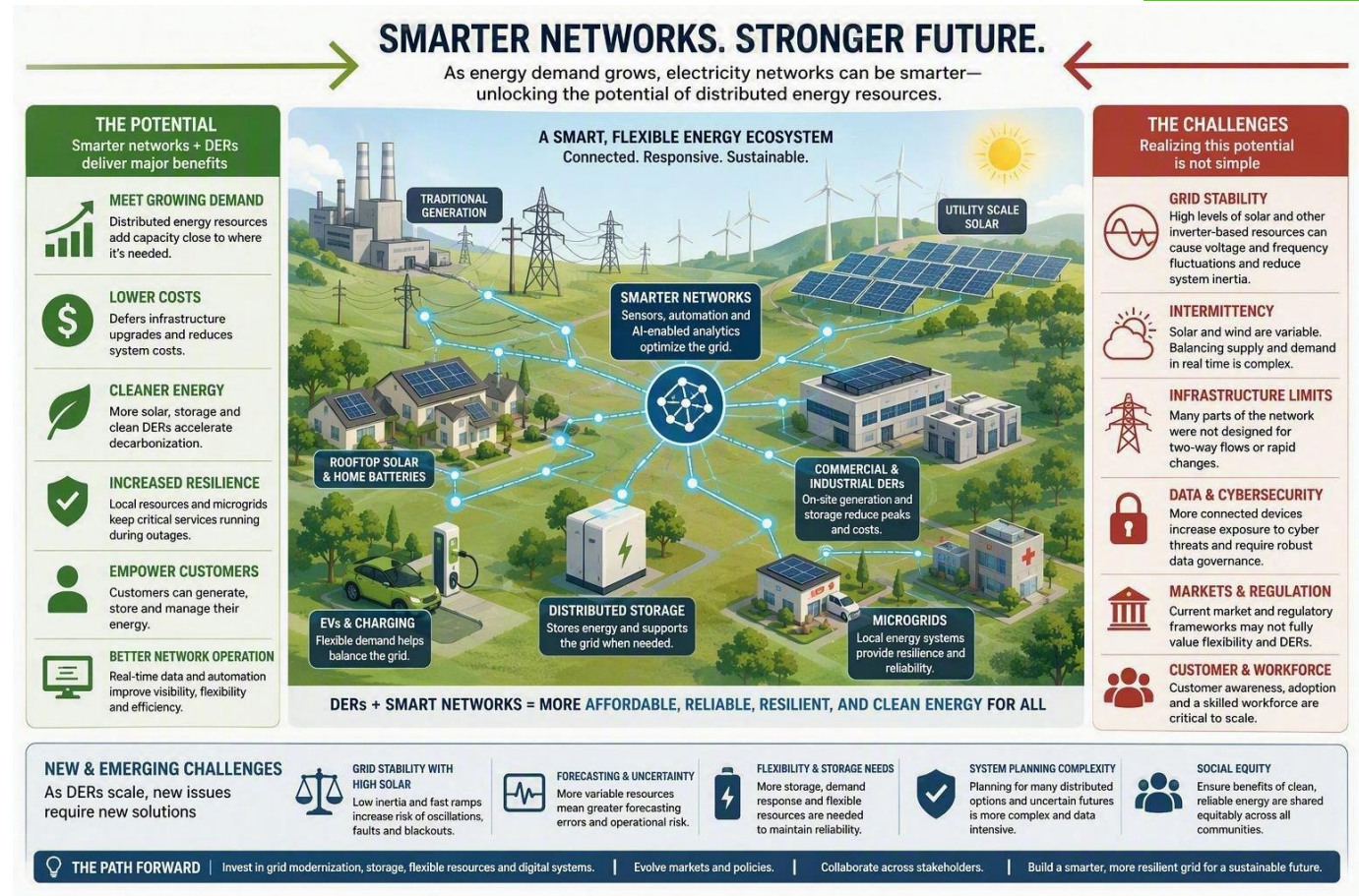
Well managed*, we can have:

- Higher network utilisation
- Falling per kWh network costs
- Increased resilience (esp. for those with solar / home batteries / EV (if V2G enabled))

Poorly managed, we could have:

- Lower network utilisation
- Rising per kWh network costs
- A fragile system with “Iberia like” risks

*E.g. EDB maturity, great network / usage data, effective pricing, technology comms protocols integration, customer comms and access terms (optimise for DER), cross-system collaboration.



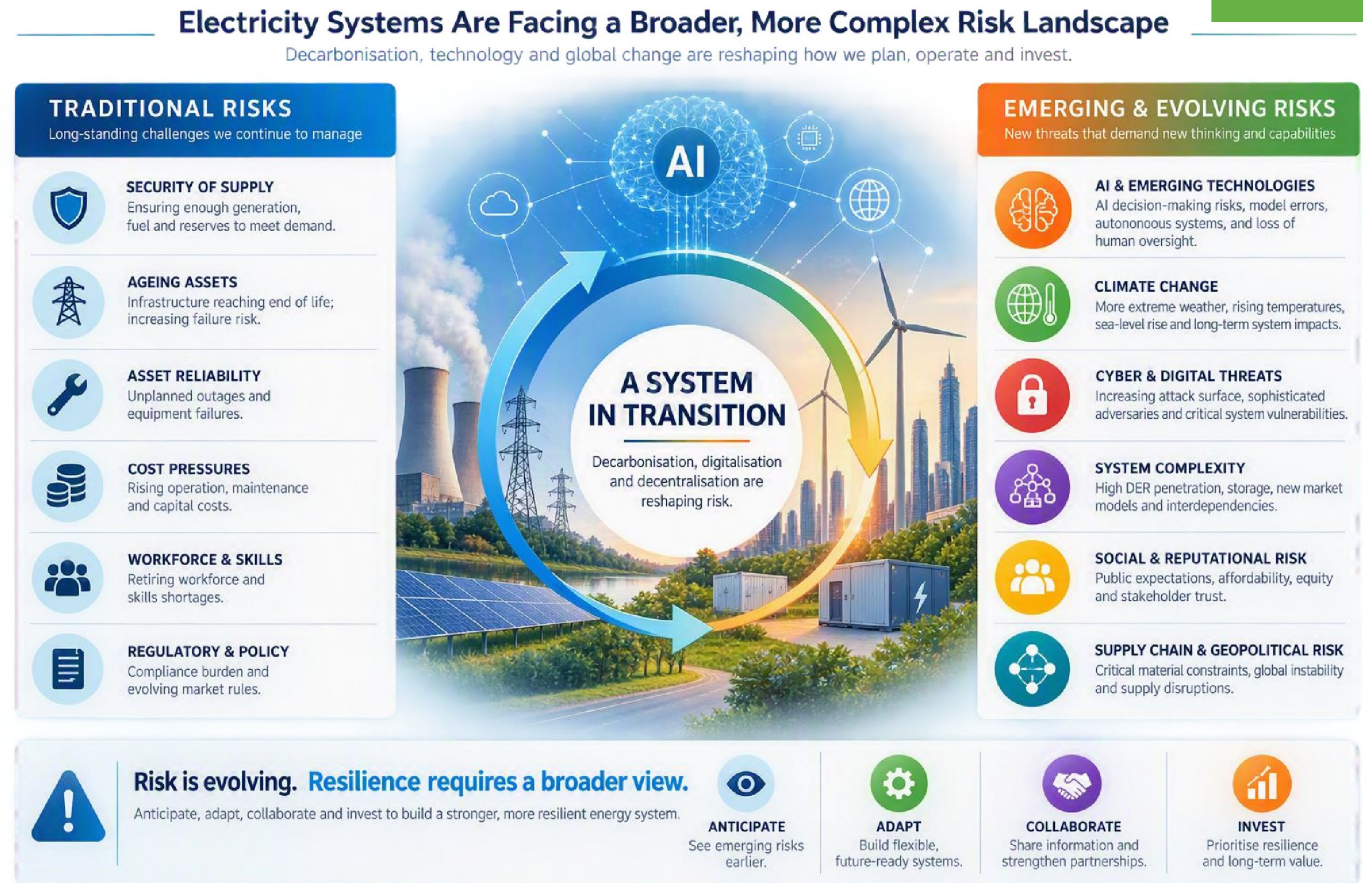
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Changing nature of risk

We return to risk:

- Conventional risk
- Emerging risks

Apology from secretary: for
using lots of AI images ...



Conventional risks

What we know today from historical experience + current understanding of potential changes

Plus:

- scale of growth multiplier
- scale of change multiplier
- pace of change multiplier

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RISK RADAR - CURRENT DASHBOARD AND TOP TEN

The table below is not intended to capture every risk facing the electricity system and is used to inform SRC focus rather than as a corporate like risk-register. It focused on risks with potential system level impacts to the security, reliability or performance of the electricity system.

ID	Risk description	Consequence	Likelihood	Time horizon	Mitigations	SRC actions
1	Decreasing gas production reduces fuel for peaking and seasonal firming	Capacity + energy shortage, high prices	High	2, 3	Drilling, gas conversion, LNG, batteries, coal, hydro mgmt.	Deep-dive into medium-long term supply demand balance risks, options
2	Politicisation / policy / regulatory uncertainty delays or misdirects investment	Chills and or misdirects investment (capital and focus), impacts SO&S and cost	High	Persistent	Clear policy and priorities, national multi-fuel energy strategy. Lower forward prices need to show in bills.	Continue calls for focus on important over urgent (latest shiny object tendency)
3	DER growth not well integrated into system / supported by clear rules	Increases system risk and cost / waste, lost opportunities	Medium	2,3	Clear rules and standards, effective integration into network / system ops	Continue calls for action on rules and standards, risk mgmt. as DER scales
4	Increasing severity of weather events / climate related hazards (fire, flood)	Material, worsening. Particular impact on networks	High	Persistent		Deep-dive into climate risks / mitigations for key system elements
5	Unfit for purpose tree regulations	Unnecessarily high loss of service, restoration cost	High	Persistent	Regulatory change	Maintain pressure for reform
6	Dry sequence / extended / back-to-back dry sequences	Energy + capacity shortage, very high prices, voluntary and involuntary rationing	On average 1 in 4 years	Persistent	Contracting firm thermal plant and fuel, grow generation fleet, hydro flexibility	
7	Intermittent generation not properly integrated into system	Grid stability, peak load and seasonal energy risk	High	Persistent	Adapt Code, SO tools and processes, address ahead of time	Deep dive in May 2026
8	Consumer dissatisfaction with system performance	Knee-jerk political action impacts investment	High	1		
9	Cyber attack, physical attack, geopolitical risks impact global supply chains	Asset damage, loss of supply, potential blackout	High	Persistent, escalating		
10	System capacity constrains demand / imperils electrification	Loss of economic activity, delayed decarbonisation	High	2,3	Strategic outlook informs investment needs and capability requirements	Strategy focus for September 2026
11	Aging assets, aging workforce	Increased risk of failure, delay to restoration	High	Persistent	Asset owner performance obligations, contract to support Rankings	Review periodically

8/09/2026 Security and Reliability Council Risk Radar

Emerging risks

Managing conventional risks

Plus anticipating, understanding and managing new / emerging risks:

- what we don't know today – global (dis)order, scale of climate change, impact of AI
- industry / regulator / government capacity to cope with scale, pace of change

THE FRONTIER AI RISK DISCOURSE

Core Public Testimonies from Anthropic Safety Experts

JACOB COXON
Former OpenAI & Anthropic Researcher

"Neither company is acting responsibly. They are racing straight to self-improving superintelligence and gambling with our lives. The people building AI earnestly believe that it could kill us all by the end of the decade."

EVAN HUBINGER
Alignment Science Lead at Anthropic

"Jacob is correct here—we really do earnestly believe AI could kill all humans! I personally think it is >10% within the next decade. I believe Anthropic is trying its best, but we do not yet have a plan to solve alignment for superintelligence..."

Source: Public expert statements | Focus: Autonomous recursive self-improvement alignment risks.

September 2026

So, what does that all tell us?

- Macrotrends are showing a degree of **change, complexity, opportunity**, and **risk** not seen since the first deployment of electricity networks in the early 20th century, if ever.
- Lessons to learn from other 'disrupted' sectors – telecoms, broadcasting, aviation etc – but stakes higher, with huge upside potential if we navigate the change well (and vice verse).
- We know that change can be messy but impact of dropping the ball very high. A clear story will help public understanding and avoid knee-jerk political / regulatory interventions
- Points to a future where strategic and system thinking, collaboration, adaptability comes to the fore.

10/9/26 – from the Energy Transition Framework – i.e. key players in NZ energy system

Energy plan needed to avoid structural economic damage - report 4

New Zealand needs Government-led action on the scale of the Christchurch earthquakes response to deal with the energy crisis threatening thousands of jobs and billions of dollars in economic activity, a powerful energy sector group is warning.



In a report out today, the Energy Transition Framework consortium of electricity and gas organisations says the crisis triggered by rapidly falling gas supplies is already well under way.

"If this energy shortage is not managed, the cost is large, and it does not behave like an ordinary downturn," it says.

Source: Energy News

Discussion

- What does good look like in 2035+?
- What do we need to do now for that to happen?
- What shouldn't we do?
- How has this session altered our view of risks?

- What are the key insights / recommendations for SRC's September advice?
- How does this affect SRC focus for Q4 meeting, 2027 plan?

The Security and Reliability Council

PURPOSE

As set out in the Electricity Industry Act 2010:

‘(2)The function of the Security and Reliability Council is to provide independent advice to the [Electricity] Authority on—

- (a) the performance of the electricity system and the system operator [Transpower]; and
- (b) reliability of supply issues.’

‘The objective of the [Electricity] Authority is to promote competition in, reliable supply by, and the efficient operation of, the electricity industry for **the long-term benefit of consumers.**’

By Wendy McGuinness, McGuinness Institute, 16 September 2026



Economic transformation and energy transition. Beyond economic and energy frictions as a cause of conflict, defence and security may need to adapt to disruptions in global supply chains and the operational implications of the energy transition. Perceptions of equitable access to essential resources and technology, and how actors choose to cooperate (or not), will exacerbate tensions. Defence actors that are tightly coupled to fossil fuel energy sources will become increasingly vulnerable to supply disruptions. The FOEs will likely see shifts in global markets, supply and value chains, and a changing notion of globalisation. There is also likely to be a mismatch as security actors seize opportunities to transition to new fuels as well as exploit the advantages of automation.

Electromagnetic warfare systems. Advances in electromagnetic surveillance and attack systems, including the proliferation of low-cost jammers and sensors, will increase the likelihood of the electromagnetic spectrum and spectrum-dependent systems being disrupted by a range of actors, including non-state actors. These electromagnetic warfare systems will have increased range and be powerful enough to exert high energy to penetrate, disrupt or destroy electronic systems. Adapting and fighting through electromagnetic warfare will likely involve not only defending against electromagnetic attacks but also using local jammers and inhibitors to enable force protection. Preventing targeting by denying the use of the electromagnetic spectrum to protect communications and navigation systems offers strategic advantage and enhances the ability to detect, deceive and disrupt adversary operations.

Directed energy weapons. The use of directed electromagnetic energy rather than kinetic energy will increase the precision of weapon effects against military targets. Directed energy weapons' ability to create speed of light effect with almost unlimited ammunition (as long as power supply and other technical issues are resolved) could enhance military postures, operational endurance and reach. They would be especially suited to fixed area denial and critical infrastructure protection where power provision is unconstrained. This would transform counter-strike capabilities, particularly against new, emerging or disruptive threats like hypersonic weapons or uncrewed swarm attacks.

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2

'Furthermore, publishing this work supports informed dialogue and broad engagement across government, industry, academia and wider society. Its release is also intended to deepen collaboration and encourage a whole-of-society approach to strategic preparedness'

Key takeaways

Good bets (continued)

Actors

- ✓ Increasing rivalry among major powers, and growing influence of regional and non-state actors, will likely destabilise the international order.
- ✓ Existing adversarial relationships will endure.
- ✓ States will likely remain principal actors, however, the number and type of security actors will rise.

Spaces

- ✓ Future warfare will extend and merge environments and operational domains: subsea and deep sea to subterranean and deep space, across the electromagnetic spectrum and throughout augmented, virtual and cognitive spaces.
 - The maritime operating environment will become increasingly accessible, visible and reachable.
 - Land operations will exist in cluttered, digitally connected and exposed conditions.
 - The speed of fielding and adaption will determine which air capabilities remain credible, resilient and relevant.
 - Data-centric warfare will be common.
 - The cognitive operating space will be ever more untrustworthy.
 - Consensus on acceptable thresholds and methods of response, including the use of armed forces, will be challenged.

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FOEs 2040

Key takeaways

Good bets (continued)

Disruptors

- ✓ The FOEs of 2040 will be revolutionary with rapid and radical technological change; they will also be evolutionary and rudimentary. Technologically, they will be shaped by data science, hyperconnectivity and AI with the seamless integration of human and machine-enabled decision-making.
 - AI will increasingly become a core part of military decision-making and quantum computing will likely render many encryption algorithms in use obsolete.
 - High-end electromagnetic surveillance and attack system capabilities with greater range and power should be expected.
 - Directed energy weapons will shift military postures, operational endurance and reach.
 - Hypersonic and supersonic weapons will change the speed and range of engagements, expanding effects from any given location.
 - The convergence of advanced sensor systems and AI-enabled data fusion will make engagement spaces increasingly transparent.
 - Effectors will become more autonomous, precise, rapid and remote.

FOEs 2040

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Key takeaways

Probable bets

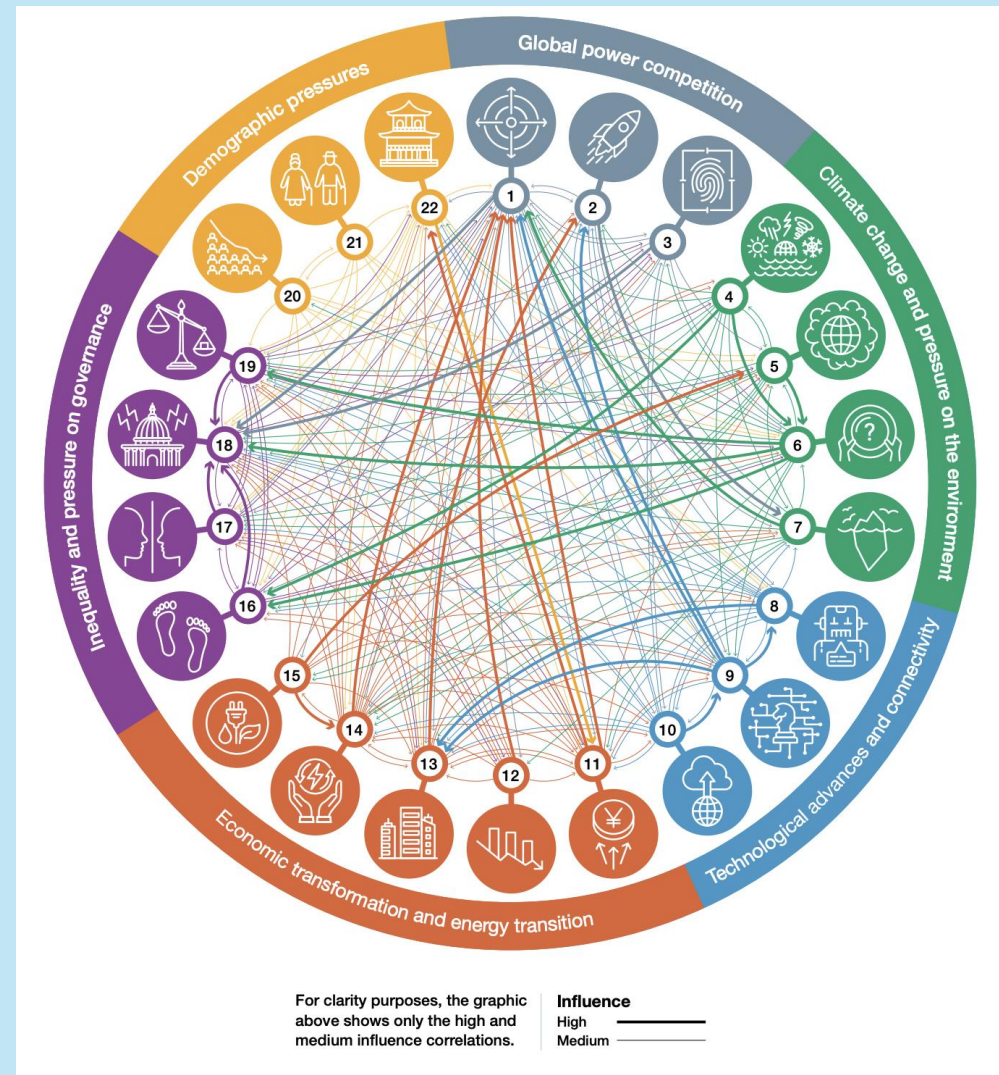
- ➔ Certain states cede power to commercial and private entities.
- ➔ Expanding threats cause actors to extend arrangements of existing alliances, driving cooperation and reducing conflict risk.
- ➔ Issue-based, unilateral defence and protectionism leads to aggressive conflict.
- ➔ Space is militarised and weaponised.
- ➔ Actors use advanced quantum decryption to intercept communications in real time.
- ➔ Advances in bioinformatics, bioengineering and AI overcome human limitations.

'High impact, low probability' bets

- ! Some megacities become military powers in their own right.
- ! Commercial and private actors become independent military or security actors.
- ! Actors respect established international law and introduce norms to regulate emerging and novel technology.
- ! Generalised space warfare breaks out.
- ! Striving for complete data and cyber sovereignty could lead to volatile virtual battlegrounds.
- ! Artificial super intelligence replaces artificial general intelligence and is differentially adopted.

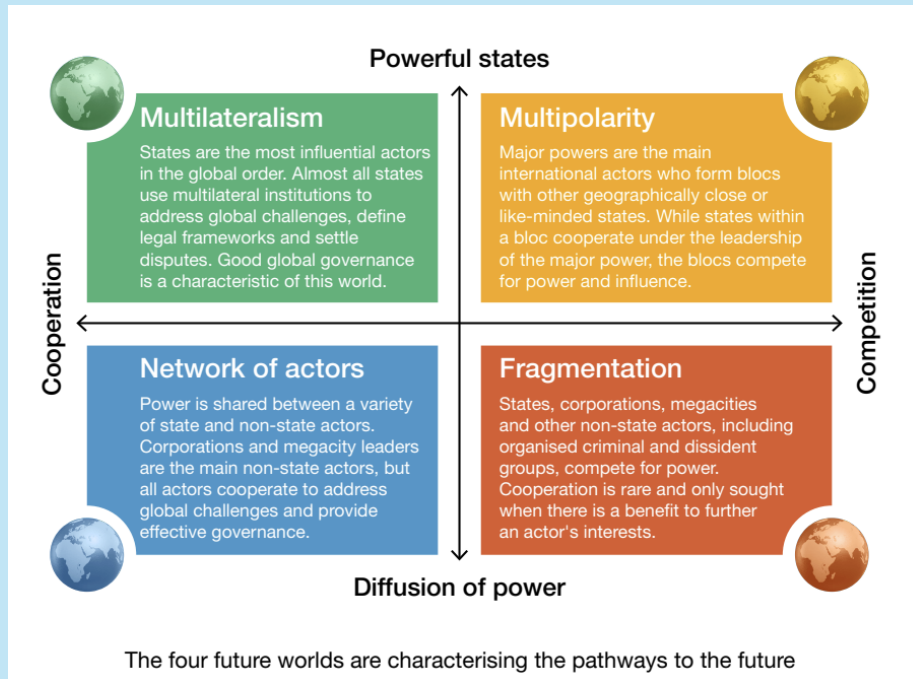
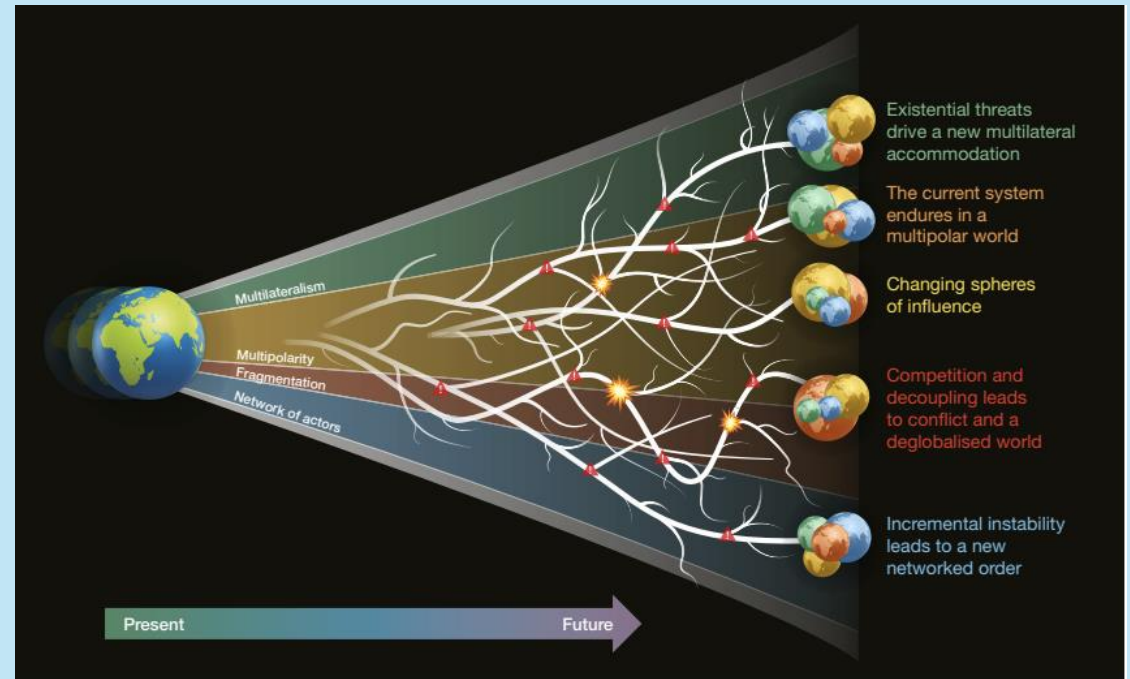
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FOEs 2040



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4



Crises v emergencies

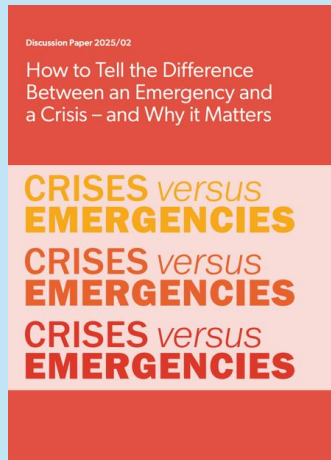
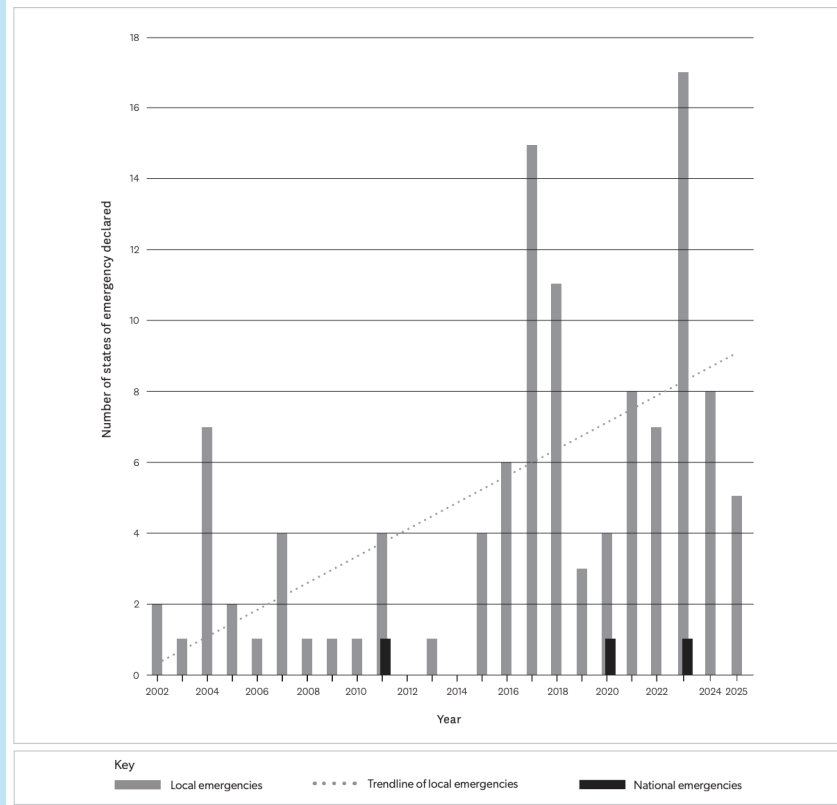
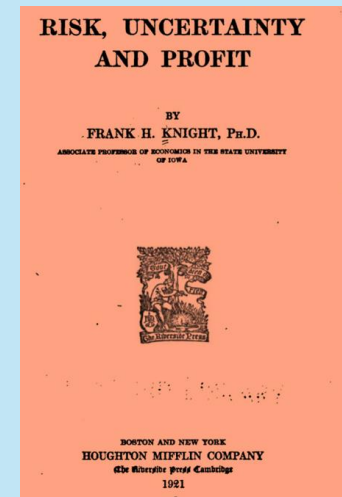


Figure 4: States of emergency declared per annum (local and national), 2002–2025
Source: McGuinness Institute, *Nation Dates*, 5th edition, December 2023⁶



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Knight, in his 1921 book, noted that risk is quantifiable and insurable, while uncertainty is unmeasurable and thus creates opportunities for profit.

Uncertainty mindset v risk mindset



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1. OECD expert group on strategic foresight

2. OECD Government Foresight Community Annual Meeting

5–6 October 2026,
(includes a session on AI)

Co-chairs

**Rafal Kierzenkowski**
Senior Counsellor for Strategic Foresight, OECD

**Aaron Maniam**
Fellow of Practice and Director, Digital Transformation Education, Blavatnik School of Government, University of Oxford

Expert Group members

**Stuart Candy**
Distinguished Visiting Professor of Critical Futures, Tecnológico de Monterrey

**Cheryl Chung**
Senior Director, Insights and Strategy, The Majority Trust

**Mikko Dufva**
Senior Lead, Foresight, SITRA

**Anne Marie Engtoft-Meldgaard**
Tech Ambassador, Denmark

**Catherine Fieschi**
Fellow Robert Schuman Centre for Advanced Studies, European University Institute

**Koffi Kouakou**
Senior lecturer on scenario planning, Wits University

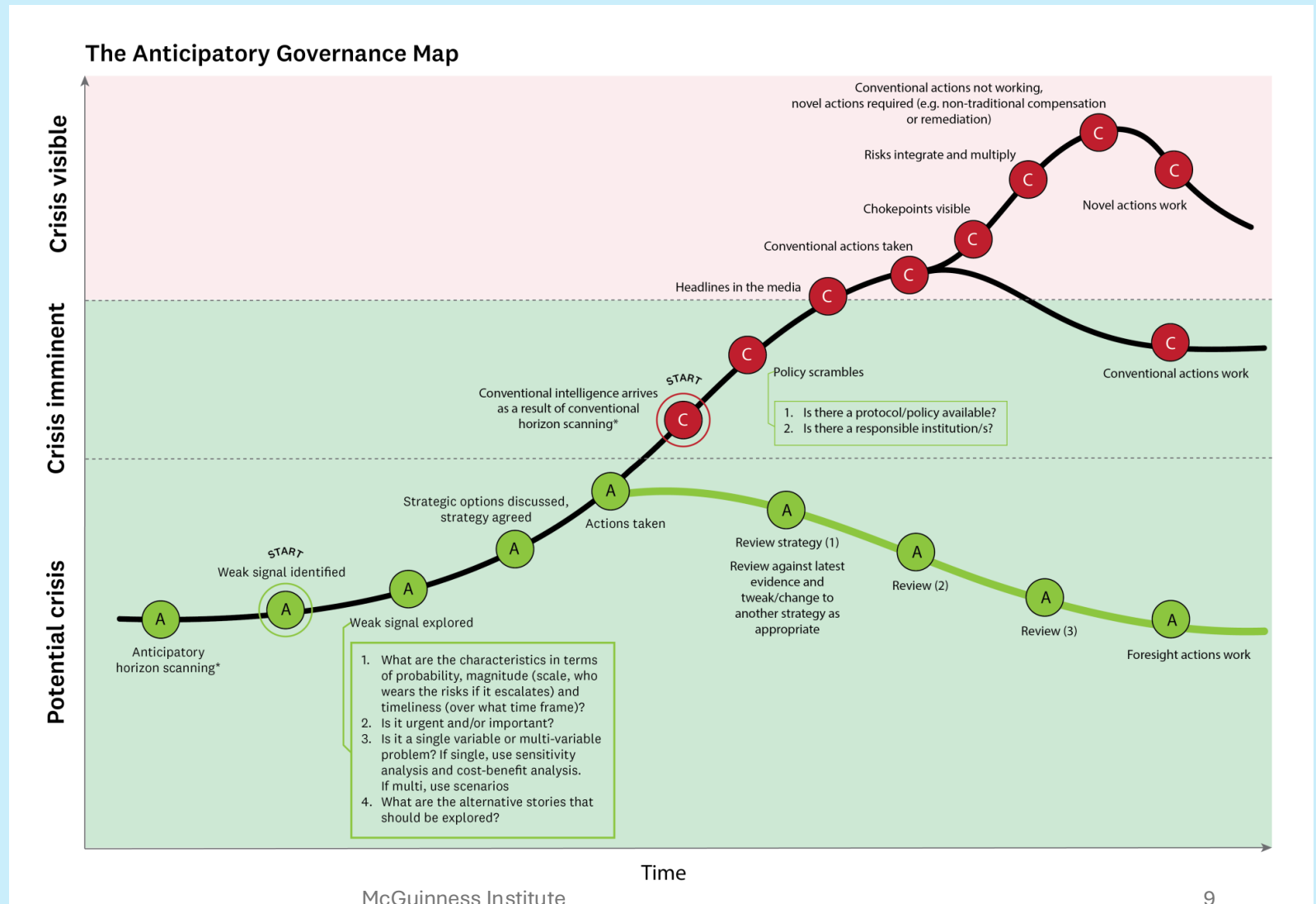
**Wendy McGuinness**
Founder and Chief Executive, McGuinness Institute

**Peter Padbury**
Chief Futurist, Foresight Lab for Public Policy

**Wendy Schultz**
Co-Founder and Director, Jigsaw Foresight

**Narue Shiki**
Senior Advisor on Strategy and Futures, Regional Bureau for Latin America and Caribbean, United Nations Development Programme (UNDP)

Anticipatory Governance: Solving the resilience problem



3. Inaugural Enhanced Engagement Activity (EEA) Exercise Bersama Shield 2026

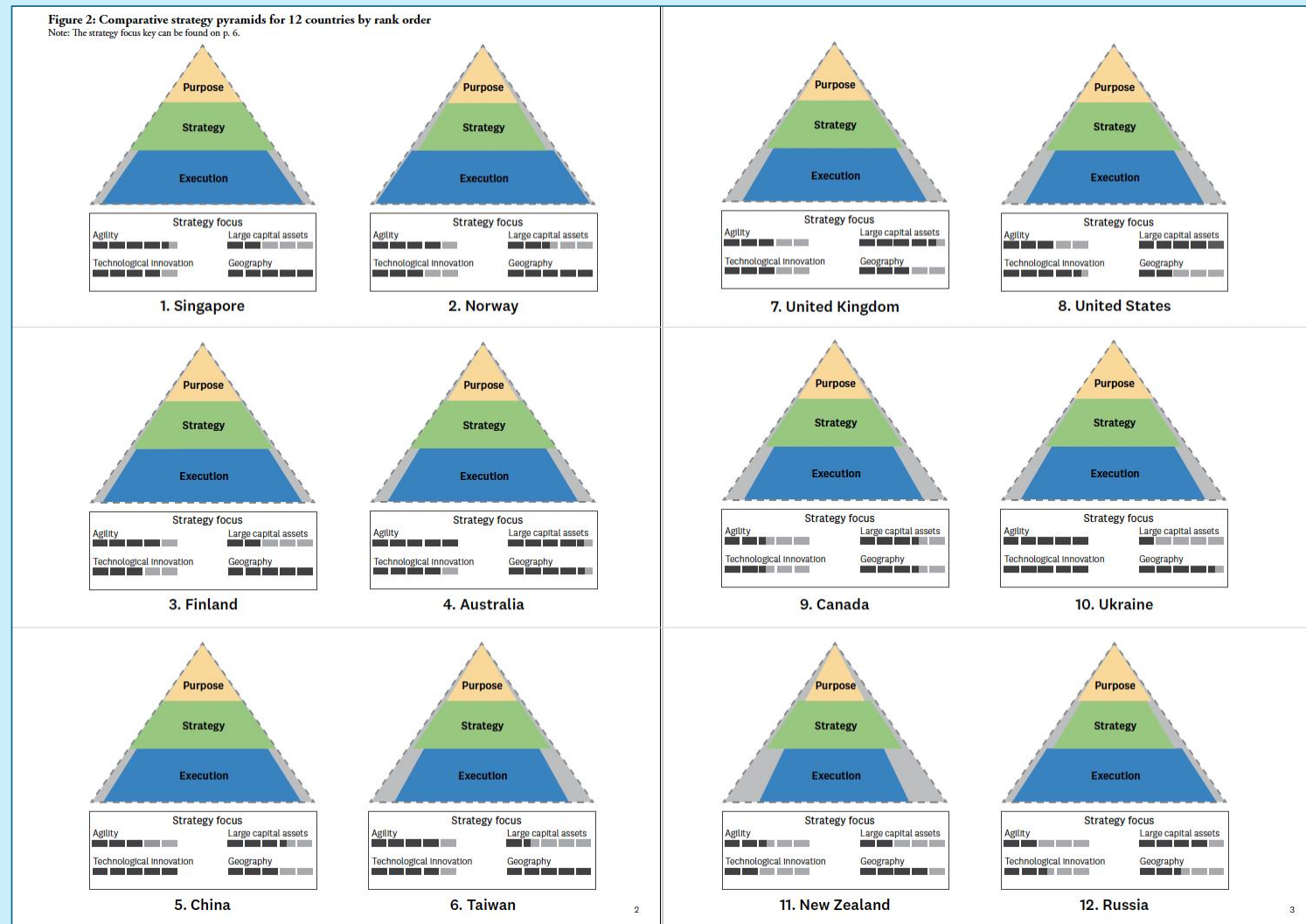
27–28 April 2026, Penang, Malaysia



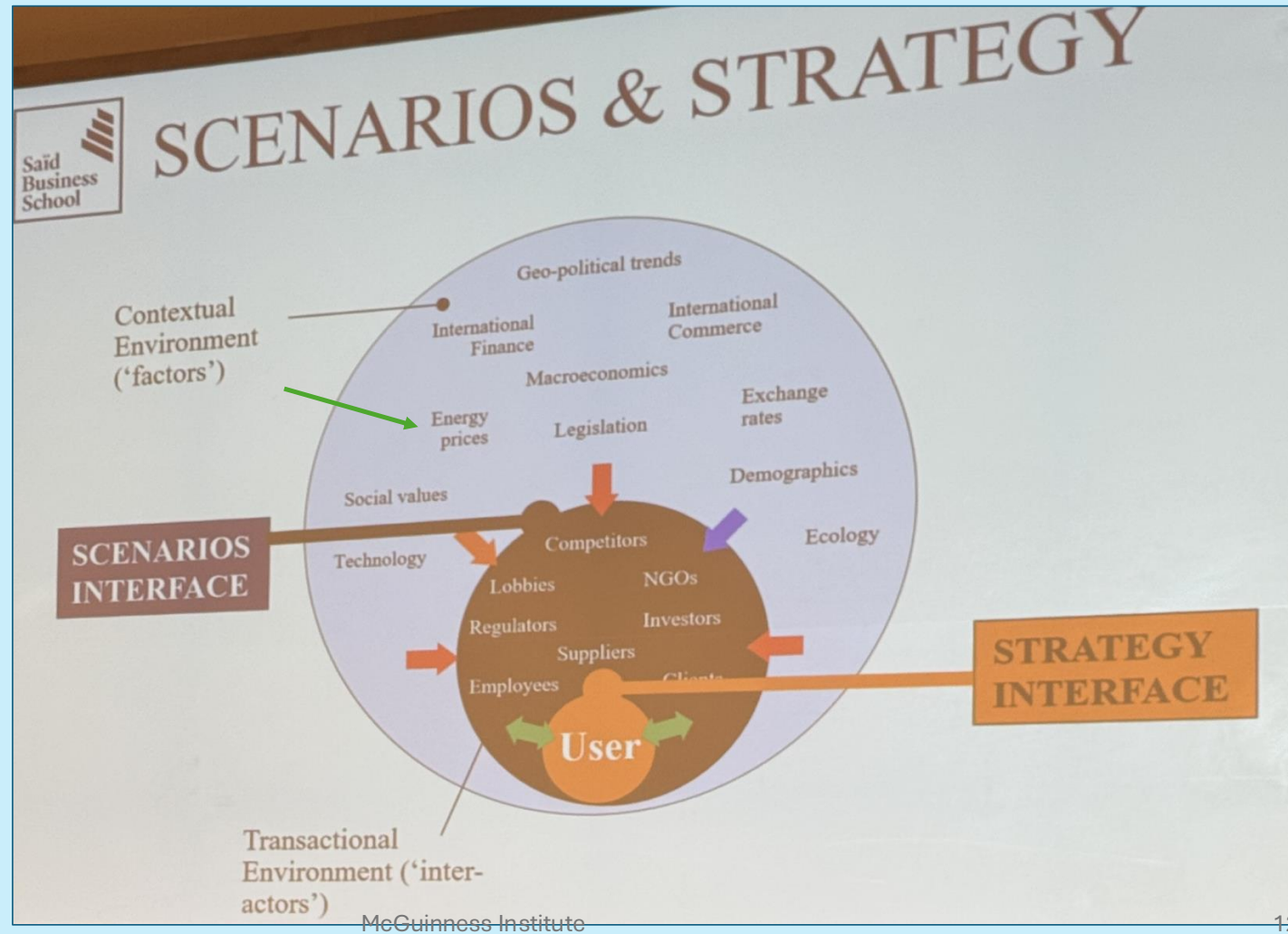
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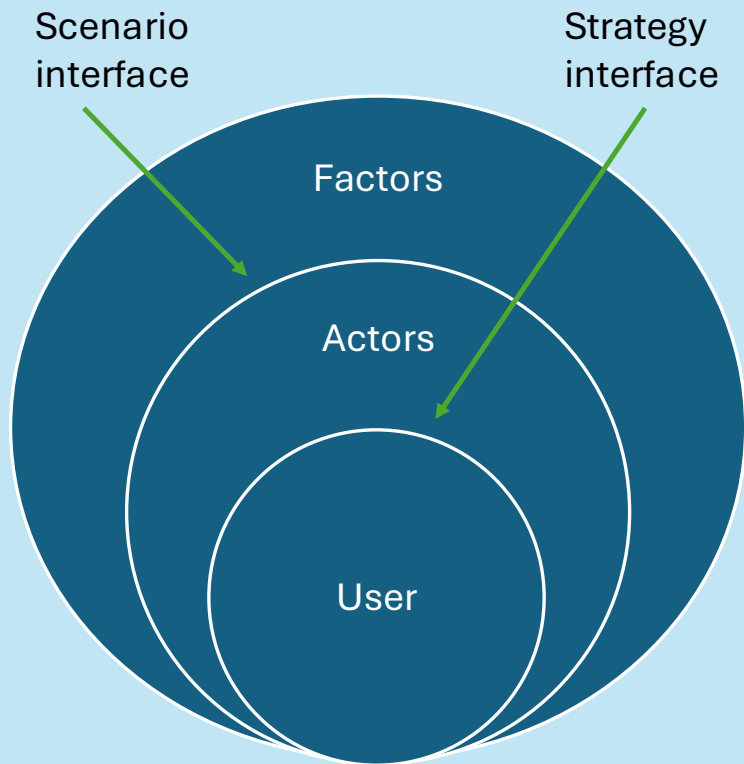
Hidden Patterns in Global Defence Strategies: 12 countries compared

Think Piece 47:
Hidden Patterns in Global Defence Strategies: 12 countries compared
(June 2026)



4. Oxford Scenarios Programme Slide





By 2040, there may be four fundamentally different classes of user:

A. autonomous users

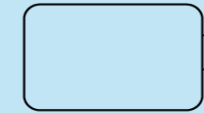
AI agents (you will not know who is using the electricity, where it is going and for what purpose)



\$ 0

B. asset-owning users

NZers who produce, store and trade electricity



\$ +

C. collective users

NZers organised through communities or businesses to purchase electricity



\$ +

D. dependent users

NZers who are price-takers



\$ \$ \$

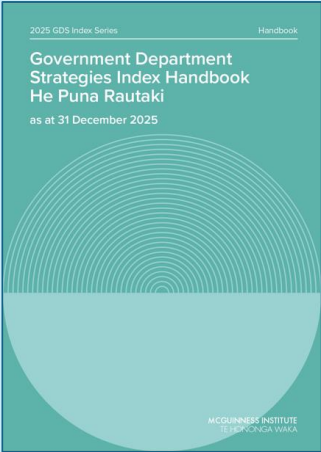
Eight weak signals to watch closely:

1. AI agents entering contracts or switching tariffs for consumers
2. Data-centre demand beginning to influence the location and timing of new generation
3. Vehicle batteries being aggregated as grid infrastructure
4. Flexibility services being bundled into mortgages, insurance, appliances or vehicle leases
5. Communities demanding ownership of energy infrastructure and data
6. A widening divide between consumers with flexible assets and those without them
7. Growing anti-AI sentiment
8. A movement to leave the GRID

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2026 GDS Index (draft)



GDS14-04 [was 09]]

Responding to a Changing Climate: The Government's climate strategy

Purpose
To create a future where our communities and our economy thrive by producing fewer emissions and strengthening the way we prepare. (p.1)

Strategy (to achieve the purpose):
The approach is to focus on five main goals:

- Delivering a fair and enduring system that prepares New Zealand and clarifies costs
- Pricing emissions fairly and effectively to incentivise emissions reductions
- Doubling renewable energy by 2030 and installing 10,000 public charging points for electric vehicles
- Providing tools and removing barriers for businesses to innovate
- Restoring biodiversity and investigating new ways of harnessing nature to remove emissions from the atmosphere. (p.2)

Key data

Publication date: July 2024
Duration: 2024-2050
Number of pages: 3
Signed by: Crown (Minister of Climate Change)
This GDS replaces: Not applicable
Jointly held with: Not applicable
Transferred from: Not applicable
Strategy map: Not found
Legislation: Not applicable

117 14: Ministry for the Environment - Manatū Mō Te Taiao

McGuinness Institute analysis

Duration: 2024-2050
Scope of subject matter: Wide scope

Climate intelligence
No mention | Mention only | Basic response | Detailed response

Transparency Scorecard

	Score	Out of
1. Opportunities and Threats		
1.1 Identifies potential opportunities	0	4
1.2 Identifies potential threats	0	4
1.3 Contains a clear statement describing the problem	6	8
2. Capabilities and Resources		
2.1 Identifies current and future capabilities	0	4
2.2 Identifies capabilities it does not have but needs	0	4
2.3 Identifies current and future resources	0	4
2.4 Identifies resources it does not have but needs	0	4
3. Vision and Benefits (Purpose)		
3.1 Provides a clear aspirational statement as to what success would look like	2	8
3.2 Identifies who the beneficiaries are	2	4
3.3 Describes how success will be measured	2	4
4. Approach and Focus (Strategy)		
4.1 Breaks down the purpose into a number of strategic goals/objectives	3	4
4.2 Identifies a range of strategic options	0	4
4.3 Describes the chosen approach	0	4
4.4 Highlights the risks, costs and benefits	0	4
5. Implementation and Accountability (Execution)		
5.1 Identifies who is responsible for implementation	4	4
5.2 Identifies who will report on its progress	0	4
5.3 Explains how progress will be reported	0	4
5.4 Discusses whether the GDS will undergo a review	0	4
6. Alignment and Authority		
6.1 Discusses predecessors to the strategy and identifies any lessons learnt	0	4
6.2 Aligns with its department's SOI	0	6
6.3 Aligns with its department's annual report	0	6
Total	19	96

GDS16-12 [was 15]]

2024 National Fuel Plan: Planning and response arrangements for fuel supply disruptions and emergencies supporting plan [SP 04/24]

Purpose
To minimise the effects of a fuel supply disruption on New Zealand, whatever the cause, as far as is reasonably practicable. (p.12)

Strategy (to achieve the purpose):
The approach is to focus on three main goals:

- Provide an agreed planning framework between government agencies, Civil Defence Emergency Management Groups and fuel sector organisations to respond to major disruptions to fuel supplies
- Document agreed communication and coordination arrangements at the national level for response operations during major disruption of fuel supplies
- Support the implementation of regional fuel supply arrangements. (p.2)

Key data

Publication date: August 2024
Duration: 2024-NK
Number of pages: 79
Signed by: Department staff (other than CE) (Deputy CE) and other (Director of CDEM)
This GDS replaces: 2020 National Fuel Plan (2020)
Jointly held with: DPMC
Transferred from: Not applicable
Strategy map: Not found
Legislation: May issue (see Civil Defence Emergency Management Act 2002, s 9(3)) and cited in the GDS on the inside cover

133 16: Ministry of Business, Innovation and Employment - Hikina Whakotutuki

McGuinness Institute analysis

Duration: 2024-NK
Scope of subject matter: Narrow scope

Climate intelligence
No mention | Mention only | Basic response | Detailed response

Transparency Scorecard

	Score	Out of
1. Opportunities and Threats		
1.1 Identifies potential opportunities	2	4
1.2 Identifies potential threats	4	4
1.3 Contains a clear statement describing the problem	7	8
2. Capabilities and Resources		
2.1 Identifies current and future capabilities	4	4
2.2 Identifies capabilities it does not have but needs	0	4
2.3 Identifies current and future resources	0	4
2.4 Identifies resources it does not have but needs	2	4
3. Vision and Benefits (Purpose)		
3.1 Provides a clear aspirational statement as to what success would look like	2	8
3.2 Identifies who the beneficiaries are	2	4
3.3 Describes how success will be measured	0	4
4. Approach and Focus (Strategy)		
4.1 Breaks down the purpose into a number of strategic goals/objectives	2	4
4.2 Identifies a range of strategic options	2	4
4.3 Describes the chosen approach	0	4
4.4 Highlights the risks, costs and benefits	2	4
5. Implementation and Accountability (Execution)		
5.1 Identifies who is responsible for implementation	4	4
5.2 Identifies who will report on its progress	0	4
5.3 Explains how progress will be reported	0	4
5.4 Discusses whether the GDS will undergo a review	4	4
6. Alignment and Authority		
6.1 Discusses predecessors to the strategy and identifies any lessons learnt	2	4
6.2 Aligns with its department's SOI	0	6
6.3 Aligns with its department's annual report	0	6
Total	39	96

GDS14-05 [was 10]]

Second Emissions Reduction Plan 2026-30

Purpose
To deliver on our climate change commitments while growing the New Zealand economy - to meet the second emissions budget (EB2) for the period 2026-30. (p.5)

Strategy (to achieve the purpose):
The approach is to focus on five main goals:

- Deliver resilient infrastructure and communities
- Ensure the climate transition is supported by credible markets
- Provide abundant and affordable clean energy
- Boost the economy through world-leading climate innovation
- Address climate change using nature-based solutions.

These goals are supported by a range of policies and initiatives to reduce emissions, accelerate the uptake of new technologies and spark innovation. (p.7)

Key data

Publication date: December 2024
Duration: 2026-2030
Number of pages: 97
Signed by: Crown (Minister of Climate Change)
This GDS replaces: Not applicable
Jointly held with: Not applicable
Transferred from: Not applicable
Strategy map: Not found
Legislation: Required (see Climate Change Response Act 2002, ss 52G-52J) and cited in the GDS on the inside cover

118 14: Ministry for the Environment - Manatū Mō Te Taiao

McGuinness Institute analysis

Duration: 2026-2030
Scope of subject matter: Wide scope

Climate intelligence
No mention | Mention only | Basic response | Detailed response

Transparency Scorecard

	Score	Out of
1. Opportunities and Threats		
1.1 Identifies potential opportunities	4	4
1.2 Identifies potential threats	0	4
1.3 Contains a clear statement describing the problem	4	8
2. Capabilities and Resources		
2.1 Identifies current and future capabilities	0	4
2.2 Identifies capabilities it does not have but needs	0	4
2.3 Identifies current and future resources	3	4
2.4 Identifies resources it does not have but needs	2	4
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6.2 Aligns with its department's SOI	0	6
6.3 Aligns with its department's annual report	6	6
Total	42	96

Thank you Questions?

Contact details:

Level 1A, 15 Allen Street, PO Box 24222,

Wellington 6011, New Zealand

Email: enquiries@mcguinnessinstitute.org

Website: www.mcguinnessinstitute.org

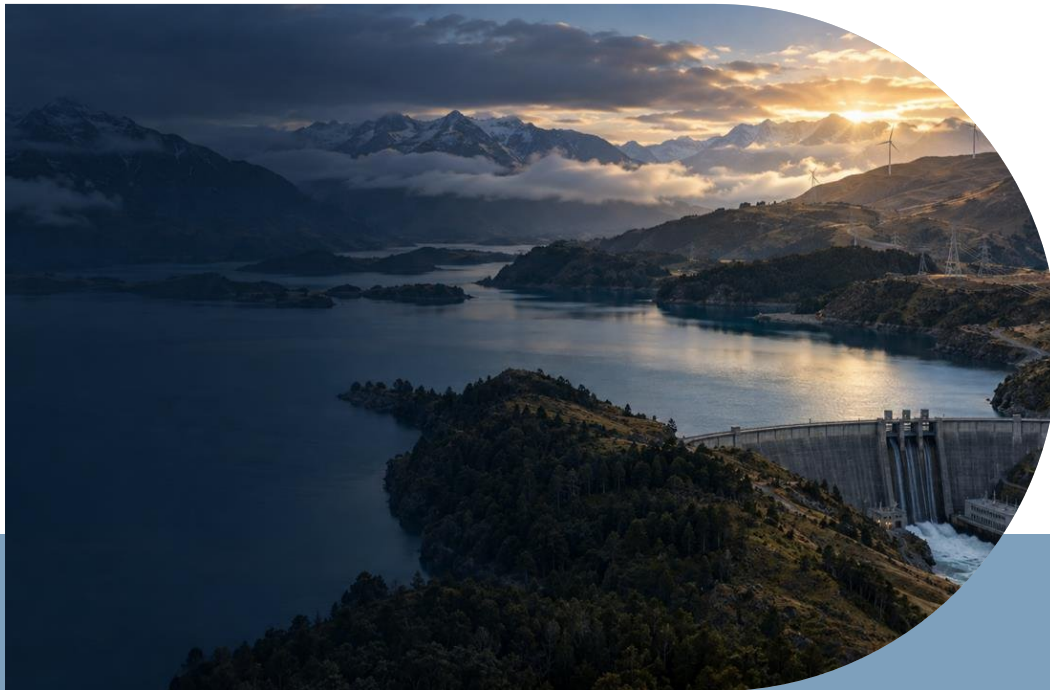
LinkedIn: Wendy McGuinness



McGuinness Institute

16

Dry period risk – security of supply considerations



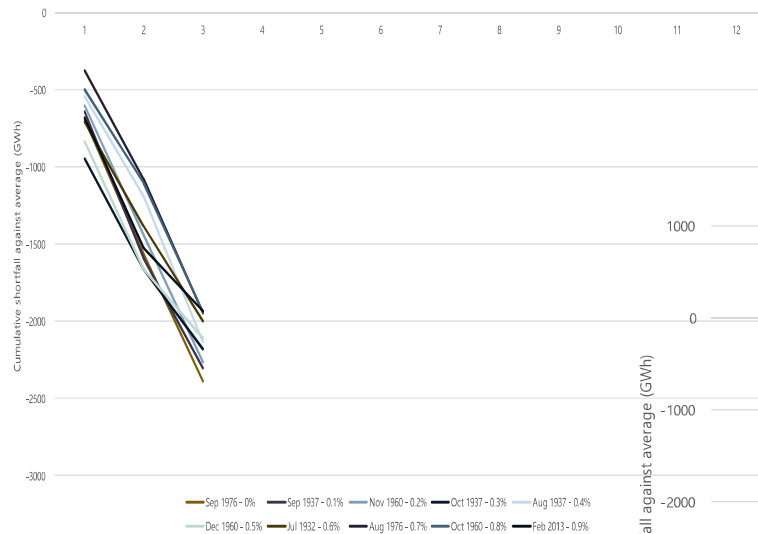
Presentation to SRC
David Reeve

16 September 2026

Hydro is mean reverting

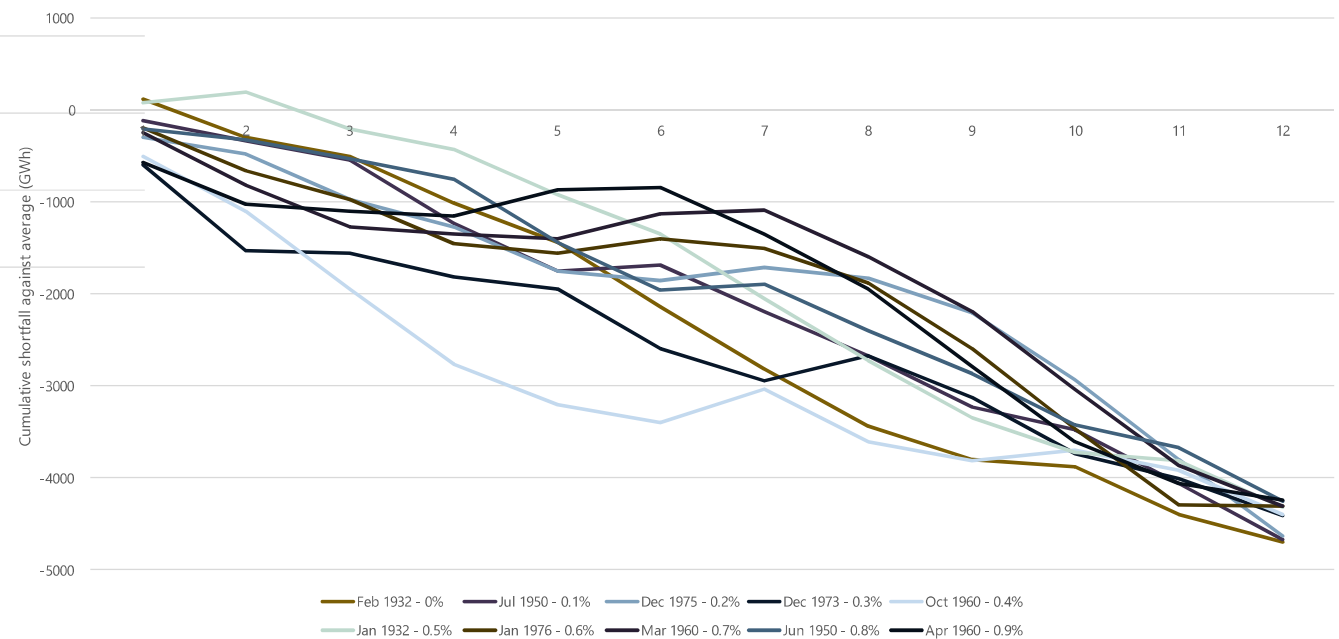
But over varying time frames from short to longer-term (over a year)
However, this statistically limits variations from mean.

Ten worst dry periods - starting in all months - duration 3 months



A 300% greater duration (3 to 12 months) gives a 92% greater hydro shortfall vs mean (2.4 to 4.6 TWh)

Ten worst dry periods - starting in all months - duration 12 months

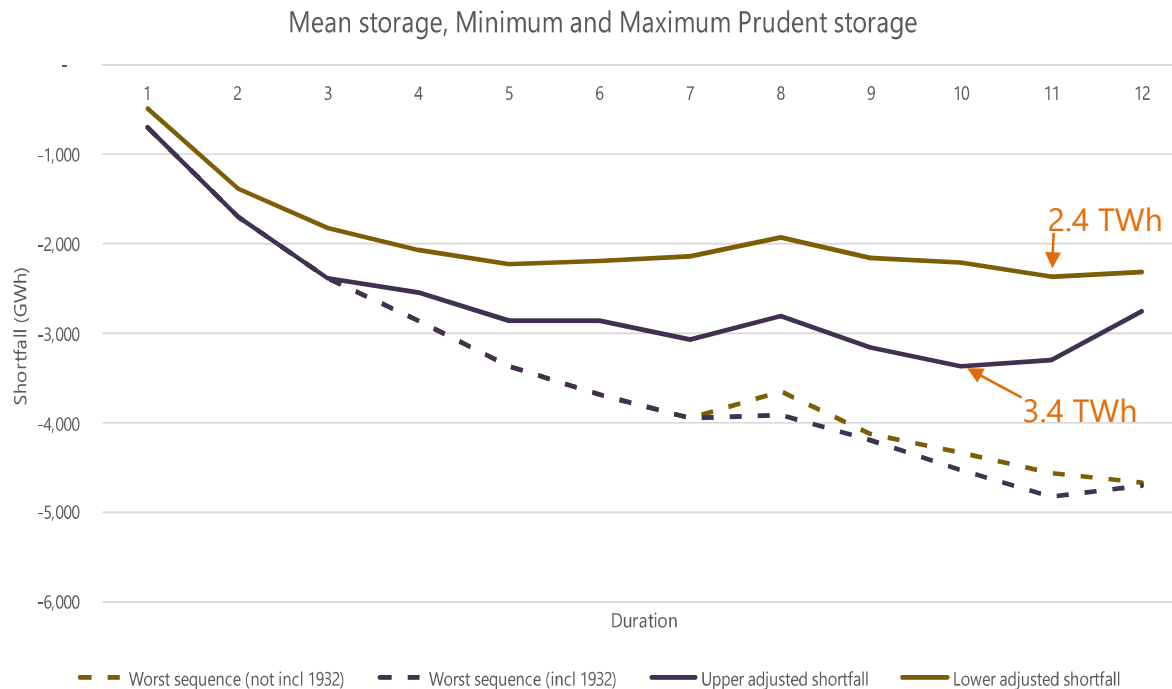


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Storage is a key component of dry year risk

However, the use of storage is a choice that depends on appetite for risk

It can be tempting to worry that another inflow sequence will occur as severe as the preceding one even though this would be a worse sequence than ever recorded.



Lower adjusted shortfall
aggressive use of storage (all storage, including contingent, used for the worst recorded inflow sequence of any duration)

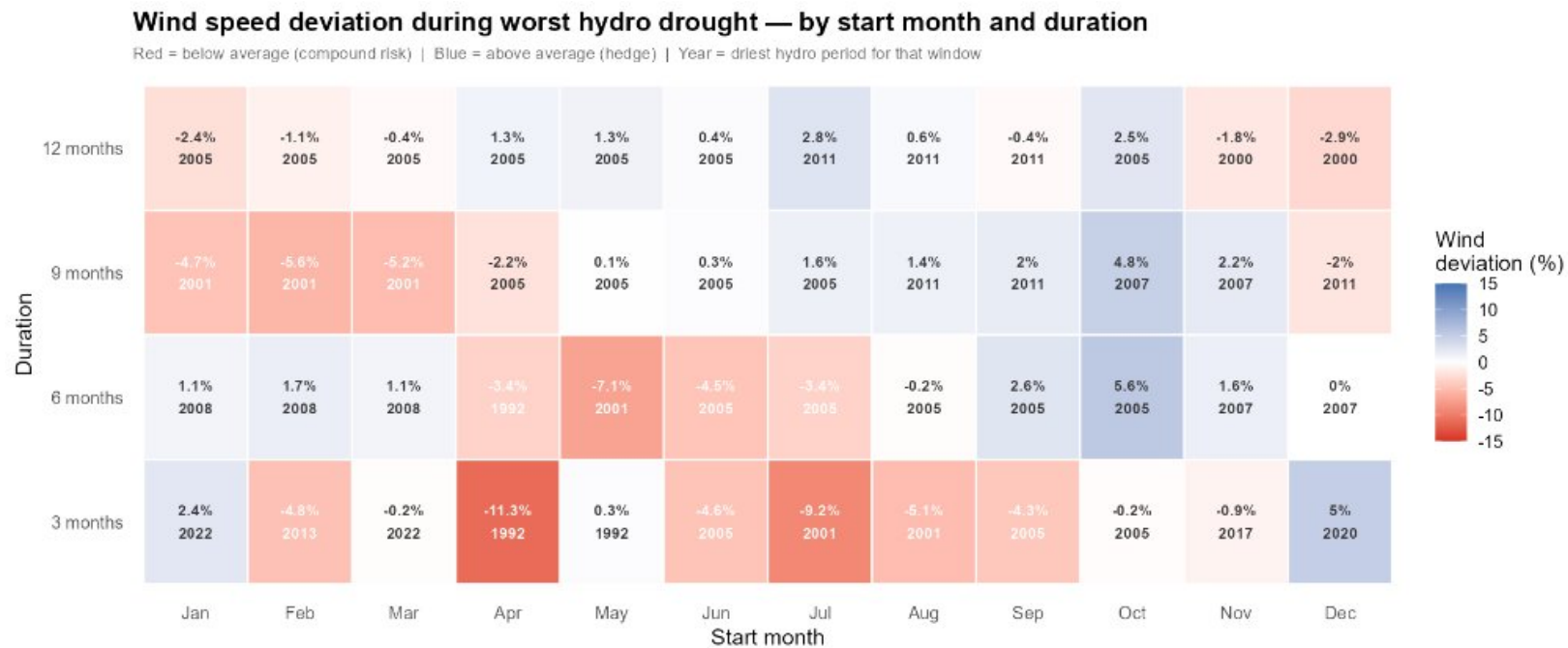
Upper adjusted shortfall
Conservative use of storage (only uses normal operating storage for any sequence of any duration except for 1932)

*shortfalls measured from mean inflow and storage

Dunkelflaute is real but relatively small and short term

Our analysis shows that wind and solar can vary over the short-term but generally revert to mean within four months.

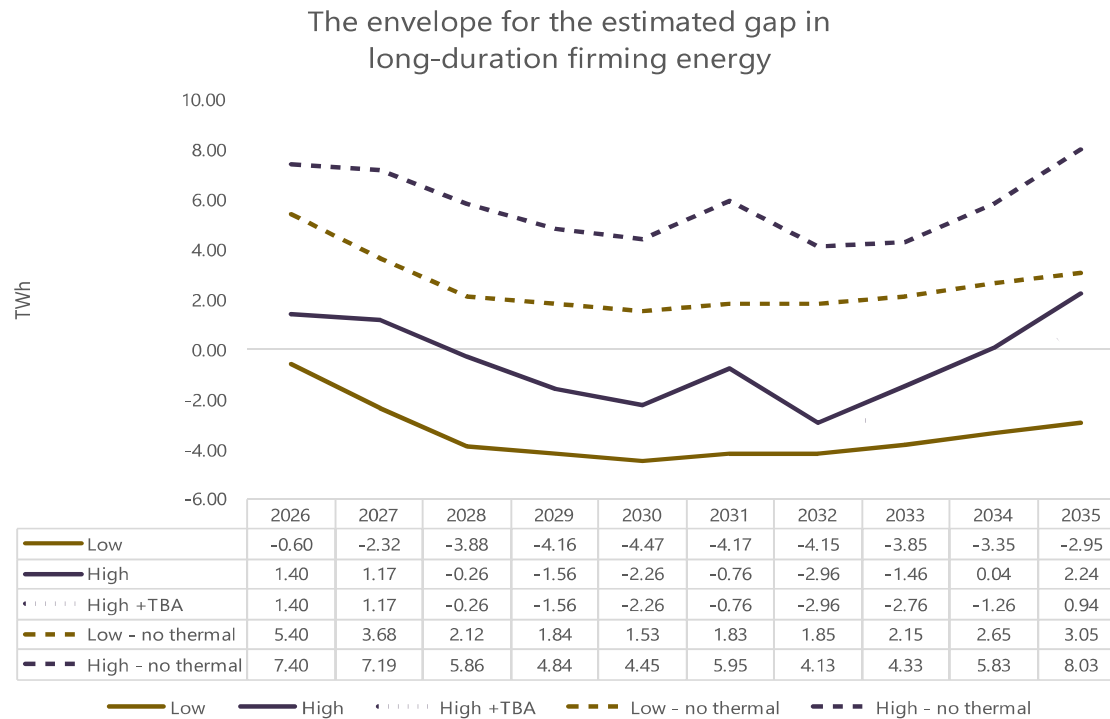
Until volumes get very large hydro storage can cater for the variation, if we trust the statistics...



Inflows from 1992 to align with available data – NIWA wind speed and irradiation data

The investment pipeline will reduce dry year risk, in the medium-term

Markets cycle between boom and bust. There is 4.6 TWh of 'committed' renewable investment in the pipeline. A boom cycle reduces dry year risk, however, there is still risk and dry year reserve is a long-term requirement. **NOTE: the chart below is the worst edge case – very low probability.**



Between 2028 and 2035, up to two thirds of the thermal fleet would not have an incentive to remain available. Price effects might also reduce renewable investment. This could exacerbate shortfalls for any demand growth at the point that thermal exits and/or renewable is delayed.

www.thinkSapere.com

In the low scenario (low demand – CCC reference, worst inflow – aggressive storage

- in 2026, would need all thermal fleet to meet energy shortfall
- by 2028, would need up to a third of the current thermal plant to manage a min prudence dry year
- by 2035, would need about half of the current thermal fleet

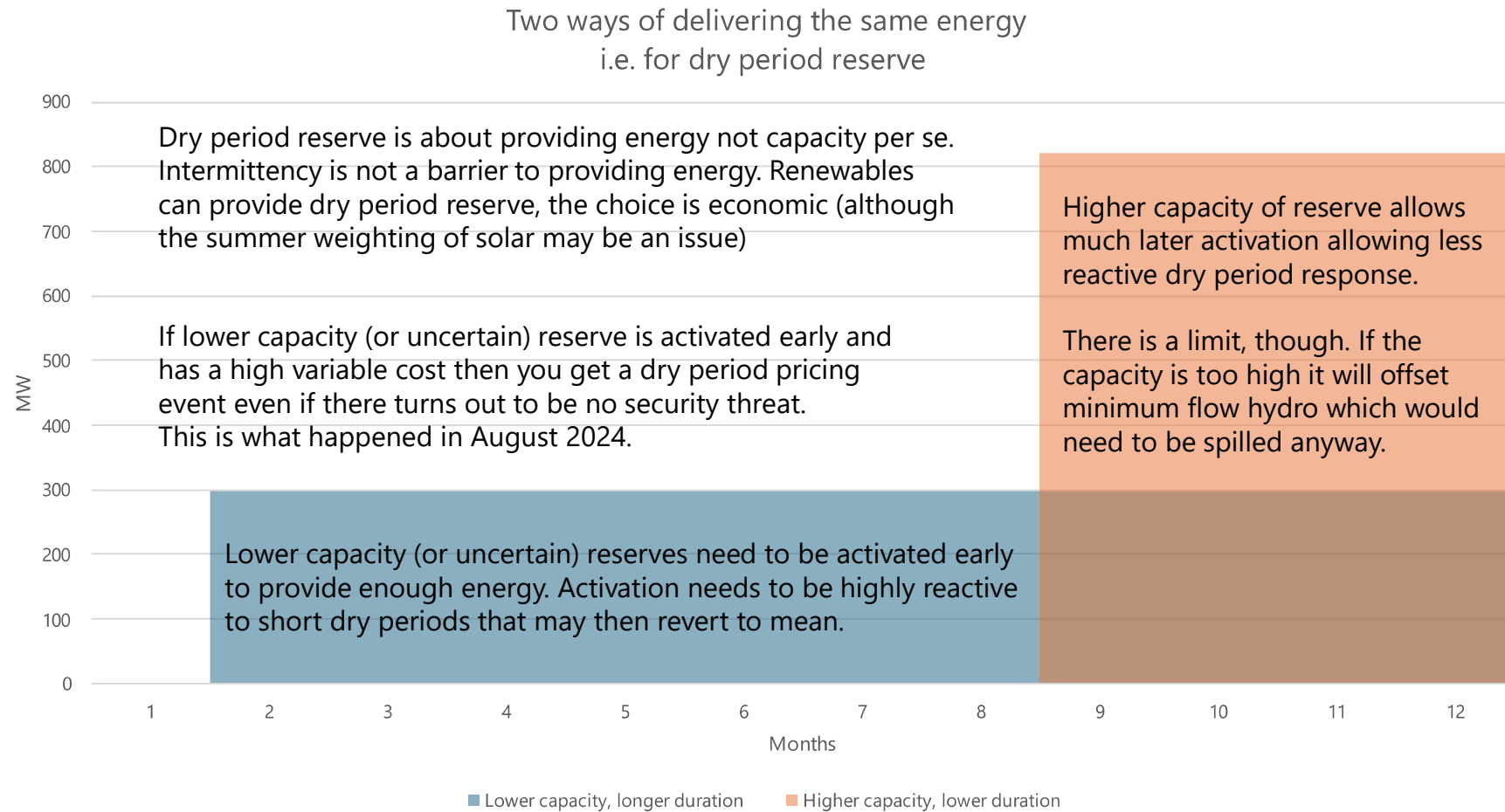
In the high scenario (max demand – EDGS innovation, second worst inflow-conservative storage

- in 2026, we need more than the current thermal fleet can provide
- by 2028, the system is secure only if current thermal plant and required thermal fuel supply is available
- that need persist until 2033, at which point current thermal plant and fuel availability is insufficient

Firm energy supply for hydro risk has characteristics – capacity, duration, and price



Energy can be made up by higher capacity for a shorter duration, or lower capacity for a longer duration



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There are many problems in contracting for electricity, and especially for security of supply

NB. Note on August 2024 – **spot exposed** customers to **high prices**

- The indictment of the above statement is spot exposed
- And this is not just a case of saying that those customers should have been contracted
- If organisations that are not specialist traders or energy companies are taking spot risk there is a **problem with the markets** (spot and contract)

Electricity contract markets, and especially security of supply contracts, have all the problems with clearing between generators and purchasers:

- Information asymmetry (n.b. providing huge amounts of data isn't necessarily improving information)
- Expertise asymmetry
- Tenor gap
- Scale
- Trust in the market
- Hold out and gaming

And, **who is the counterparty for security of supply?** Are spot exposed customers the only beneficiaries of SOS? Would causer pays give better counterparty matching?

www.thinkSapere.com



Missing broker services

In a workably liquid market then brokers have a role in balancing information asymmetry and expertise. They can also span the gap on tenor and scale, and other requirements, e.g. credit.

Brokers can only survive if they can offload risk.

Generators sometimes won't contract

Generators have retired from contracts markets when their residual energy supply is not firm.

The last resort for offloading SOS risk is investment

The investment problem, and retention problem, for security of supply



As MDAG stated in its work on a low renewables future. For a single part (energy only) market to work prices must rise high enough during periods of scarcity. MDAG concluded that this could happen, my conclusion is that it can't.*

In my view an investor in security of supply cannot reasonably expect their investment to be revenue adequate in the spot market. However, even if they could the cashflow would be made up of the opportunity to make large cashflows during periods that could be years apart. Debt funders would not accept this cashflow volatility for underwriting the fixed costs of investment.

Theoretically, entities with large balance sheets could still invest. This immediately limits competition for security of supply. However, even large balance sheets ration capital and there are many projects available with superior risk/return.

10

SOS investment needs contracts - chicken and egg – sufficient liquidity in contracts requires firm energy supply, firm energy supply requires contracts.

*The political, and regulatory, response to August 2024 highlights the problem. NB. My analysis suggests the affordability problem in wholesale prices is because low prices are too high.



The LNG proposal and Winter Energy Reliability Obligation

The LNG proposal is bereft of detail but the specification is to supply 3 TWh in 3 months (1.5 TWh from coal, 1.5 TWh from LNG) – costing \$1-1.5 billion over 10-15 years (for the fixed costs of the LNG).

3 TWh over three months is significantly larger than the three month hydro shortfall (2.4 TWh – not including storage). This might be designed to be a high capacity short duration option (less reactive). However, our analysis suggests firm energy can't be recovered faster than 4-5 months to avoid offsetting minimum flow hydro. The LNG facility appears to be over-specification for dry period risk.

The LNG facility is, arguably, more needed for industrial gas consumers.

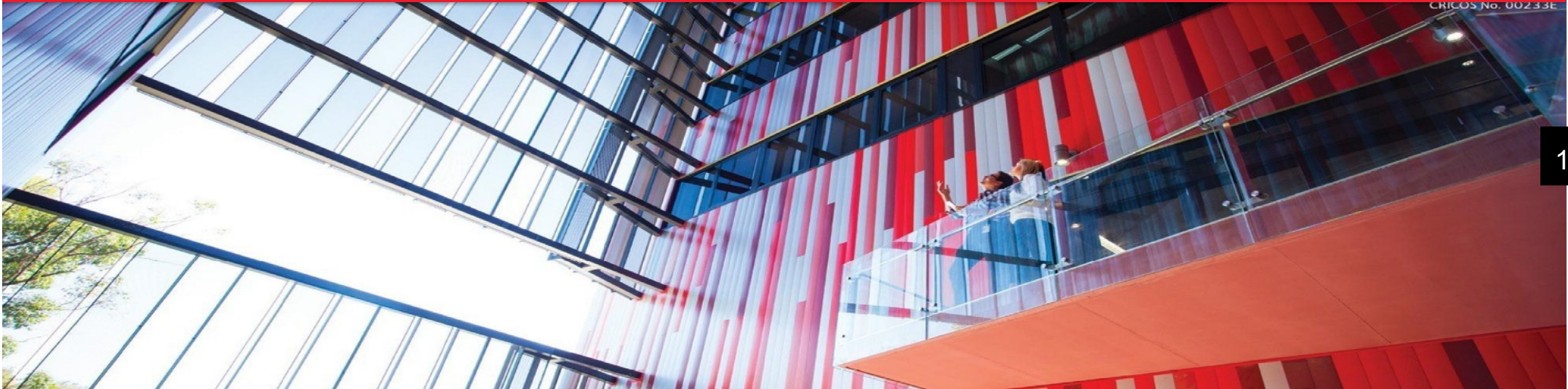
Given the previous presentation I suggest we have long-term options that are potentially better than LNG. There is a potential need for a short-term intervention for security of supply.

Without going into the detail of WERO it seeks to put the obligation to firm energy supplies on generators. It potentially fits with a causer pays approach to security of supply, but is also a clearly rushed rule development. This is being led by MBIE.

The implementation of WERO still requires a lot of detailed rule design but it is not clear what role the Electricity Authority or the SRC has in that.

Australia's National Electricity Market Review

Associate Professor Tim Nelson



10

Griffith University | Energy Economics

Queensland Australia • CRICOS: 00233E • TEQSA: PRV12076

Presentation Roadmap

01

Our Starting Point

The politics of prices and why the Review was commissioned

02

Weather dependency

Supply-side resources are increasingly weather dependant but the tools to manage this different risk profile don't exist

03

Hidden resources

Largest generator in the NEM (28 GW of BTM solar, increasingly accompanied by batteries) does not participate in NEM dispatch

04

Recommendations

Three key recommendations across three key timeframes

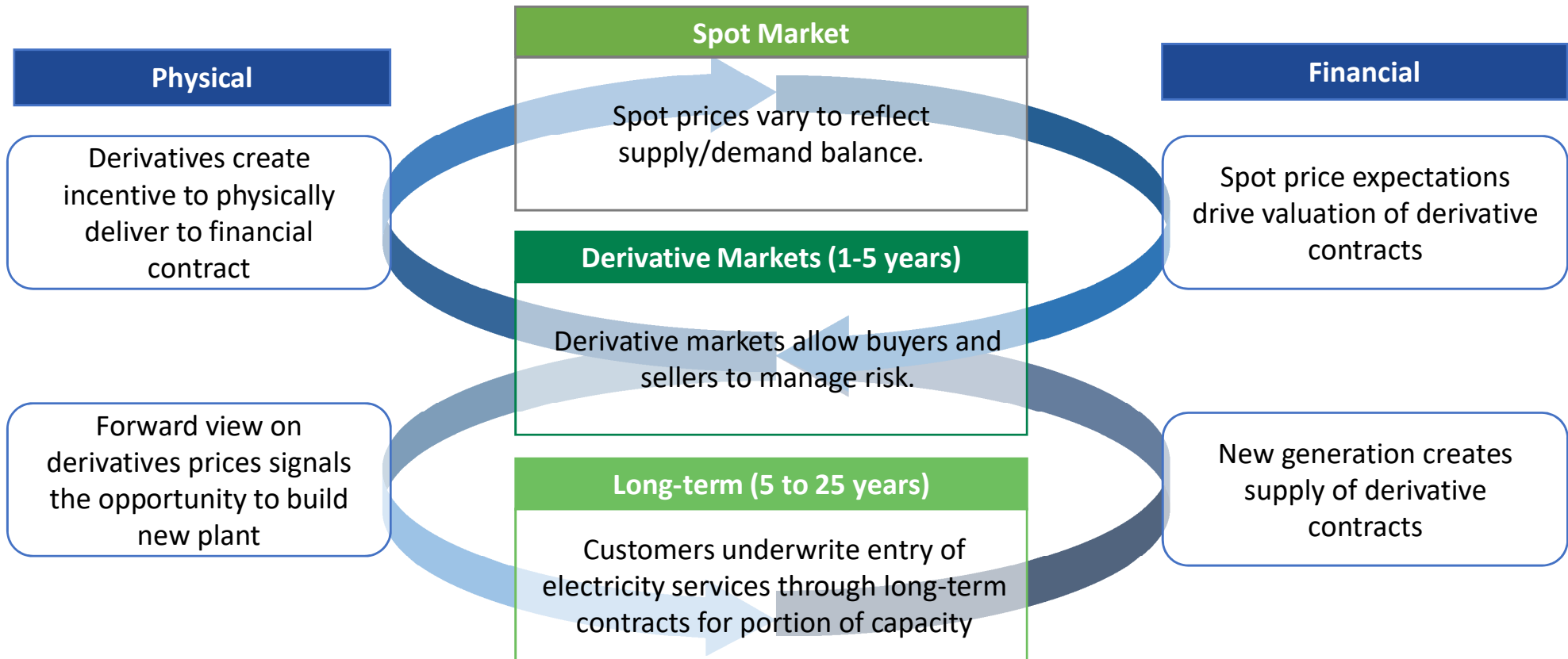
05

A coherent package of reforms

Reforms restore the original intent of the NEM – consistent economic price signals across short-term (dispatch), medium term (risk management) and long-term (investment) timeframes

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A reminder on how the NEM works



Weather dependency

The old system

- Energy is stored as fuel
- Power generation was 'firm'
- Financial contracts managed the risk of variable *demand*



The new system

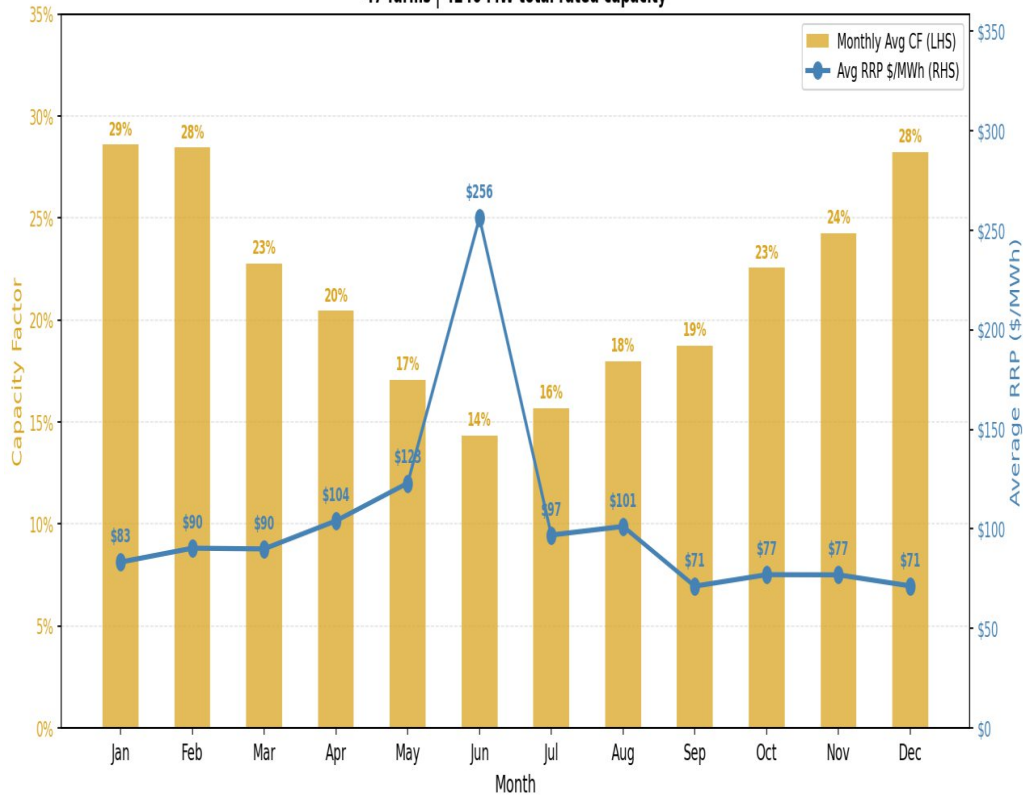
- Renewable generation is not 'firm' (i.e. weather-dependent)
- Energy is stored after initial generation (i.e. batteries)
- Financial contracts need to evolve to manage the risk of variable *demand* and variable *supply*



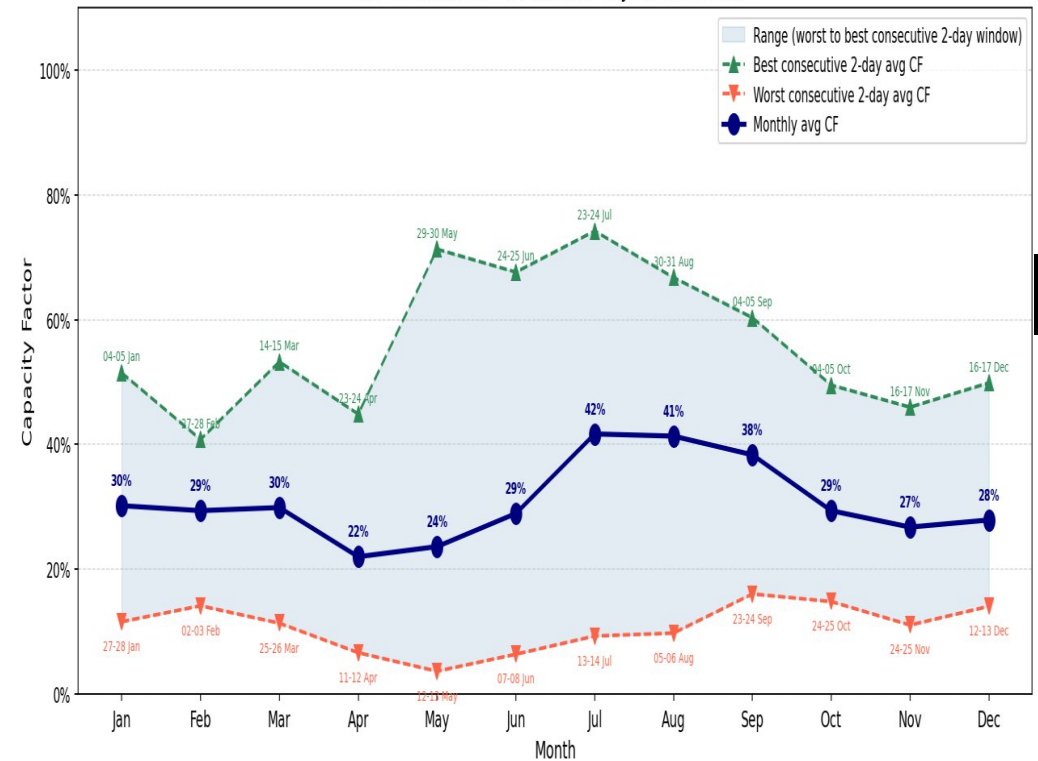
Electricity has always been an economic challenge due to the absence of long-term inventory management (i.e. you can't store it for very long periods in a warehouse)

Weather dependency – predictably variable (solar) and unpredictably volatile (wind)

NSW Solar Fleet – Monthly Avg Capacity Factor vs Wholesale Price 2025
47 farms | 4240 MW total rated capacity



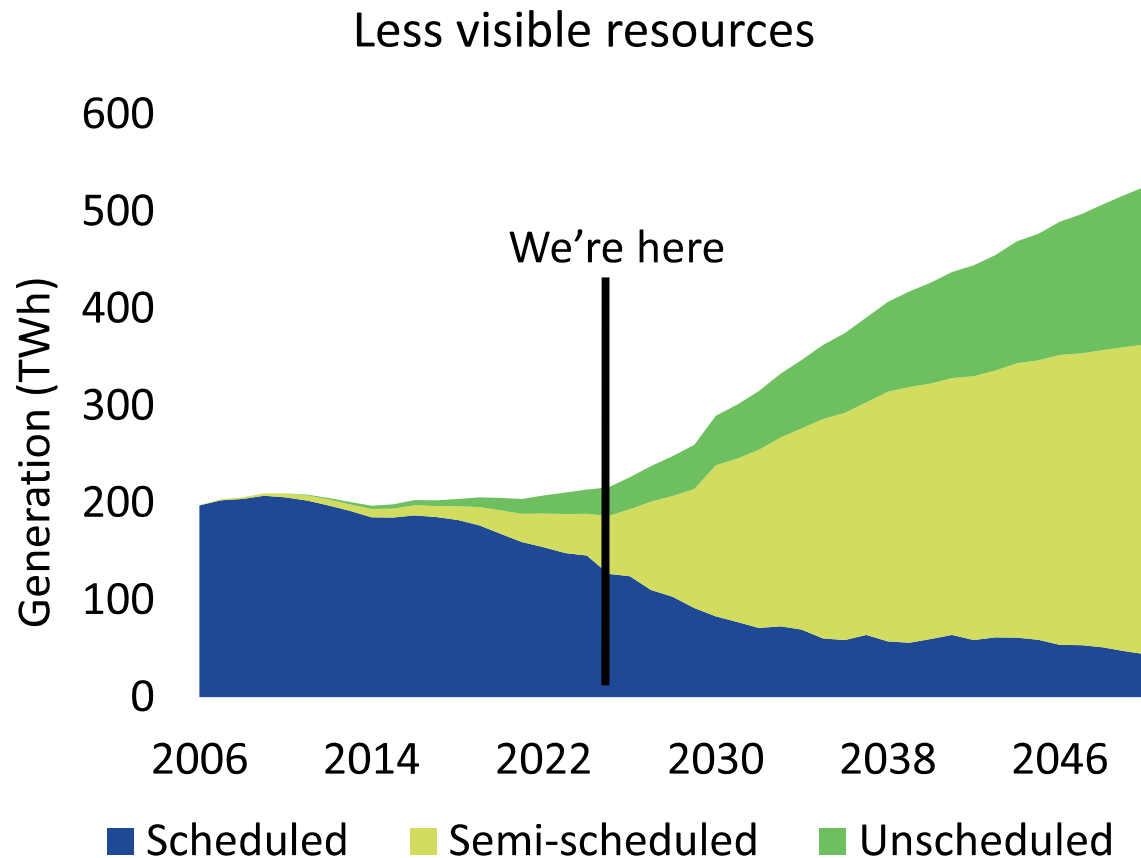
SA Wind Fleet – Monthly Capacity Factor 2024
Navy dots = monthly avg | Triangles = best/worst consecutive 2-day window
Dates shown are actual calendar days of each window



10

Derivative contracts do not exist today to manage this changing risk profile with risks now being from variable SUPPLY as well as variable demand

Short-term market: hidden resources – distorting dispatch



- Largest generator in the NEM (28 GW of BTM solar, increasingly accompanied by batteries) does not participate in NEM dispatch
- These hidden resources are distorting forecasts, raising system costs and weakening investment signals
- Price-responsive resources can lower costs and improve system efficiency — but only if they are visible to the market
- AEMO is unable to accurately forecast the actions of price responsive resources such as BTM batteries. As demand forecasts become weaker, there will be substantial errors in large-scale plant dispatch
- AEMO estimates that this could result in ~\$4bn in wasted resource deployment by 2050. In practice, batteries could be responding by discharging while AEMO directs large-scale batteries to charge to correct the frequency imbalance
- Key recommendation – incorporate VPP and other price responsive resources into dispatch through new ‘visibility’ mode

Medium-term: adapting the contract market to ensure new risk profile of 'firmed renewables' is managed

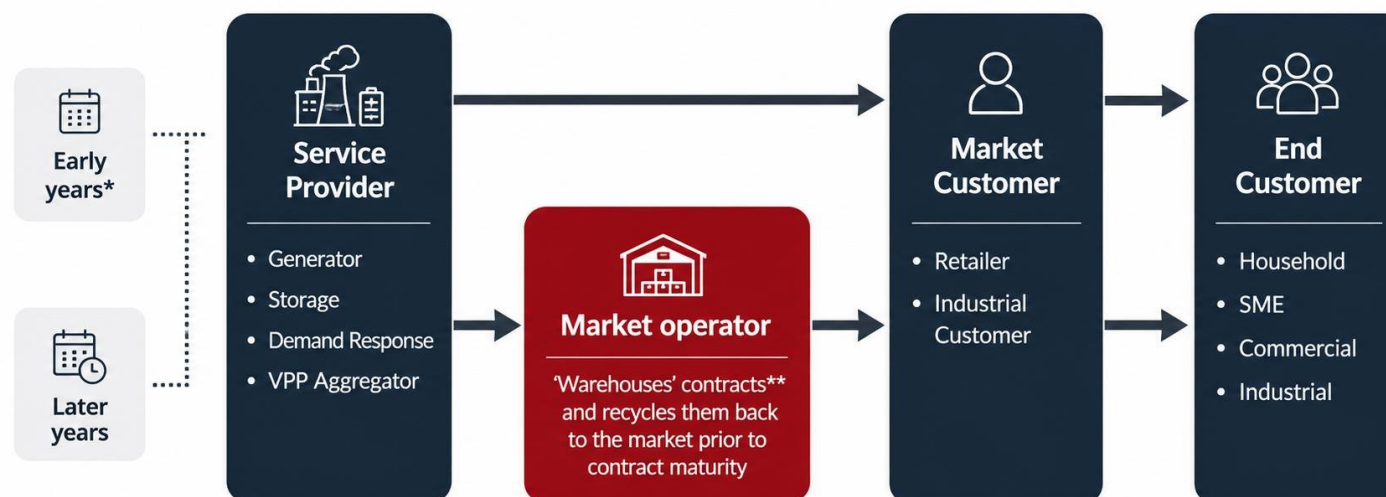
Core contracts used today		Firmed Renewables	Examples
Time-weighted average swap	 <p>Physical shift from coal to firmed renewables</p>	Bulk energy (MWh)	Ex-post dispatch-weighted swap
	Contract markets haven't evolved	Shaping (bi-directional units)	Standard virtual toll
Caps	Swaps and caps still primary contracts on ASX despite ~40% of energy coming from sources with non-firm variable supply	Firming (continuous dispatchable capacity)	Caps

Key recommendations:

- Industry co-design process to define standardised contracts for bulk zero-emissions energy, shaping and firming (suitable for managing the risks of a firmed renewables system)
- Market Making Obligation to ensure liquidity and price transparency in all three services (energy, shaping and firming).

10

Long-term: a new investment mechanism linked back to the medium-term derivative market – addressing the tenor gap



* In market period proposed to be 'no less than 3 years'

** Contracts are derivatives, established through the process outlined in the medium-term market recommendations

Buyers are only willing to contract for next ~5 years...

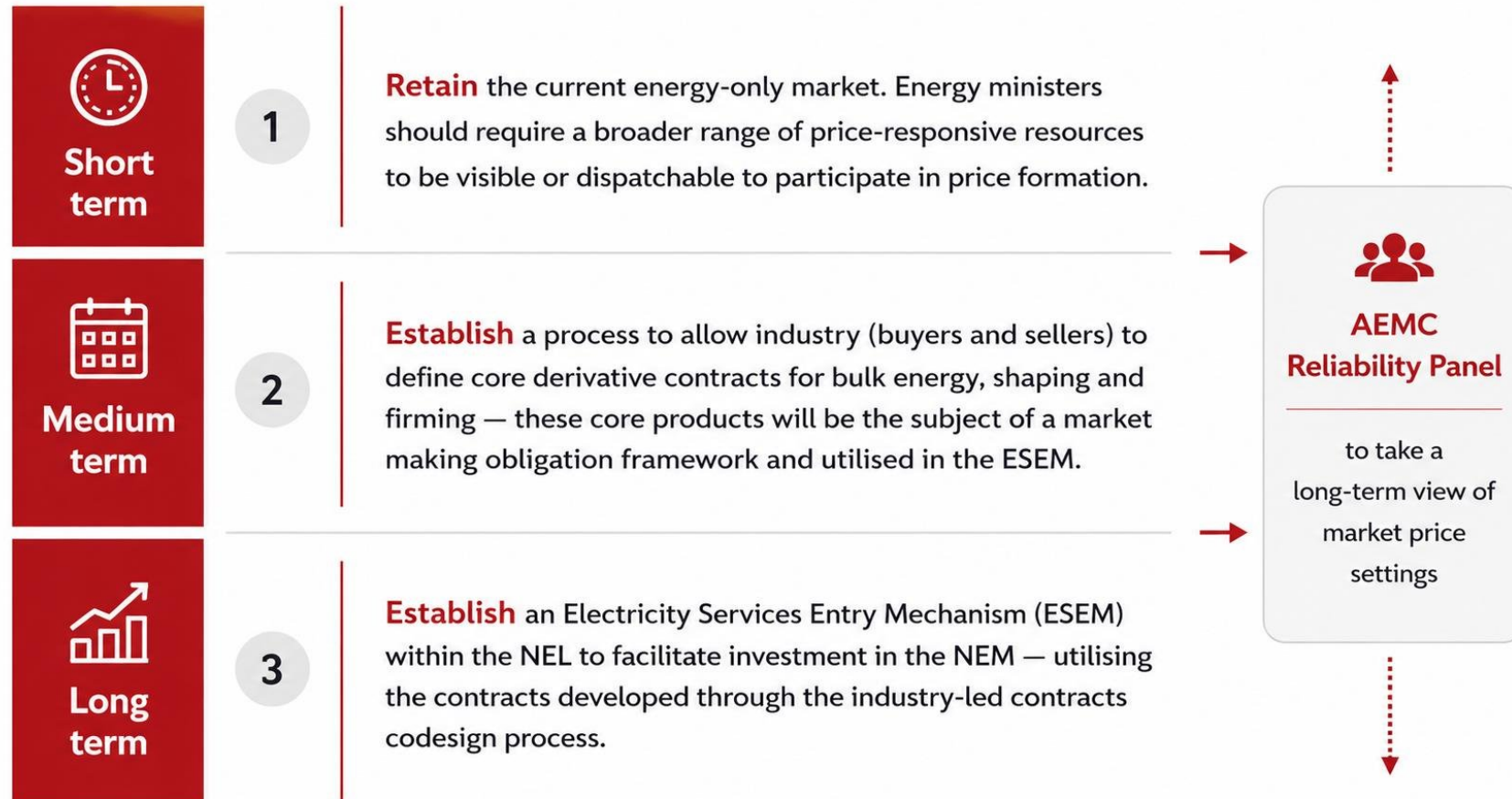
The tenor gap

... but investors (new sellers) need ~15 years of certain revenue

- **Key Recommendation:** Establish the Electricity Services Energy Mechanism (ESEM) — an enduring, standardised framework to underwrite firm renewables investment
- Market operator procures bulk energy, shaping & firming services via competitive auction — winners sell derivative contracts to market operator, no revenue underwriting
- Standardised derivatives held by the scheme administrator until market demand materializes
- Contracts released back to market as retailers and customers need them — closing the tenor gap
- All risks retained within market

10

A package of reforms – restoring consistent economic pricing across timeframes



16 September 2026

Electric vehicles and DER

A co-ordination challenge

EECA ENERGY EFFICIENCY &
CONSERVATION AUTHORITY
TE TARI TIAKI PŪNGAO

10

Key points

- Charging of private EVs will not create any threats to security or any need for network expansion....

....IF the charging can be fully coordinated

- There's a similar story for other electrification and distributed generation
 - Electrification of gas hot water and heating
 - Widespread solar and batteries
- Industrial electrification will be a bit trickier
- Widespread uptake without co-ordination will be ruinously expensive or highly risky
- We have no experience with this type of co-ordination on the demand side
- We don't currently have the tools within the industry to coordinate demand side resources fully



What could the 2030s look like?

Sector

Residential

- Majority EV fleet
- Majority of homes have solar, most of these have batteries
- No residential piped gas

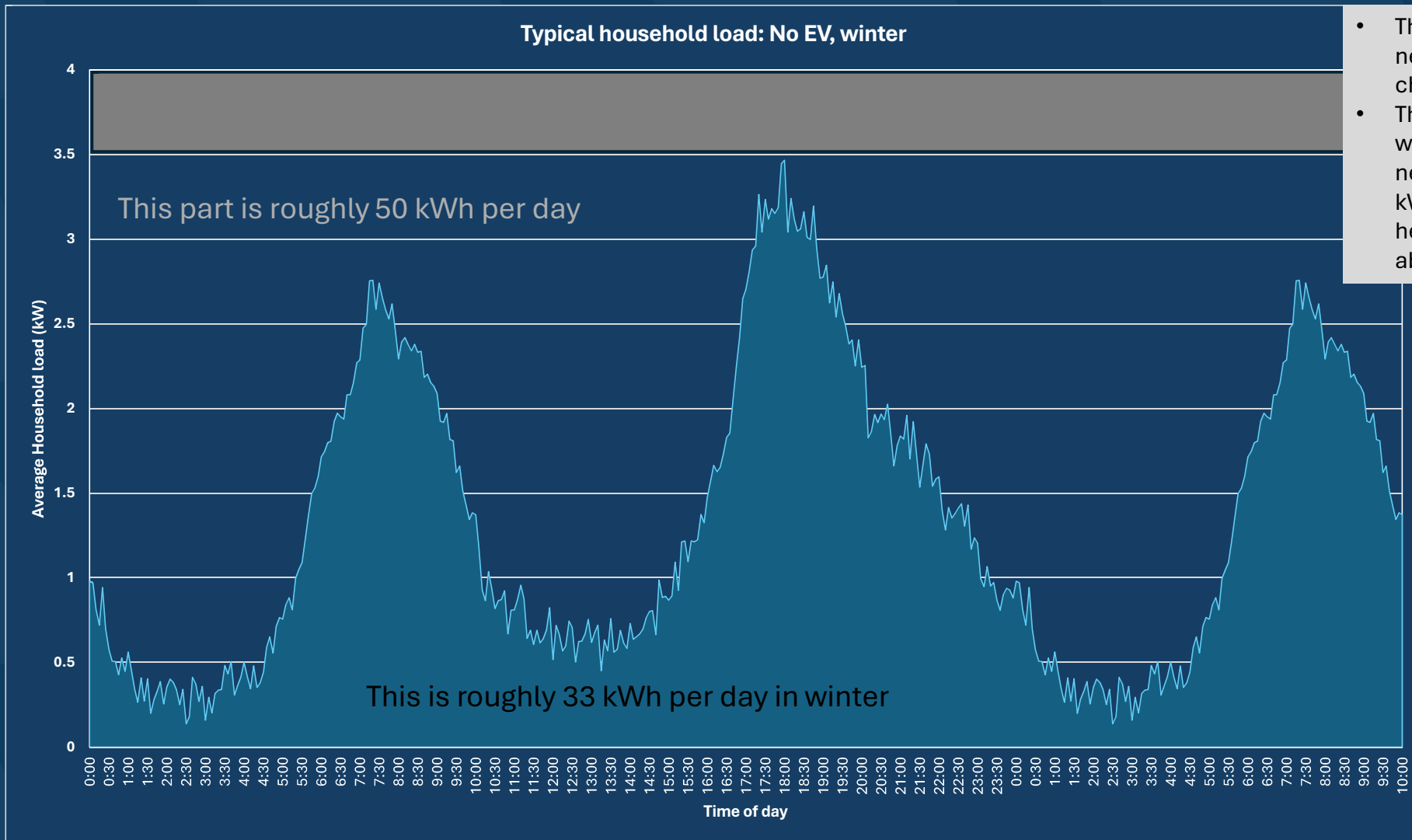
Commercial/Industrial

- Majority EV fleet
- Majority of sites have batteries, most have solar
- Most gas coal and diesel replaced by heat pumps and biomass

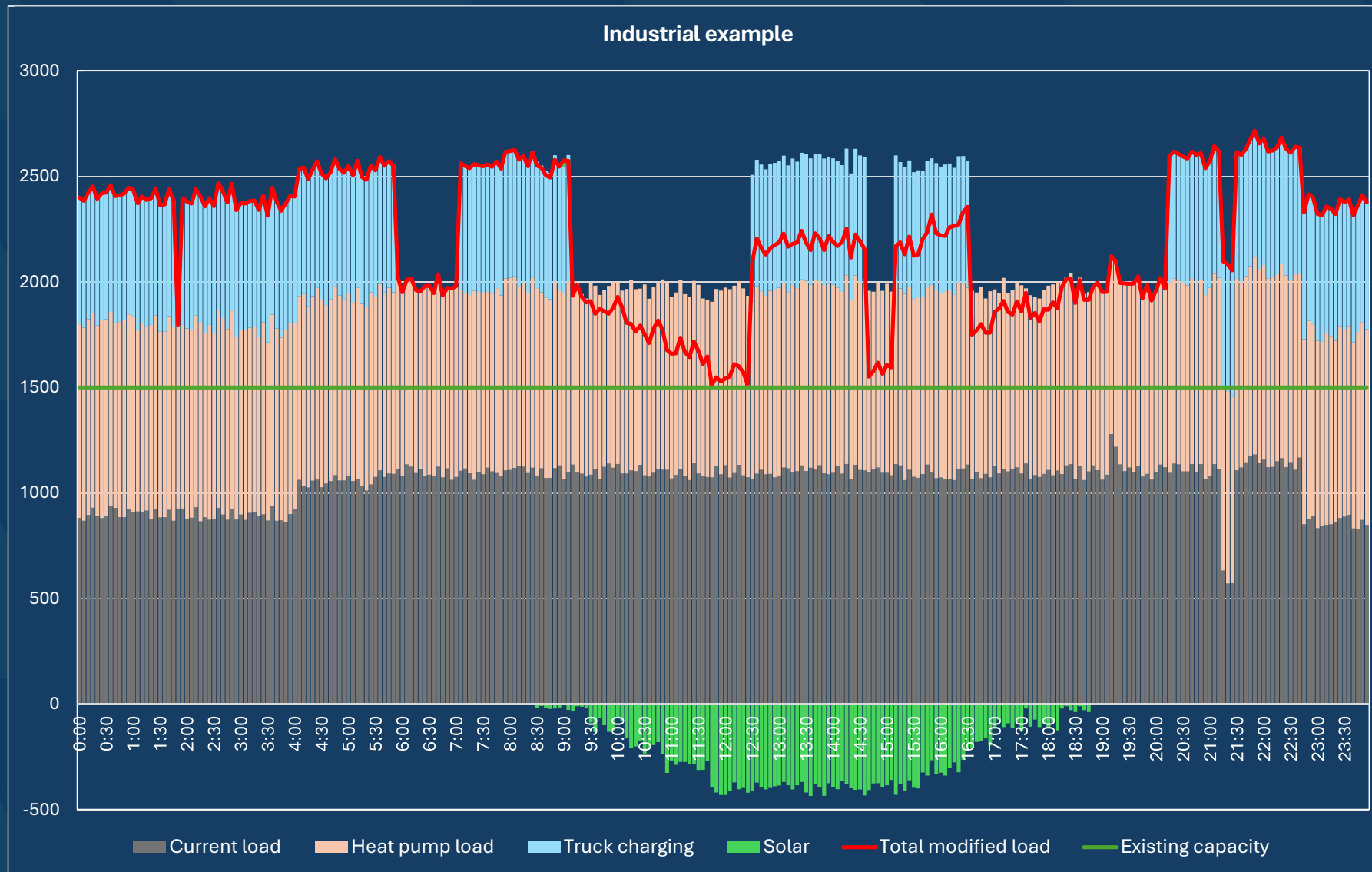
Impact

- No problem if well coordinated
 - Major cost and inequality issues if not
-
- Probably significant network strengthening needed
 - Higher resilience/reliability needs, higher impact of interruptions
 - Complex co-ordination and communication required

EECA



- The average EV needs 6-7 kWh of charge per day
- The average Hot water cylinder needs around 7 kW, a hot water heat pump needs about 2-3 kWh.



Residential EV Chargers – Two main types

Cable charger



- **Plugs into a standard 10 Amp wall socket**
- **Draws up to 1.8 kW**
- **Usually has no external controls**

Wall charger



- **Hardwired into a dedicated circuit up to 32 Amps**
- **Draws up to 7 kW**
- **Usually has an app or other external controls fitted**

Residential EV Charging Behaviours

Default

- Treat the car just like any other appliance
- Plug in as soon as you get home, charge until finished

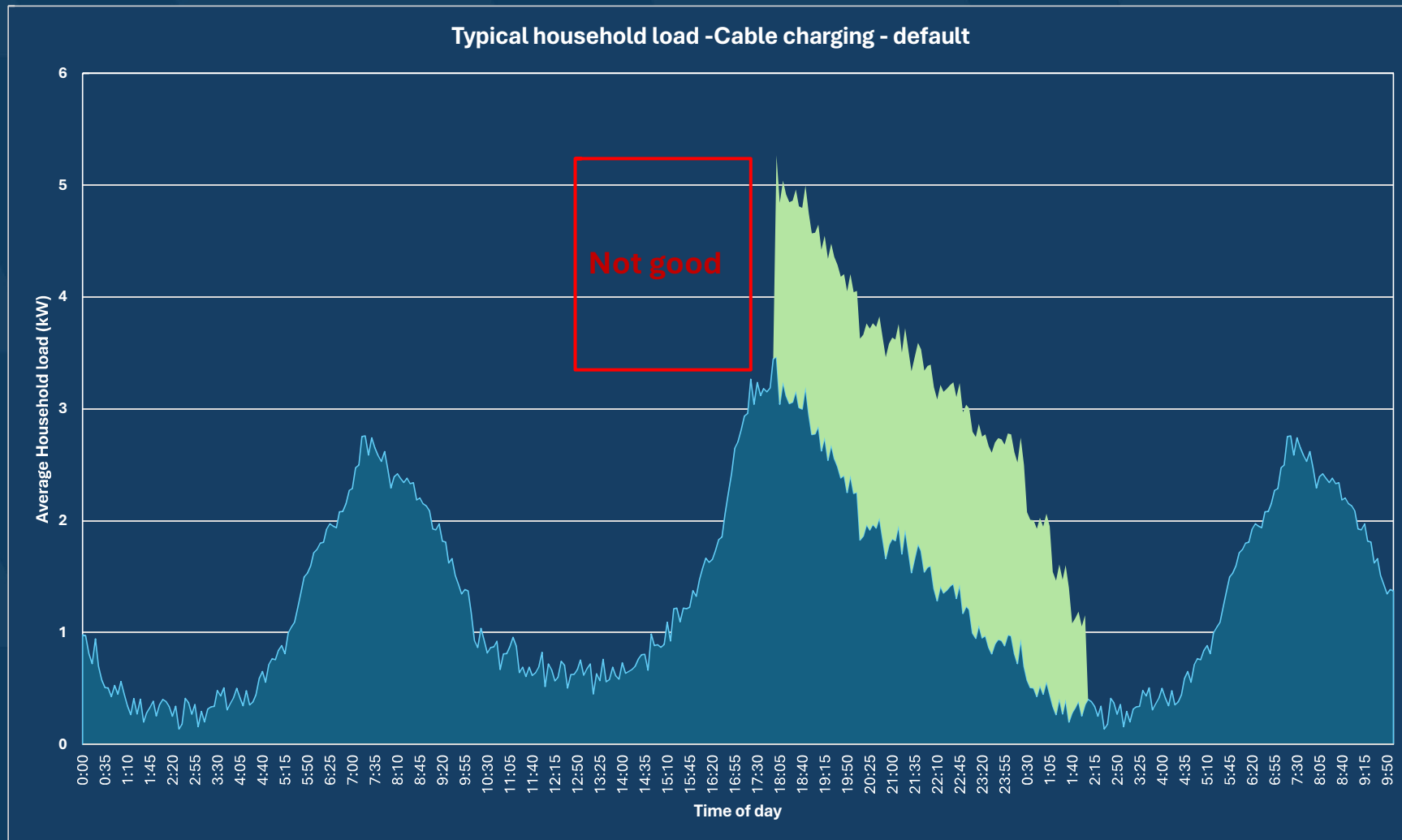
Basic management

- Set a timer using the car's inbuilt functions, or an app connected to your wall charger
- Can delay charging to after the peak
- Likely 'set and forget'
- May be based on Time of use tariffs or cheap periods of power

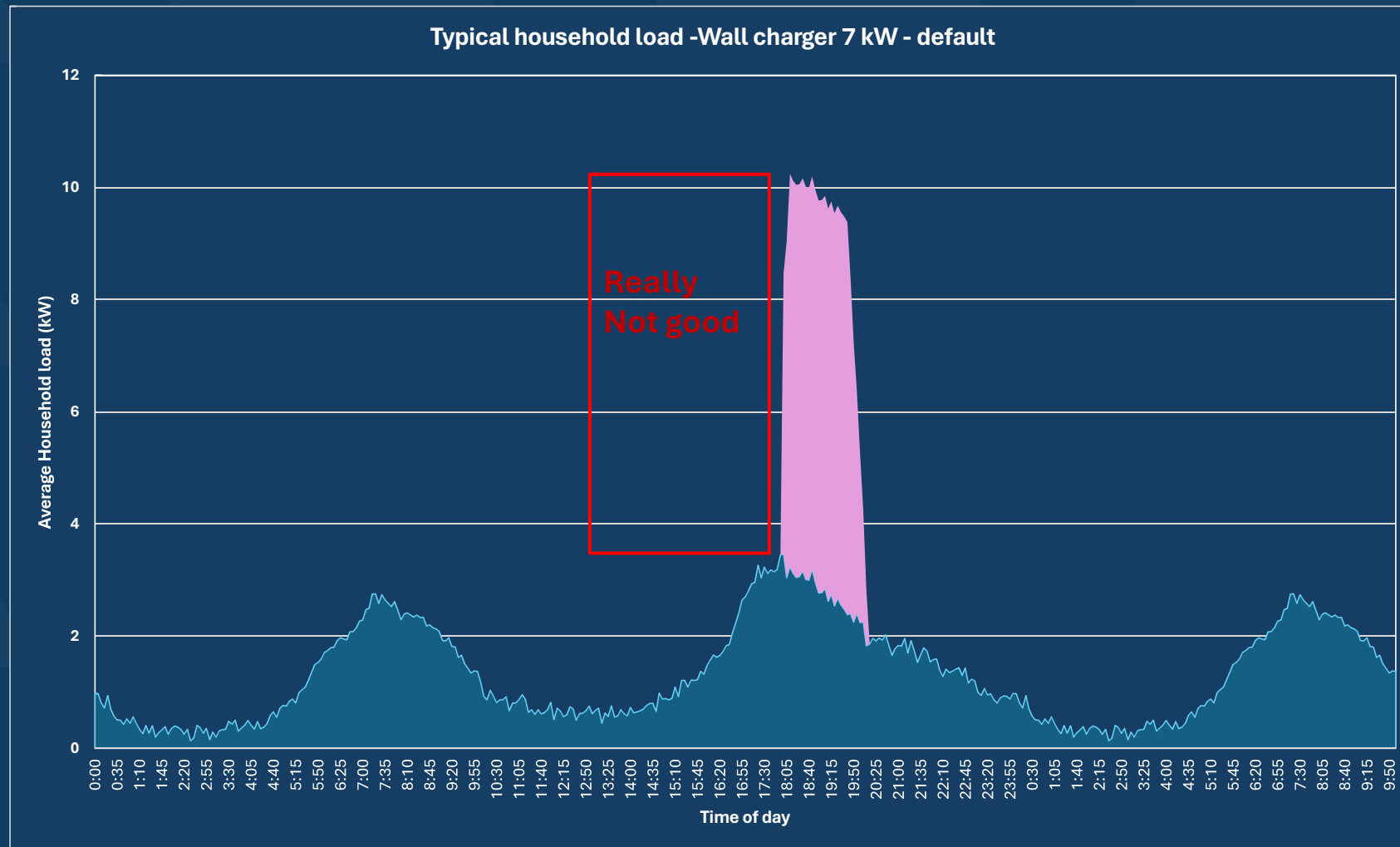
Advanced management

- Smart functions built into the charger, or from an external provider can schedule charging to minimize cost and avoid peaks
- Communication allows co-ordination across multiple users, which increases flexibility and resilience
- May be able to respond to system events such as cold snaps, storms or line outages

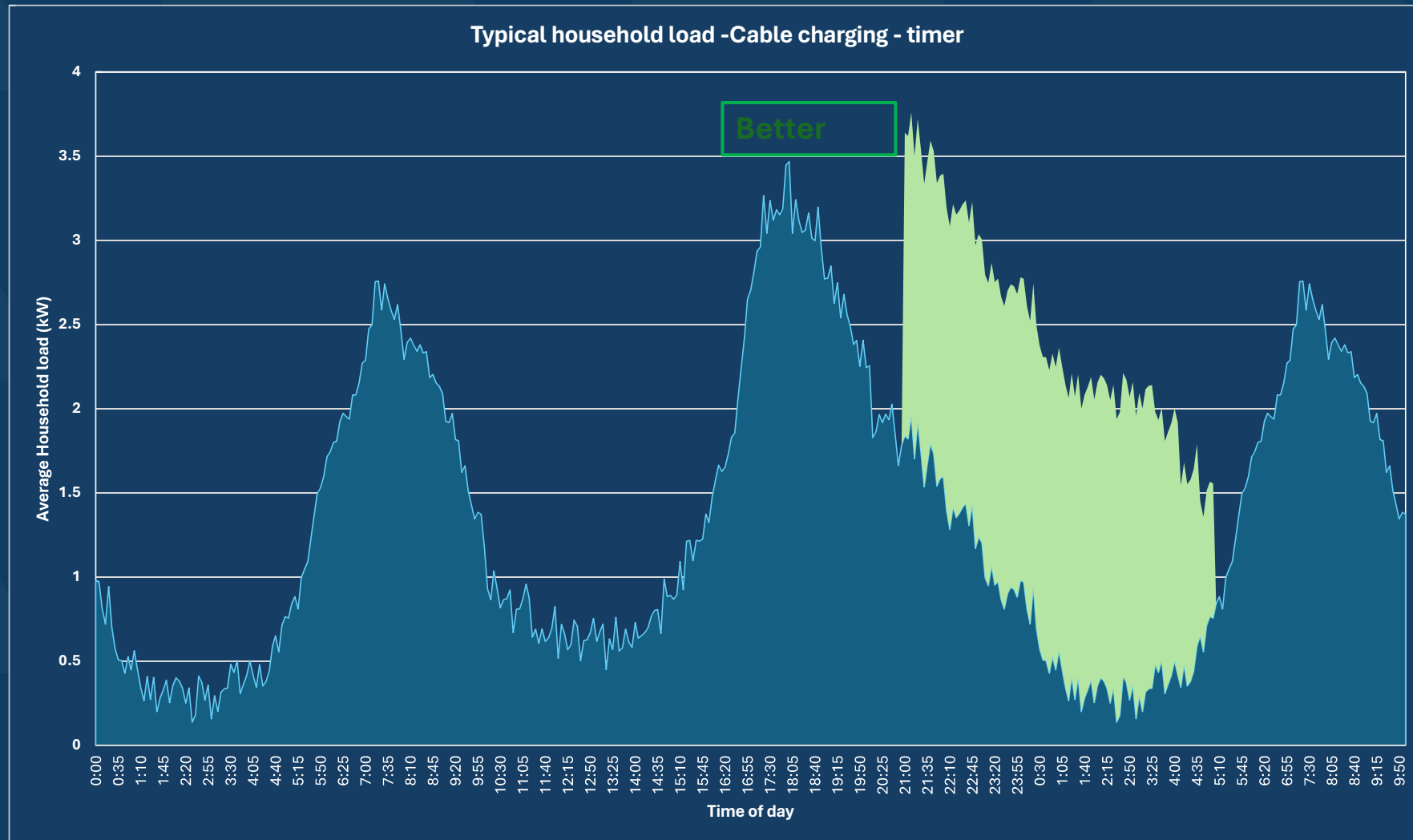
Default charging with cables pushes up the peak



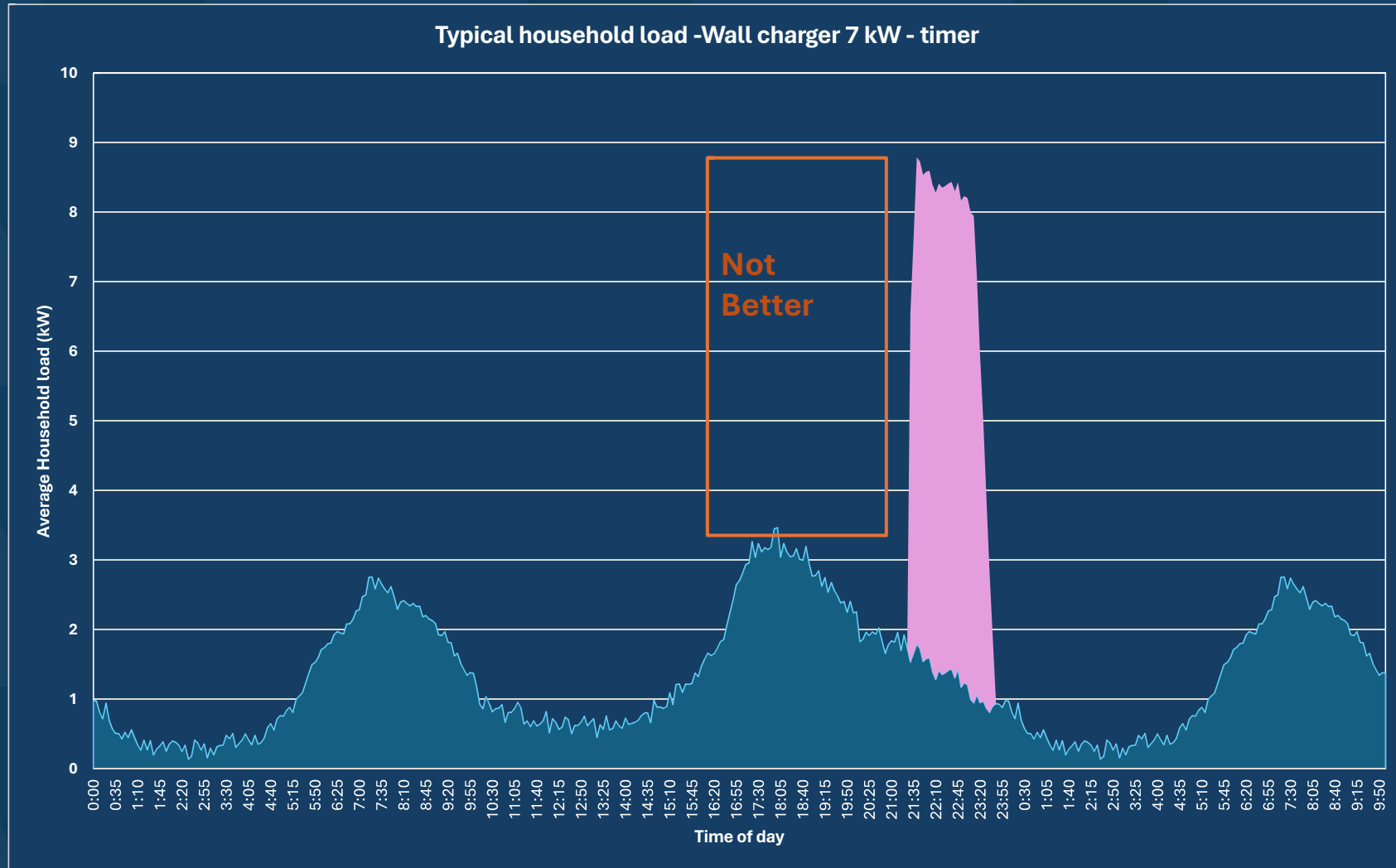
Default charging with Wall chargers is even worse



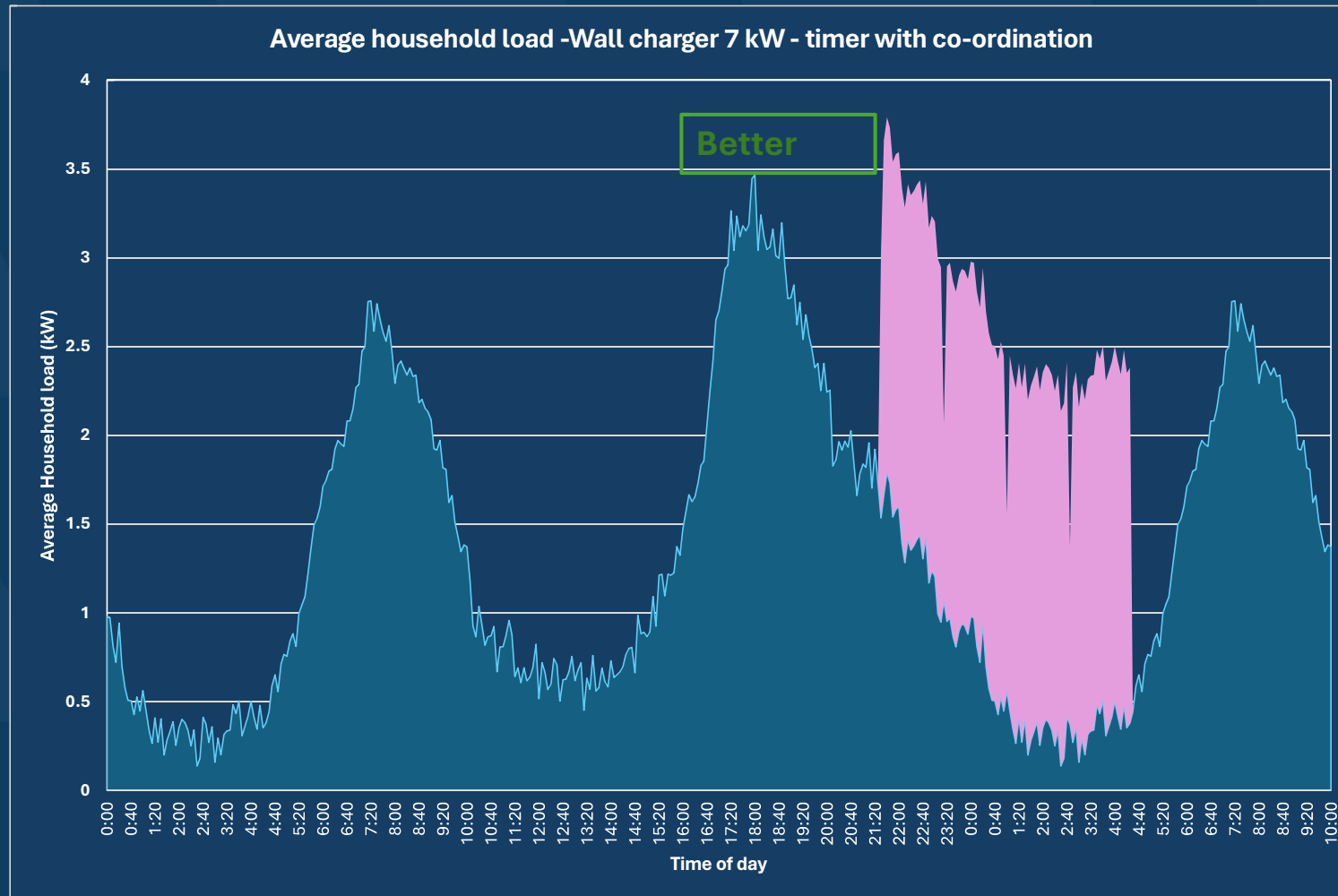
Basic managed charging with cables is not too bad



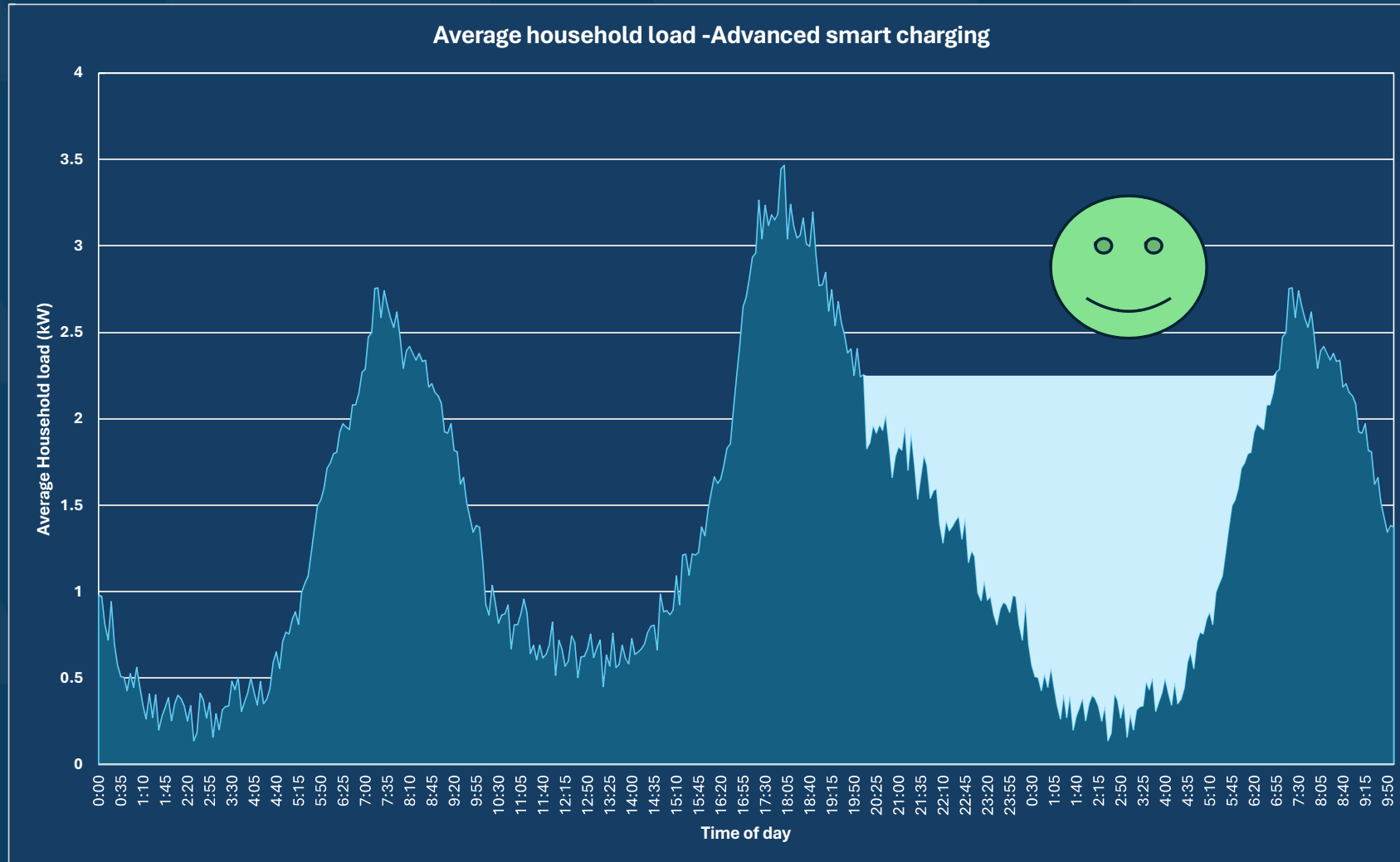
But basic managed charging with wall chargers doesn't help as much



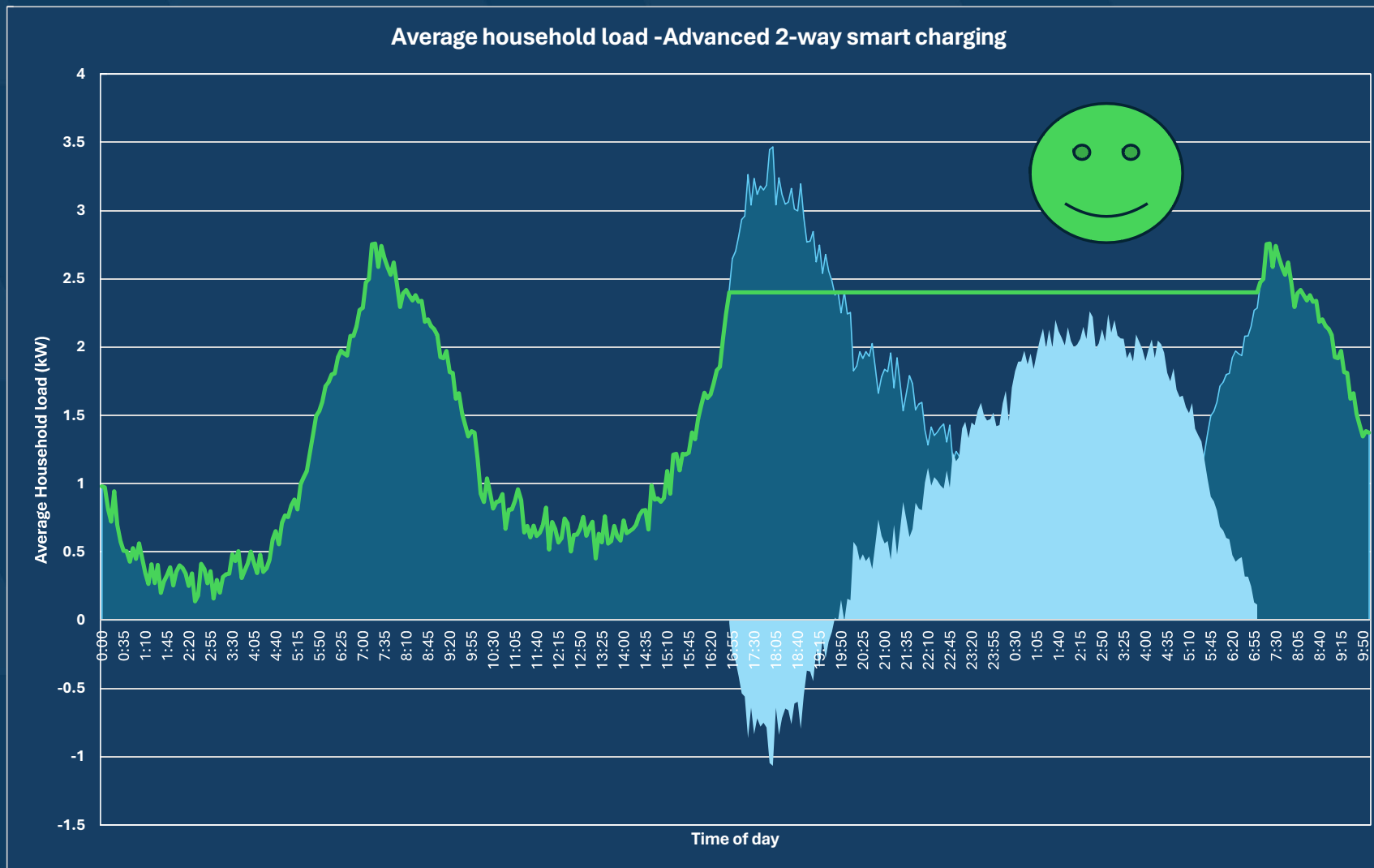
Unless you can stagger the timer starts somehow- effectively Advanced management



Advanced managed charging can make the system work a lot better



...and Advanced 2-way smart charging can completely change the picture



Technology is a critical piece of the puzzle

EV Smart Charger Approved List

A list of residential and commercial electric vehicle chargers that are approved by EECA based on efficiency and smartness.

[Home](#) > [Regulations](#) > [Voluntary Guidance](#) > [EV Smart Charger Approved List](#)

Recommended EV chargers

A wall-mounted charger will charge your EV faster and more safely than a three-pin plug, and help you save money on power bills.

But they're not all created equal. EECA has published an approved list of EV chargers recommended for residential and commercial use. The list has been developed to help New Zealanders identify, and purchase, EV chargers that use 'smart' technology and are energy efficient. The new, internationally proven smart technology benefits both the user and the national electricity grid, by allowing two-way communication between the charger and the grid.



EECA

Market settings are equally necessary

- Current settings act as barriers to demand flexibility and co-ordination
 - Simple pricing
 - Siloed decision-making
 - Protected investments
- The direction of travel for future settings is positive, but there are risks
 - Over-reliance on pricing that won't inherently deliver co-ordination
 - Market participants don't have genuine incentive to co-ordinate load effectively
 - Consumers will move quickly, regulators generally move slowly
 - Changing the rules after consumers have invested is deeply unpopular
- Other jurisdictions are doing okay at this but none of them have it perfect

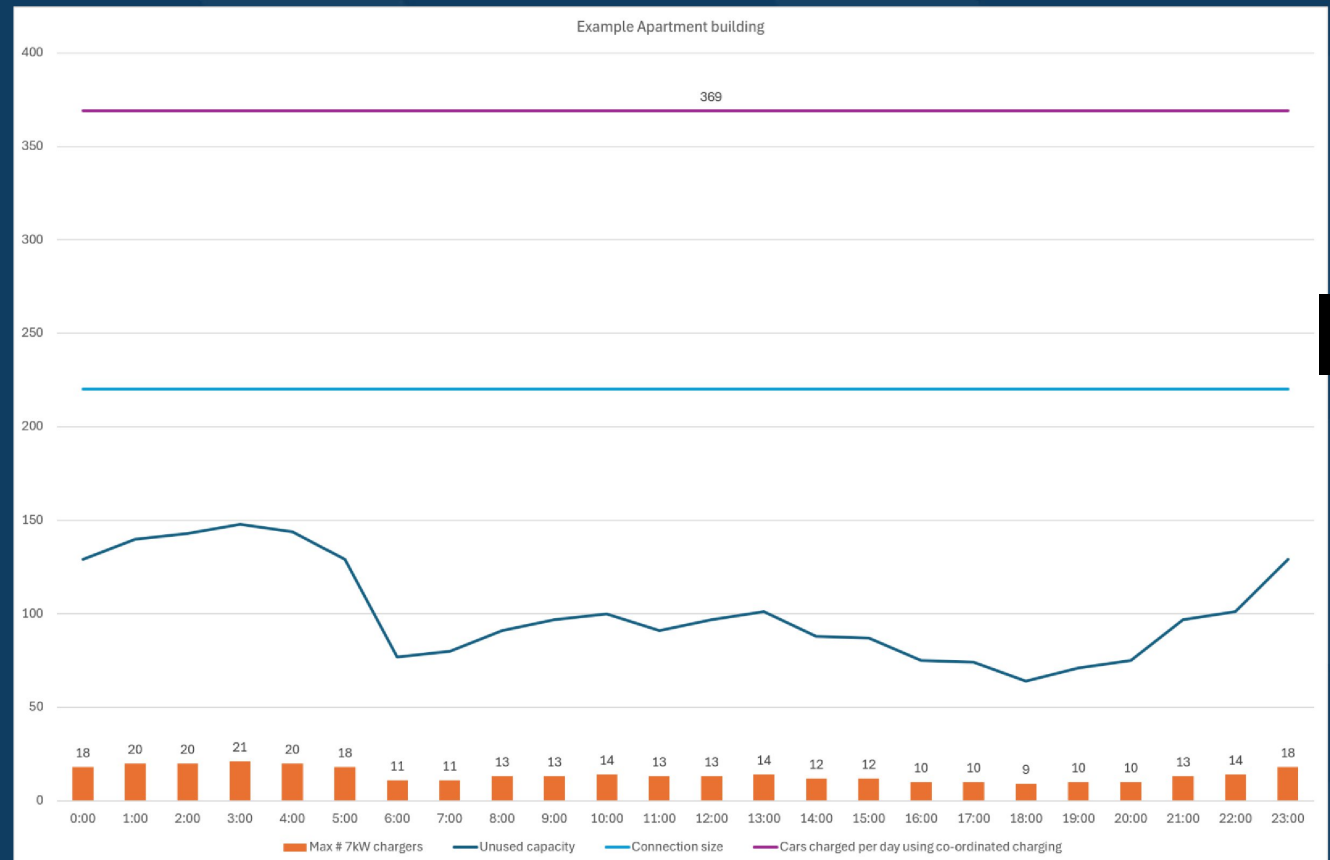
Apartments and other multi unit dwellings

EECA has supported a pilot project in Auckland that demonstrates how smart charging technology can enable lots of apartment EV charging without huge connection costs

We've demonstrated that a building with 240 carparks can charge all of these within its existing connection

Traditional approaches would have expanded the network connection or limited charging to ~10 carparks

We're just putting the finishing touches on our report, which we'll be publishing soon



Two-way charging trials

Building NZ evidence on vehicle-to-grid charging

Gaining insights on:

- Opportunities and barriers to wider uptake
- Market readiness for V2G
- Installation, integration, and operation
- Household and business experience and benefits
- Electricity system benefits

Queenstown trial is underway, and a second urban trial location procured and in the early stages of planning.

Insights into the V2G market in NZ to be shared soon.



Wrap Session – Item 9

Risk and Security Strategy Session

UNCLASSIFIED - INTERNAL

SECURITY AND
RELIABILITY COUNCIL

Brief note on item 11 – Annual Security of Supply Assessment

- The SRC reviews the System Operators annual security of supply assessment (SOSA)
- There are three papers for this item –
 - the SOSA itself – published 29 June (circulated to SRC previously)
 - presentation from the System Operator summarising what the SOSA is for, key changes for 2026, links to the EA's current review of the security standards and assumptions (SSAD) that underpin the SOSA
 - presentation from the EA on its review of the SSAD
- The 2026 SOSA headlines:
 - Energy and capacity margins have improved compared to 2025 with increased market response
 - But, dependency on generation projects being delivered on time to meet the NZ winter energy margin, lower than expected gas availability or higher than expected demand exacerbates this risk
 - Capacity risks remain, key drivers are low wind production and thermal plant availability / commitment in cold snap

Discussion points / question to presenters:

- Is there an objective basis for the “efficient level of supply relative to demand” in SSAD and does this change with system change and electrification?
- SOSA highlights multitude of demand and supply side risks, what is being done by SO and EA to understand, manage, mitigate these?
- A Rankine tripped, how reliable really is the 3rd unit ... that outage plus unit 5 shut down took us close to the edge
- How instrumental is BESS today and how will that change as more BESS commissions and wind / solar comes on line?
- What do the “R”, “E” and “S” in the traffic light icons mean?

UNCLASSIFIED - INTERNAL

IN-CONFIDENCE - EXTERNAL



Annual Security of Supply - 2026

Presentation to SRC

September 2026

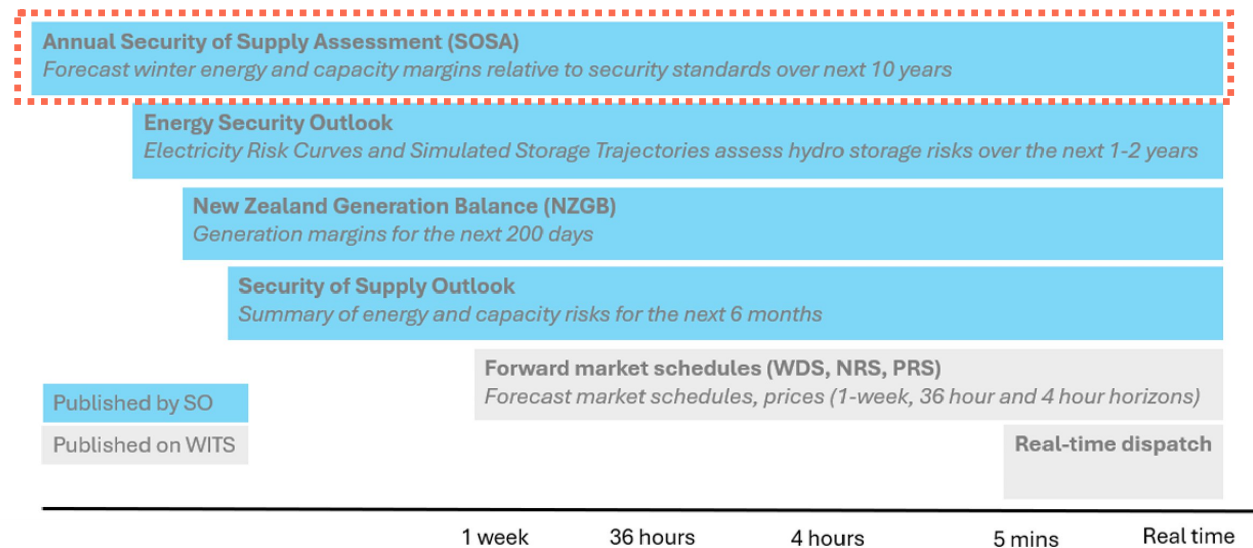
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IN-CONFIDENCE - EXTERNAL

IN-CONFIDENCE - EXTERNAL

Security of Supply Assessment Summary

- SOSA is one of our security of supply information publications
- Assesses three risks over the next 10 years and compares against efficient standards:
 - **New Zealand winter energy:** Do we have enough energy nationally to get through dry winters?
 - **South Island winter energy:** Can the South Island meet its dry winter energy needs, given both supply and inter-island transfer limits?
 - **North Island winter capacity:** Do we have enough North Island generation and South Island contribution via the HVDC to meet North Island peak winter demand, including reserves?



12

IN-CONFIDENCE - EXTERNAL

IN-CONFIDENCE - EXTERNAL

Security Standards - Overview

- Set by the Electricity Authority in the Code
- Reflects the efficient level of supply relative to demand to:
 - Manage dry winters (Winter Energy Margins)
 - NZWEM: **14 - 16%**
 - SIWEM: **25.5 - 30%**
 - Supply peak loads (North Island Winter Capacity Margin): **630 - 780 MW**
- Falling below the standards means an inefficient level of supply relative to demand:
 - Efficient to invest in more resources
 - Increased risk of inefficient demand management
- Assumptions to be used by the SO in determining the margins specified in the Security Standards Assumption Document (SSAD)
- EA are reviewing the standards and SSAD

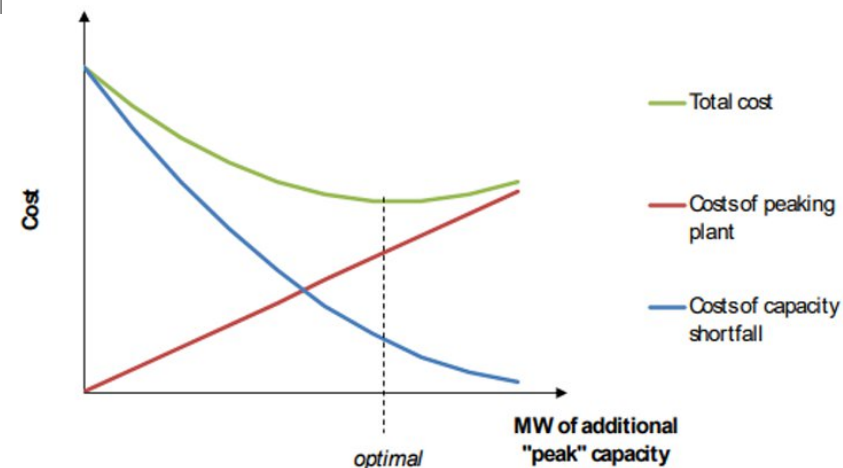


Table 2: Figures for explaining WCM

WCM (MW)	Expected hours p.a. of energy or reserve shortfall (as a result of capacity shortage)	National benefit-cost ratio of additional investment in peaking generation (considering only benefits in terms of reducing capacity shortage)
500	81	3.03
550	47	2.33
600	36	1.74
650	28	1.25
690	22	1.0
700	21	0.94
750	16	0.66
800	11	0.48
850	8	0.34
900	6	0.27
950	4	0.17
1,000	3	0.12

Table 3: Figures for explaining NZ-WEM

NZ-WEM (%)	Expected amount of energy shortfall, as % of total demand (including conservation campaigns and rolling cuts, but excluding 2% "market-based response")	National benefit-cost ratio of additional investment in dry-year generation (considering only benefits in terms of reducing energy shortage)
12.4	0.12%	2.1
13.2	0.10%	1.5
14.1	0.08%	1.1
15.0	0.06%	1.0
15.8	0.04%	0.7
16.7	0.03%	0.4
17.6	0.02%	0.3

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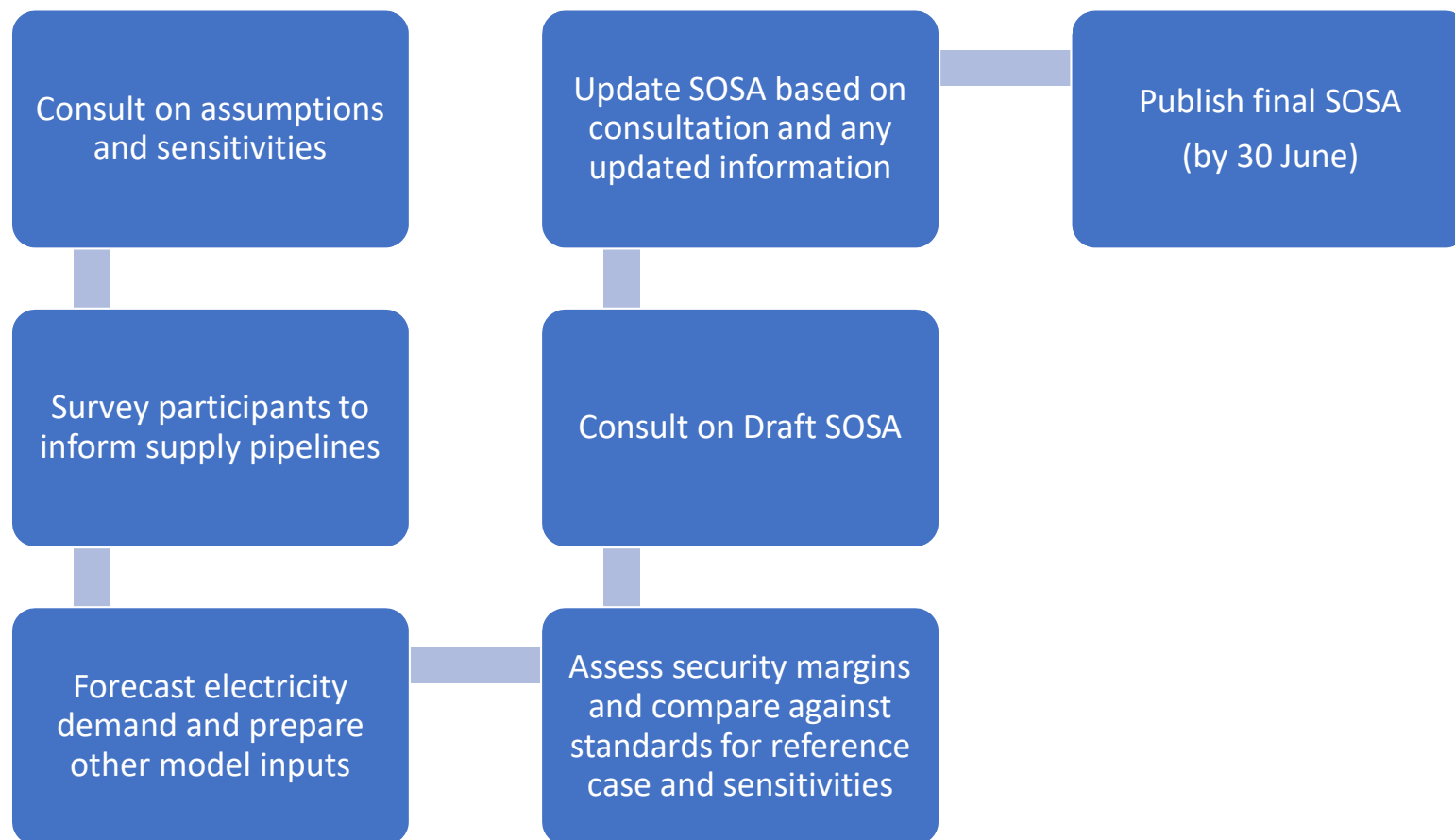
Security Standards Assumptions Document

14 November 2012

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SOSA process



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Reference case and sensitivities



- **Stage 1:** Existing and committed (FID achieved)
- **Stage 2:** Stage 1 + Consented and likely to proceed. Projects with > 75% likelihood were included in the pipeline
- **Stage 3:** Stage 2 + Unconsented investments but consent is likely to be sought in next two years. Investments with > 75% likelihood were included in the pipeline.
- Expected future scenario: Same as Reference with low gas supply + LNG from winter 2029

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Some key changes to SOSA 2026

- Assesses the security margins against the security standards across **three-time horizons**.
 - Short-term (2026–2028): issues require immediate attention from industry, as most new generation projects are already *committed or under development*. Any breach of the lower security standards signals the need to commit additional projects to mitigate near-term risks.
 - Mid-term (2029–2031): the market has more time to respond. *Consented projects* can be advanced to address potential shortfalls, or additional projects may be needed if the current consent-ready pipeline is insufficient.
 - Long-term (2032–2035): there is time to plan and consent new projects. If the existing pipeline is inadequate, the market can assess and develop additional projects that *could be consented* and delivered.
- Refining the supply pipeline**: Updated supply pipeline definition to 3 stages and including a likelihood of development
- Introduce an **Expected Future** case comprised of the combination of the Reference case and sensitivities that we consider (at the time of publishing SOSA 2026) reflects most likely outcome for the 10-year modelled period (2026-2035)
- MBIE has consulted on a potential long-term Winter Energy Reliability Obligation using the SOSA to identify future gaps when forecast margins fall below the security standards. If this progresses, we will work with MBIE and EA to implement the required changes.

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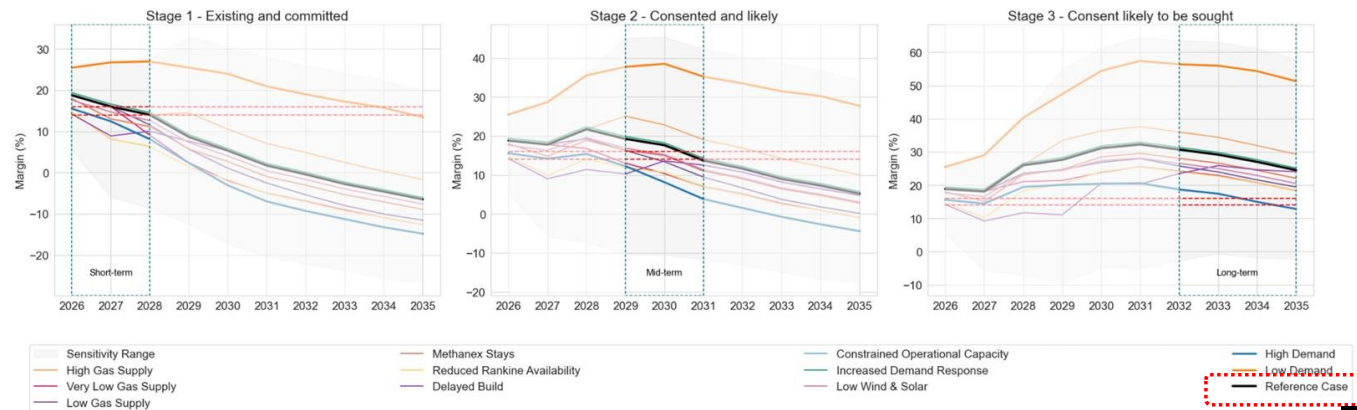
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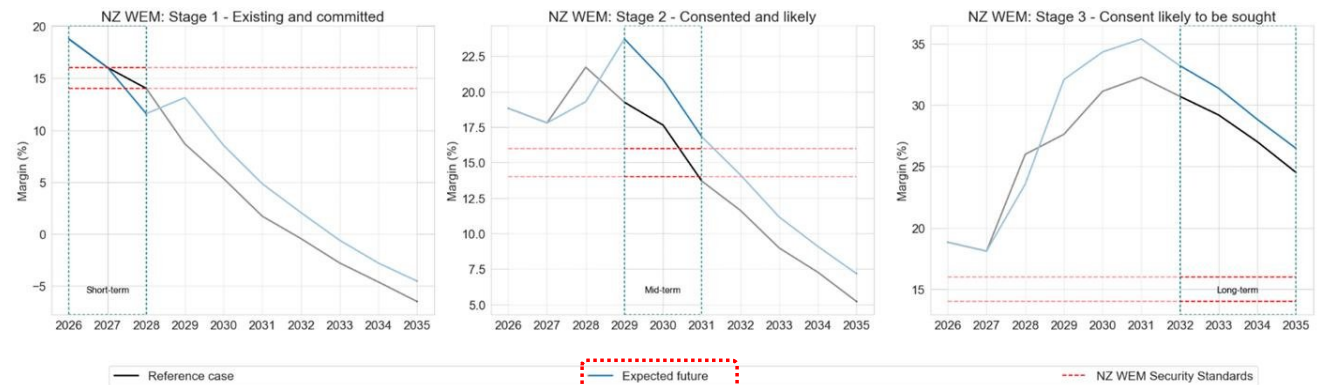
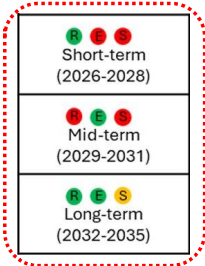
New Zealand Energy Margin

- Improved outlook compared to 2025
- Short and mid-term risks:
 - Rankine Availability
 - Delayed new build
 - Low gas supply
 - High demand growth
 - Low wind and solar supply (mid-term)
- Long-term risks:
 - High demand growth
 - High demand combined with other downside risks (e.g. delayed build)
- Maintain focus on timely project delivery of committed pipeline, thermal generation availability (including fuel) and bring forward diverse consent-ready projects to reduce mid-term risks

Reference and sensitivities



Reference and Expected future scenario

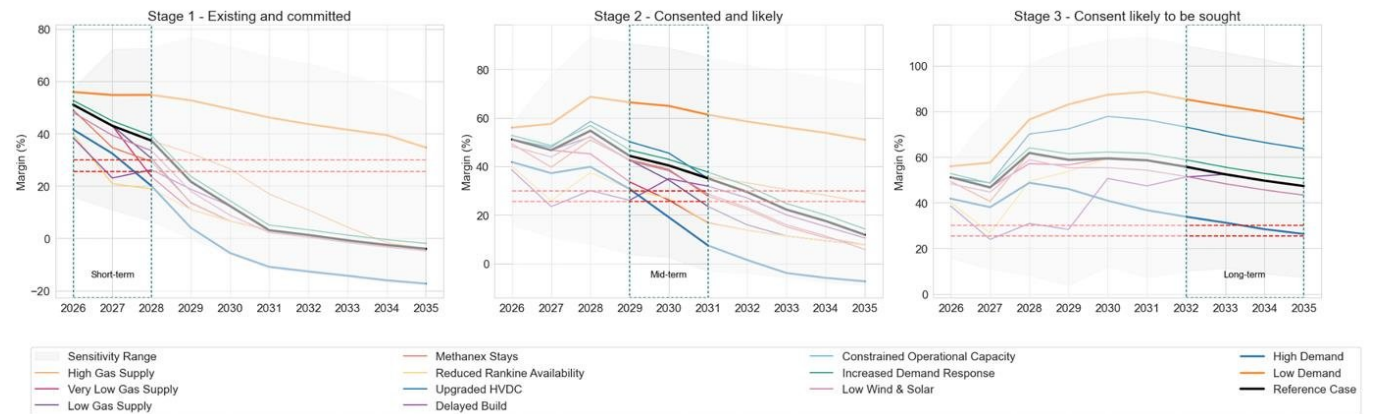


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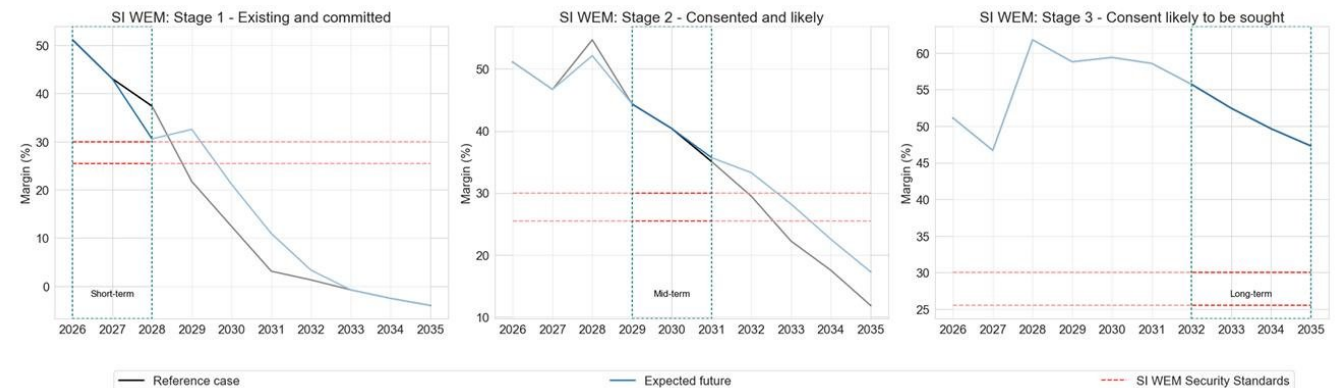
South Island Energy Margin

- Improved outlook compared to 2025
- Short and mid-term risks:
 - Rankine Availability
 - Delayed new build
 - High demand growth
 - Low gas supply
- Long-term risks:
 - High demand growth
 - High demand combined with other downside risks (e.g. Reduced Rankine availability)
- Sensitive to some risks but stronger position than NZ-WEM.

Reference and sensitivities



Reference and Expected future scenario



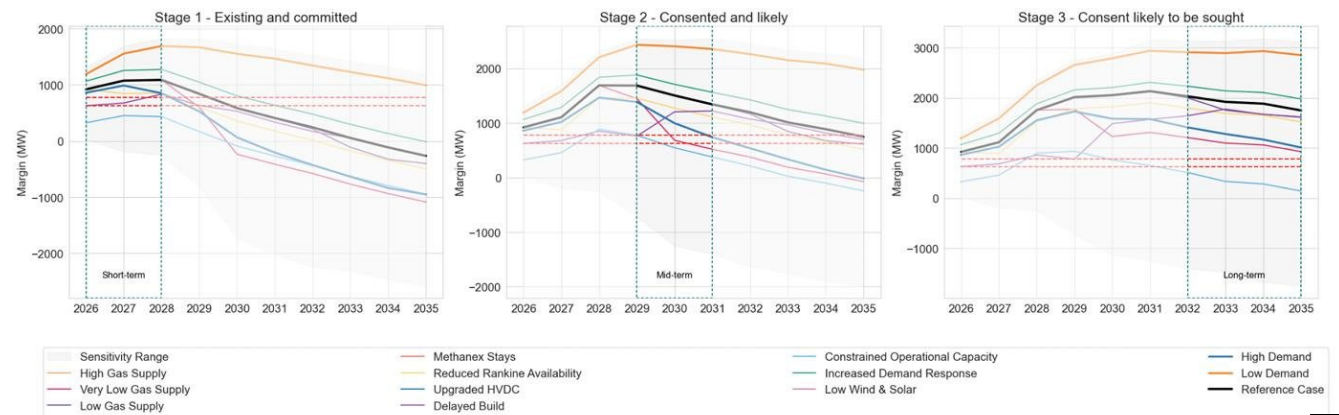
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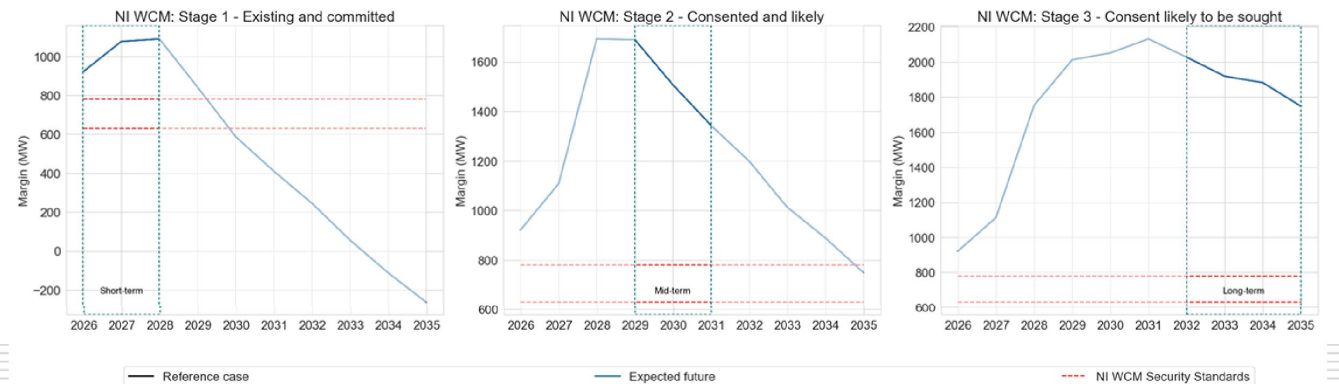
North Island Winter Capacity Margin

- Improved outlook compared to 2025 with investment in BESS and peak demand management
- Short and mid-term risks:
 - Constrained operational capacity (Low thermal commitment, low wind)
 - Delayed build
 - Very low gas (mid-term)
- Long-term risks:
 - If stage 3 projects delivered, NI-WCM more robust to downside risks
- Ensure timely project delivery, including flexible resources (like BESS). Sufficient thermal commitment during peaks will help reduce downside risks.

Reference and sensitivities



Reference and Expected future scenario



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Key take-aways

- Energy and capacity margins have improved compared to 2025 with increased market response
- The supply pipeline is being developed and continues to expand which is positive
- Maintaining security of supply over the next decade requires:
 - strong delivery discipline with regard to committed and consented generation projects
 - earlier commitment of additional consent ready projects in the short- and mid-term to reduce downside security of supply risks
 - ensuring availability of thermal generation units and fuel
 - more active development of a more diverse and flexible future generation pipeline

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Security standards update

SRC 16 September 2026

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Security Standards and Security Standards Assumptions Document

- Security of supply standards serve as **economic points of reference** for the System Operator to assess how likely it is that economically efficient levels of generation will be available to supply demand over the next 1 to 10 years. This analysis is published in the annual Security of Supply Assessment (SOSA).
- This approach reflects that 100% reliability requires an inefficiently high-level of investment. A breach of the lower standards in the SOSA does not mean that a shortfall of energy or capacity will occur. Instead, it means that it would be economically efficient to invest in additional generation solely for avoiding a capacity or energy shortage.
- The standards are set out in the Code:
 - **Winter Capacity Margin (WCM): 630MW – 780MW** (incl reserve requirement): The capacity standard is used to assess whether there will be an efficient level of generation given the available north-flowing transmission capacity to meet peak demand:
 - The energy standards are used to assess whether there will be an efficient level of generation capability given the variability of inflows into hydro catchments:
 - **New Zealand Winter Energy Margin (NZ-WEM) of 14-16%**
 - **South Island WEM (SI-WEM) of 25.5% to 30%**

Interaction between SOSA and security standards

- The SOSA assesses security margins under different supply and demand scenarios, these are then compared to the security standards to provide a view on medium/long-term risk.
- The Authority has published a Security Standards Assumptions Document (SSAD) that guides the development of the SOSA:
 - The primary purpose of the SSAD is to ensure that the SOSA analysis is consistent with how the security standards were calculated
 - The System Operator must use the assumptions set out in the SSAD, unless it considers that other assumptions would be more appropriate. It must set out its rationale for deviating from the SSAD if it chooses to do so.
- The standards were last updated in 2012 and are now out of date – they do not reflect many market developments over the last 14 years.
- We are now looking to update the security standards, which will also require changes to be made to the SSAD.

We will be consulting on changes to the Standards and SOSA shortly

- The Authority will publish a consultation paper in early October that is primarily intended to seek feedback on proposed changes to the underpinning methodology for the WCM and WEM.
- We are aiming to have the new standards in place for the 2028 SOSA – this is to enable good quality consultation on the proposed standards and to give sufficient time for System Operator implementation.

SECURITY STANDARDS

- Proposed changes for the 2028 SOSA:
 - WCM: Model new peak capacity as BESS, update shortage costs and separate reserves from surplus capacity.
 - NZ-WEM: Use LNG-backed thermal generation as the marginal firm-energy proxy; include contingent hydro storage and update shortage-cost assumptions.
 - SI-WEM: Remove as separate standard as unnecessary and adds SOSA analysis overhead.

PROPOSED CHANGES TO 2027 SOSA

- We are proposing two SSAD changes for the 2027 SOSA. These would require the System Operator to publish its methodology and assumptions for:
 - the future generation pipeline and
 - for demand forecast scenarios.
- There would also be a requirement to explain any material differences between SOSAs.
- As these two variables are strongly deterministic of margin assessments, they aim to increase transparency of the SOSA, and consistency between SOSAs.

Next Steps

- Consultation for six-weeks, starting in October
- Decision on changes to SSAD for 2027 SOSA by end of the year
- Code amendment consultation on revised security standards in early 2027
- Decision on new standards by April 2027
- New standards in place for 2028 SOSA.

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SECURITY AND
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Brief note on item 12 – EA Strategy

At the May SRC, Sarah Gillies noted the strategy refresh underway by the EA.

In the meantime that refresh has finished and been published, it sets 5 strategic priorities

1. Strengthening system security
2. Enabling flexibility
3. Strengthening the wholesale market
4. Being a strong responsive regulator
5. Supporting network efficiency

Iona Mylek, the EA's acting GM for strategy and corporate will join the SRC to introduce and discuss the new strategy and priorities.

Discussion points / question to presenters:

- The system is becoming more complex with genuinely novel challenges.
- Getting to grips with these and making sound decision needs to be prioritised, what is being deprioritised?
- What change does “being a strong responsive regulator” bring and how will you / stakeholders know if this is occurring.
- Traditionally siloed energy sectors are converging, policy / strategy / regulation need to reflect this.
- What is the EA doing to overcome institutional siloes, work as ‘one team’ with policy makers / regulators?

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ELECTRICITY AUTHORITY

OUR STRATEGY

13

10 JUNE

**ELECTRICITY
AUTHORITY**
TE MANA HIKO



OUR STRATEGIC FRAMEWORK

Our strategic framework sets out how we deliver on our statutory objectives and fulfil our role as New Zealand's electricity regulator

WHY

VISION

Reliable electricity at lowest cost for New Zealand consumers.

OUR STATUTORY OBJECTIVES

To promote competition in, reliable supply by, and the efficient operation of, the electricity industry for the long-term benefit of consumers. AND:

To protect the interests of domestic consumers and small business consumers in relation to the supply of electricity to those consumers.

HOW

We take a whole system view to carrying out our work, which we deliver through our regulatory functions.

We engage with agencies, industry, consumers and other stakeholders to perform our regulatory functions.

- We make and administer the Code governing the electricity industry and promote market development;
- monitor and enforce compliance;
- contract to operate the electricity system and markets;
- inform and educate; and
- protect the interests of small electricity consumers.

WHAT



Affordable - Electricity is generated and delivered at lowest cost over time for New Zealand consumers.

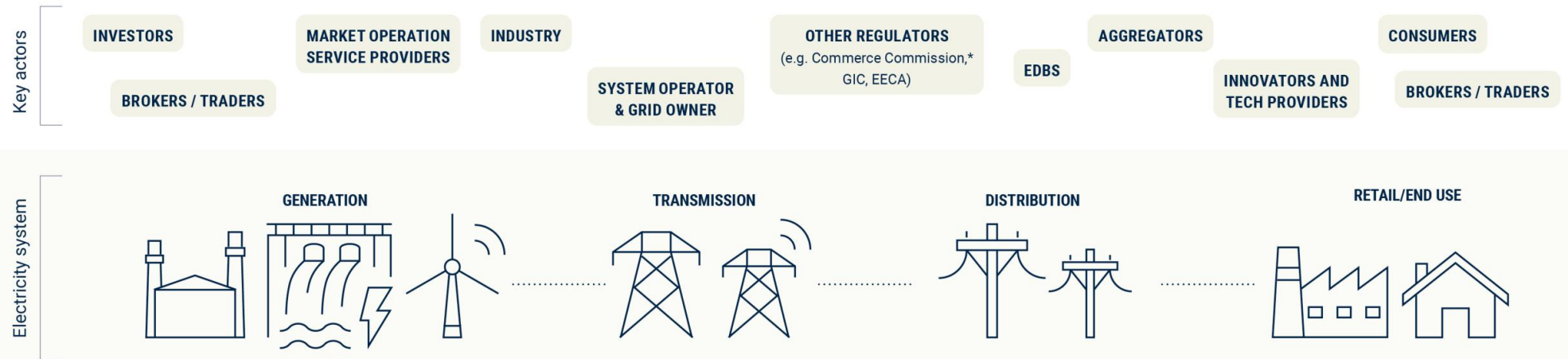


Reliable - Our electricity system is secure and resilient, meeting consumers' demands at an efficient level of reliability.

These outcomes are delivered by an efficient electricity market for the long-term benefit of consumers.

OUR ROLE

We regulate the electricity system to deliver reliable electricity at least cost for NZ consumers



Foundations

Effective wholesale market

There is public and political confidence in a competitive wholesale electricity market, with clear price signals and effective tools to manage risk and incentivise investment

Efficient transmission and distribution networks

Networks operate efficiently and reliably to deliver electricity at lowest overall cost to the system over time

Competitive retail market

Multiple retailers compete on price and service, giving consumers real choice and value and ensuring they fully benefit

Strong, responsive regulator

* The Commerce Commission regulates allowed price paths (regulated returns) that the Grid Owner and EDBs can charge for transmission and distribution networks; the Electricity Authority does not regulate this.

OUR CONTEXT

New Zealand's electricity system is changing rapidly, driving new strategic challenges

Key drivers of change in the electricity system...



The economics have changed

- Plunging cost of renewables and rising costs of gas and coal
- Accelerating decline of gas supplies
- Driving electrification of the economy
- Expected significant increase in demand for electricity over next 30 years

Investment at scale is required

- Huge investment in new generation and supply alternatives will be required (2.5x the rate achieved in the 30 years to 2020)
- Getting this major investment right - to deliver reliability at least cost to consumers

Technology and participation

- Technology enabling new players (including households) to provide generation, energy storage or demand response services.

...are transforming the system's physical dynamics



The system is becoming more weather-dependent

- Renewables make up a larger portion of generation
- Increasing sensitivity to short-duration weather events leading to spot price volatility and seasonal price variation
- Generation with storage and demand-side with flexibility become more important in balancing the system
- Transitional period of declining gas supply may put pressure on wholesale spot prices in periods of hydro shortages
- Gradual reduction in dry-year risk expected but it won't disappear. Batteries and peaking generation increasingly important in low-solar and low-wind periods.

The system is becoming more complex

- More participants in electricity system and types of devices to be coordinated by spot market.
- Cost pressure in transmission and distribution networks increasing.

OUR STRATEGIC PRIORITIES

Strengthening the foundations and addressing new strategic challenges

The power system can consistently match supply and demand and operate within safe limits with an increasing share of renewable, storage and distributed energy technologies.

Strengthening system security

Enabling flexibility

Flexible energy resources and services can firm renewables and balance the system so it delivers reliable electricity at lowest cost, including for peaks and longer time periods.

Accurate pricing, risk management tools and incentives, competition, and confidence in the market drive investment and put downward pressure on prices.

Strengthening the wholesale market

Vision:
Reliable electricity at lowest cost for New Zealand consumers.

Supporting network efficiency

Standardising pricing and policies across distribution networks and enabling non-network solutions to compete with traditional infrastructure, reducing overall system costs.

Being a strong, responsive regulator

Delivering our statutory objectives, including to protect consumers, through effective compliance, informed consumer choice, and data and digital technologies.

* These strategic priorities are intended to deliver on the Authority's Statement of Intent 2024-28 and Statement of Performance Expectations 2026/27.

OUR 2026/27 WORK PROGRAMME

Priority policy initiatives

Priority/initiative/project	Wholesale market	System security	Flexibility	Efficient networks	Strong regulator
Security & Resilience – Review of Part 8 of Code (common quality requirements)		✓			
Battery Energy Storage System (BESS) enhancements	✓	✓	✓		
Network connections pricing				✓	
Network connections – removing non-price barriers				✓	
Level playing field measures – implementation and compliance	✓		✓		
Wholesale products for long-duration firming investment	✓	✓	✓		
Develop standardised demand flexibility product	✓	✓	✓		
Transmission Pricing Methodology amendments and operational review				✓	
Implement market making updates, including for super-peak hedges	✓		✓		
Flexibility market and network visibility			✓	✓	
Distribution pricing to encourage demand-side flexibility			✓	✓	
System security review (hedge cover stress testing, security standards review, update VoLL/scarcity pricing)	✓	✓		✓	✓
Market Operation Service Providers (MOSP) long-term roadmap	✓	✓			✓
Consumer access and choice: consumer protections (prepay customers, medically dependent consumers and Consumer Care Obligations)					✓
Data programme (including supporting the Consumer Data Right for electricity, standardising electricity product and consumption data)					✓

* Note: This is an intended priority work programme, with any measures subject to consultation and Authority Board decisions. We will continue to assess expected costs and benefits of each measure and will adapt our work programme as needed to ensure it continues to focus on measures likely to deliver the greatest net benefits for consumers.

OUR 2026/27 WORK PROGRAMME

Non-discretionary and implementation work

Non-discretionary initiatives and implementation	Wholesale market	System security	Flexibility	Efficient networks	Strong regulator
Compliance and enforcement (deliver on legislative changes)	✓				✓
Dry-year regulatory framework (deliver on legislative changes)	✓	✓	✓		✓
Monitoring enhancements (deliver on legislative changes)	✓				✓
System Operator Service Provider Agreement (SOSPA) renewal					✓
Procurement of new MOSP contracts for 2027	✓	✓			✓
Refresh Authority's statutory interpretation document					✓
Implement and enhance new comparison and switching service					✓
Implement better bills (standardisation and best plan)					✓
Implement Emergency Reserve Scheme		✓	✓		
Implement peak injection rebates			✓	✓	
Implement time-of-use pricing requirements			✓		✓

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* Note: There are a number of non-discretionary initiatives which the Authority is or may be required to deliver in 2026/27 and future years alongside our priority work programme, many of which will also contribute to our strategic priorities. The full scope of these will be confirmed once legislation has passed, and may require additional resources and/or reprioritisation of our work programme to deliver. In addition, some initiatives from our 2025/26 work programme will require further implementation work in 2026/27.

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Brief note on item 13 – dry year regulatory framework

SECURITY AND
RELIABILITY COUNCIL

- MBIE recently [consulted](#) on new functions for the EA in relation to reliability obligations to manage dry year risk
- The consultation proposed the SRC have a role reviewing a new annual Security of Electricity Supply Report to the Minister for Energy
- The purpose of that report is:
To clearly inform the Government of the current and emerging risks to security of supply and whether the current regulatory settings are adequate to address the risks or if further enhancements are required
- The consultation did not elaborate on the SRC's potential role.
- This is a chance to discuss with the MBIE policy lead, John McCabe.

Discussion points / question to presenters:

- What role does the new report have?
- How does it interact with winter energy reliability obligations if at all?
- What would the nature of the SRC's review be?

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Strengthened dry-year regulatory framework

Security and Reliability Council

16 September 2026

New Zealand Government
Te Kāwanatanga o Aotearoa



Our system is changing but our regulatory settings have not kept pace

- The electricity market has **undergone significant changes** over the past decade with less thermal capacity, more renewables and tighter balance of supply and demand.
- Our market now faces different risks:
 - **New generation correlation risks:** the increasing proportion of renewable generation increases the risk to the system of a larger proportion of installed capacity not being available when needed.
 - **New operational constraints and risks:** with the declining proportion of thermal generation on the system, fast-start thermal has gained a greater importance to our system to meet peak demand.
 - **New 'fuel' availability risks:** the rapid decrease in our gas reserves has presented increased uncertainty to the fuel supply of remaining gas-fired plant and a barrier to investment in gas-fired, long-duration cover.
 - **Retiring plant risks:** potential uncertainty about the timing of significant plant refurbishment/retirement decisions (e.g., Genesis' Huntly plant).
- But our **regulatory settings have not kept pace.**



Objectives of the strengthened regulatory framework



- Cabinet has agreed measures to strengthen **roles**, **information** and **rules and tools** to identify and respond to evolving dry-year risk.
- We recently consulted on a two-layer reliability obligation to strengthen **incentives** for market participants to secure enough long-duration firm energy to efficiently get the electricity system through a dry winter.



Cabinet has agreed to a package of measures

MEASURES	EXPLANATION/NOTES	WHO TAKES ACTION
LEGISLATIVE CHANGES TO THE ELECTRICITY INDUSTRY ACT 2010		
ROLE	Give the EA an explicit function relating to dry-year risk	To place greater accountability on the EA and enable it to adapt more quickly to strengthen the framework to account for evolving risks Government to legislate EA to take action per its statutory objective and functions
INFORMATION	Require the EA to submit an annual Security of Electricity Supply Report to Minister for Energy	To clearly inform the Government of the current and emerging risks to security of supply and whether the current regulatory settings are adequate to address the risks or if further enhancements are required Government to legislate EA to seek review by Security and Reliability Council EA to publish annually
	Require the EA to regularly review foundational security of supply monitoring framework policies	EA to undertake regular reviews to security standards, Security Standards Assessment Document (SSAD), and Security of Supply Forecasting and Information Policy (SOSFIP) Government to legislate EA to review the security standards and SSAD at least every 5 years and the SOSFIP every 3 years

MEASURES	EXPLANATION/NOTES	WHO TAKES ACTION
A RELIABILITY OBLIGATION (The subject of this consultation)		
INCENTIVES	Introduce a new reliability obligation	A new Winter Energy Reliability Obligation (an <i>ex ante</i> obligation) covering: short-term fuel procurement, and long-term energy adequacy MBIE to consult on options

MEASURES	EXPLANATION/NOTES	WHO TAKES ACTION
AMENDMENTS TO THE 2024 GOVERNMENT POLICY STATEMENT ON ELECTRICITY		
INFORMATION	Information improvements	To ensure information provided to the market, as set out in the security of supply monitoring framework, changes dynamically with evolving security of supply risks EA to assess, and can decide to introduce in the Electricity Industry Participation Code 2010 (the Code)
	Publication of a new 'Electricity Security Opportunities Statement'	This will ensure information on security of supply shortfalls is accessible and show options for what investment would firm that shortfall Proposed by Frontier and agreed by Cabinet EA to set out requirements for an Electricity Security Opportunities Statement System Operator to publish annually
	New market participant disclosure obligations	Participants must disclose exit plans for firm generation (or substantive changes to entry plans), and substantive new load EA to assess, and can decide to introduce in Code
	More regular updates to Energy Demand and Generation Scenarios (EDGS)	To ensure MBIE produces more regular electricity demand and generation scenarios, including better future load forecasts MBIE to publish at least every 3 years
RULES AND TOOLS	Improvements to the stress testing regime	Stress testing (of participants' exposure to financial risk relating to dry-year exposure) to be improved, so each large customer, and the EA, is better aware ahead of time (and can choose to take action) EA to assess, and can decide to introduce in Code Participants required to undertake tests and report to EA
	Improvements to market liquidity	Assess liquidity in hedge markets and the effectiveness of market-making obligations. Consider strengthening or extending market-making obligations where needed EA to assess, and can decide to introduce in Code
	New standardised risk management products	Introduce new standardised long-duration cover contracts to enable customers to manage risk. These will be similar to the standardised super-peak contracts currently available, but will cover longer durations EA to assess, and can decide to introduce in Code



The Winter Energy Reliability Obligation (*subject to consultation*)

A long-term generation investment-focused obligation

&

A short-term fuel-focused obligation

Objective: to provide revenue certainty that encourages investment before shortages occur	
Trigger	Shortfall identified by the SOSA 3 – 5 years out
Obligated Entities	Large wholesale purchasers (gentailers and NZAS)
Obligation Allocation	Size of the shortfall apportioned based on share of expected winter demand
Qualifying cover	New generation, additional contracting, demand response
Compliance	Assessed by Electricity Authority 1-year ahead to verify cover

Objective: to ensure the system has sufficient fuel going into winter	
Trigger	Hydro storage projected to cross Watch Curve within 90 days
Obligated Entities	Large generators (gentailers)
Obligation Allocation	Cover for own load and contractual commitments
Qualifying cover	Additional fuel or demand response
Compliance	Assessed by Electricity Authority within winter period



Next steps

- Legislative measures will be progressed through the Electricity Industry Amendment Bill
- Amendments to the Government Policy Statement on Electricity have already been made. The updated GPS came into effect from 9 June 2026
- A consultation on the Winter Energy Reliability Obligation closed on 21 July 2026. MBIE has analysed submission and is advising Ministers on next steps.



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SECURITY AND
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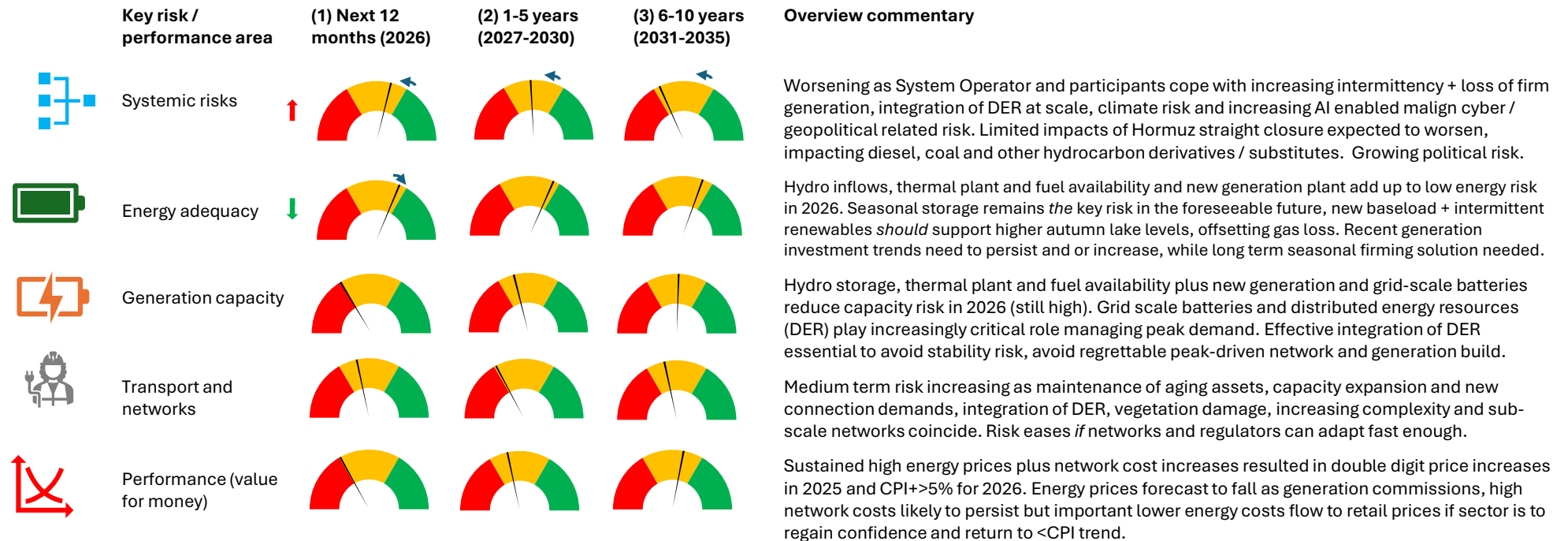
Wrap Session – Item 11, 12, 13: Annual Security of Supply Update EA Strategy Dry-year regulatory framework

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The purpose of the SRC's 'risk and performance radar' is a point in time snapshot of high-level view of risks to electricity system security, reliability and performance. It is used by the SRC to inform its own focus and priorities.

The risk and performance radar is the SRC's aggregated view in five key areas across three time horizons. It reflects SRC members own knowledge and insight and that shared by various experts who meet with the SRC each quarter.



The SRC is limited in its ability to act or advise on real-time or very short term matters (where a risk has or is becoming an issue) but can influence policy making and sector risk management through its advice and actions.

In particular, the SRC has a system wide and long-term perspective so can identify potential blind-spots, acting as a 'canary in the coal mine'. In this capacity the SRC calls attention to risks (and opportunities) that may fall through the cracks or drift, increasing the likelihood of future harm to electricity consumers.

The table below is not intended to capture every risk facing the electricity system and is used to inform SRC focus rather than as a corporate like risk-register. It focused on risks with potential system level impacts to the security, reliability or performance of the electricity system.

Time horizons
1 = with 1 year
2 = 1 to 5 years
3 = 6 to 10 years

**SECURITY AND
RELIABILITY
COUNCIL**

ID	Risk description	Consequence	Likelihood	Time horizon	Mitigations	SRC actions
1	Decreasing gas production reduces fuel for peaking and seasonal firming	Capacity + energy shortage, high prices	High	2, 3	Drilling, gas conversion, LNG, batteries, coal, hydro mgmt.	Deep-dive into medium-long term supply demand balance risks, options
2	Politicisation / policy / regulatory uncertainty delays or misdirects investment	Chills and or misdirects investment (capital and focus), impacts SOS and cost	High	Persistent	Clear policy and priorities, national multi-fuel energy strategy. Lower forward prices need to show in bills.	Continue calls for focus on important over urgent (latest shiny object tendency)
3	DER growth not well integrated into system / supported by clear rules	Increases system risk and cost / waste, lost opportunities	Medium	2,3	Clear rules and standards, effective integration into network / system ops	Continue calls for action on rules and standards, risk mgmt. as DER scales
4	Increasing severity of weather events / climate related hazards (fire, flood)	Material, worsening. Particular impact on networks	High	Persistent		Deep-dive into climate risks / mitigations for key system elements
5	Unfit for purpose tree regulations	Unnecessarily high loss of service, restoration cost	High	Persistent	Regulatory change	Maintain pressure for reform
6	Dry sequence / extended / back-to-back dry sequences	Energy + capacity shortage, very high prices, voluntary and involuntary rationing	On average 1 in 4 years	Persistent	Contracting firm thermal plant and fuel, grow generation fleet, hydro flexibility	
7	Intermittent generation not properly integrated into system	Grid stability, peak load and seasonal energy risk	High	Persistent	Adapt Code, SO tools and processes, address ahead of time	Deep dive in May 2026
8	Consumer dissatisfaction with system performance	Knee-jerk political action impacts investment	High	1		
9	Cyber attack, physical attack, geopolitical risks impact global supply chains	Asset damage, loss of supply, potential blackout		Persistent, escalating		
10	System capacity constrains demand / imperils electrification	Loss of economic activity, delayed decarbonisation	High	2,3	Strategic outlook informs investment needs and capability requirements	Strategy focus for September 2026
11	Aging assets, aging workforce	Increased risk of failure, delay to restoration	High	Persistent	Asset owner performance obligations, contract to support Rankines	Review periodically

8/09/2026

Security and Reliability Council Risk Radar
IN-CONFIDENCE: ORGANISATION

Purpose and Scope of Q4 Meeting and Forward Work plan

1. The Purpose and scope of Q4 Meeting

- 1.1.1 The purpose of this paper is to set the focus and agenda for Quarter 4 (Q4) on 18 November 2026.
- 1.1.2 Ordinarily, the secretary would put forward topics for the next meeting. However, we propose discussing the Q4 meeting agenda alongside themes for the 2027 meetings in light of the strategy and risk discussion at this meeting.
- 1.1.3 In considering topics for the Q4 meeting and 2027 members should bear in mind:
 - a. SRC's statutory purpose : independent advice on the performance of the electricity system and SO, matters affecting security and reliability.
 - b. Strategic objectives: make a positive difference to outcomes for electricity users and be the “canary in the coal mine” so future challenges are addressed in time to achieve the best possible outcome for consumers
 - c. Strategy: take a whole of system view, including adjacent industries and provide insightful, direct and prescient advice

- d. Guidance or requests from the Authority, specific questions, issues, concerns members would like addressed

1.1.4 Other considerations influencing the agenda ...

- a. We had agreed to have an update from the System Operator on to work being done on grid stability and the Future Security and Resilience work programme.
- b. The Authority have requested to present the draft for the independent review of the System Operator

1.2 Questions for the SRC to consider

- 1.2.1 What are the topics of most importance to discuss for the upcoming meetings?

2. Forward Work Programme

- 2.1.1 Appendix A to this paper includes the “Looking ahead section” from the Year in Review report.
- 2.1.2 The typical Appendix A of the rolling forward outlook on the year has been omitted from this quarter's paper, as we expect that discussion today will shape the upcoming work programme and topics seen as highest priority.
- 2.1.3 Appendix B lists potential future themes and topics, unrefined, for further review and discussion. Members are invited to provide feedback to the secretary ‘offline’.

2.1.4 Appendix C sets out the SRC's overarching themes. There are unchanged and provided for reference.

2.2 2027 Meeting Dates

2.2.1 Q1 Meeting – Option: February

- a. It was discussed as an option of the SRC is hosted in Auckland for SRC Q1 2027. This would be combined with a visit to systemically important users or generators.

2.2.2 Q2 Meeting – Option: May

2.2.3 Q3 Meeting – Option: August

- a. This is typically when meeting where we have the annual discussion with the Authority board. The meeting date would be organised around an invite from the board.

2.2.4 Q4 Meeting – Option: November

Appendix A: Year in Review report 'Looking Ahead' section

The Council will continue to maintain its proactive stance, adapting its focus as the energy landscape evolves to ensure it is identifying and advising on the most significant emerging risks to the security and reliability of New Zealand's power system.

Looking to FY27, the Council will again focus on persistent challenges and emerging risks and opportunities. These are expected to include:

- Maintaining a close focus on the near-term security of supply situation, System Operator performance and its security of supply assessments
 - Understanding the strategic implications of gas decline and geopolitical developments (such as the Hormuz closure) on energy policy, and the electricity system
 - Assessing sector readiness to meet expected demand growth through the 2030s – generation, networks, system operations – as the sector evolves, specifically:
 - o scale integration of solar and an increasingly intermittent and non-synchronous generation mix.
 - a more nuanced and intelligent understanding of how the changing demand / supply profiles affects energy and capacity risk and specifically over seasons o leveraging
- the potential of DER to supplement (and reduce the cost of) networks and grid delivered energy
- seasonal storage and dry-year cover in a low thermal electricity system
 - Tracking developments to adjust to falling natural gas supply, including LNG imports and greater transparency of gas production information.
- Identifying and advising on issues that constrain progress and improving information available to the sector, regulator and policy makers, for example:
 - time and cost to connect to distribution and transmission networks for new generation and offtake
 - market, regulatory and other barriers to the development of generation of the type and scale required to maintain security of supply and competitively priced energy
 - barriers to and enablers of secure integration and system-value maximising utilisation of DER
 - policy and regulatory cohesion across historically discrete but increasingly interdependent and 'converging' electricity, gas and liquid fuels system.

Appendix B: Other Previously Proposed themes and topics for – 2026 – for further discussion

The potential themes and topics below are included here again for SRC consideration. Some have been discussed already. Members are asked to review and add / remove items:

- Cascade events – topics could include system operator principal performance obligations, geomagnetic storm resilience and, potentially, future topics, as identified from the May meeting's focus on asset management (eg insufficient fuel sources, unplanned outages)
- Artificial intelligence – the risks and benefits, including learnings from overseas
- Input shocks and potential for disruption - have we anticipated potential disruptors to how we build, manage and operate the power system (capital, materials, labour...) and what are we doing about it?
 - Presentation from a disruption expert or futurist
 - Supply chain diversification and management of electrical input resource
 - Collaboration across the sector and more broadly to prepare and remain resilient
 - Water - its future role in the power system – consenting, conservation and future competing needs
- Islanded networks – the extent to which EVs and V2G power flows can support resilience in contingent events
- Inertia markets – the experience overseas; the New Zealand context and how they may support greater system stability
- A presentation from the Authority on relevant security and reliability aspects of Real time Pricing (RTP)
- An update from the Authority on progress with certain workstreams relevant to the SRC's function
- Update from MBIE on progress with on overall strategy for the sector.
- Meeting locational capacity constraints with demand response – lack of signalling of scarcity price at some GXPs
- Vehicle to grid and the practical realisation of its potential in the next decade Future technology potential – what are manufacturer's doing, comparator technologies, warranty issues
- Understand security of supply risks from the concentration of wind, and solar, generation in certain locations
- How the sector understands where the single points of failure occur and if there is a sector view of this
- Network reliability and performance, including the Commerce Commission, ENA
- An update from ENA Chair Tracey Kai on priorities and learnings over the past year
- Technology and information security, including disruptive events, solar flares
- Fires and public safety

Appendix C: Overarching themes to ensure reliable and secure energy for consumers

Figure1: Overarching themes to ensure reliable and secure energy for consumers

