

13 June 2023

Dr Nicki Crauford
Electricity Authority Chair
Electricity Authority
PO Box 10041
Wellington 6143

Dear Nicki,

Advice resulting from the 1 June 2023 meeting of the Security and Reliability Council

The Security and Reliability Council (SRC) is tasked with providing the Electricity Authority (Authority) with independent advice on the performance of the electricity system and the system operator, and reliability of supply issues.

At the June SRC meeting

The theme for the June SRC meeting was *Industry Associations and Groups* and their role in supporting security and reliability in the power system. To support this theme, the SRC received presentations from:

- Electricity Networks Aotearoa (ENA - formerly the Electricity Networks' Association),
- The Electricity Engineers' Association, (EEA)
- The Northern Energy Group (NEG), comprising 6 distribution companies operating in the upper North Island,
- The Electricity Retailers' Association (ERANZ),
- The Major Electricity Users' Group (MEUG), and
- The Consumer Advocacy Council (CAC), the independent advocacy group for residential and small business consumers,

The SRC also heard from the New Zealand Infrastructure Commission on network infrastructure resilience in light of recent Cyclone Gabrielle devastation. The SRC considered the consultation version of the system operator's annual *security of supply assessment* (SOSA).

This letter is the SRC's advice arising from the meeting.

Network infrastructure resilience

A presentation from the New Zealand Infrastructure Commission highlighted the difficulty of the task ahead to ensure network reliability and resilience, while maintaining an aspiration of 100% renewable electricity by 2030.

A key element is the current and future workforce challenge; retaining existing personnel, capturing, and passing on their knowledge and recruiting for future needs. This is a concern noted in most of the industry association presentations, supported by learnings from overseas. For example, from Australia where between 250k-400k people are needed to achieve Australia's 'green generation' aspirations. The loss of New Zealand staff to Australia is already noticeable, and there is significant risk many more skilled New Zealanders could leave, or skilled immigrants go to Australia instead of New Zealand.

Another strong infrastructure message was the need to avoid siloed thinking, as resilience requires a system of interdependent parts working efficiently together. On this point, it was positive that presentations from industry associations and groups indicated a strong willingness to collaborate and share information to support the sector's aims, although little has been done to date. The Authority, and other agencies should leverage this support early and include input from them in current and future workstreams where possible.

There were differing views, as to what network resilience is achievable by 2025 (when the SOSA – covered in more detail below - indicates capacity margins may be below the standard if demand grows faster than the system operator's reference case). The indication from an infrastructure perspective is that much of the heavy lifting needs to come from demand response and flexibility services; in short, a need to focus on increasing dispatchable capacity more urgently than energy, with both required over the medium and long term to ensure resilience.

While the SRC agrees there is a clear need to focus on demand response and flexibility services to encourage their availability, there is significant doubt such efforts will be sufficient if there is investment uncertainty around the short-term future of thermal generation for peaking and firming.

The SRC considers the market's ability to signal the need for capacity needs to be strengthened. The SRC raised some of these and other points in its 6 April letter of advice to the Authority on the theme of *demand response*.

The SRC was again impressed with the Infrastructure Commission's approach and strongly encourages the Authority to regularly engage with them to share information, data and insights.

Industry Associations and Groups

The purpose of this meeting's main theme was to provide the SRC with greater understanding of each association's or group's role in assisting their members to provide greater security and reliability. It also gave insight into areas of aligned focus and where there may be gaps, or a lack of understanding, in the role these organisations perform.

The approach being taken by the NEG and EEA particularly stood out positively in terms of collaboration. These included supporting asset management and providing guidelines on power quality and DR connection (EEA) and using outreach programmes and technical advisory groups to obtain advice and recommend improvements (NEG).

The SRC strongly supports these initiatives to share information, knowledge and expertise, to provide a more holistic view and minimise the likelihood of siloed thinking. The EEA provides a good example of an agency doing this well. They are also an example of an agency whose work programme and approach belies its size and available resources.

Conversely, the SRC has ongoing concerns about the approach being taken by parts of the industry on cyber security. Some presenters indicated they are comfortable for other

agencies to lead this work, rather than collaborating proactively for their members to surface issues and ensure a sector-wide uplift in knowledge and preparedness.

The ENA, for example, included cyber security in their 2019 Network Transformation Roadmap and 2021 update (specifically in relation to autonomous distributed energy resources) but stated to the SRC that cyber security is not a focus for them as it is managed through other forums. The SRC believe cyber security is an example of where there is significant disparity in capability among distribution businesses, as demonstrated by results of anonymised surveys the SRC conducted in 2020 and 2021.

The SRC encourages the new ENA Chief Executive, when they take up the role, to take the ENA on a path of collaboration and information sharing and aiming for continuous improvement in cyber preparedness where possible. This both supports their members and consumers generally.

The SRC acknowledges cyber security is not a core function of the Authority. However, as regulator, it can actively promote risk awareness and best practice in its workstreams and in consultation with industry and consumers. The SRC has included *technology and information security* on its forward work programme later this year. If the Authority has particular views on how the SRC can support cyber security best practice, the SRC would welcome this in the Authority's response.

Consumer Advocacy Council (CAC)

The CAC are an independent advisor to the government on consumer issues. The SRC included the CAC for this meeting, as an agency able to engage with consumers and share their perspective with the sector to include in planning to meet future power system needs.

The SRC invited the CAC to attend and share their understanding of consumer expectations and views on paying for higher levels of reliability. The CAC were also asked what consumers see as risk areas.

The CAC's work indicates a relatively high level of satisfaction with the reliability of their power supply (80%) but a low level of trust in the sector generally (47%). This is especially concerning, given indications consumers will face increased costs in the short to medium term through electrification.

While energy affordability is not a function of the SRC, the SRC believes the sector needs to think about how industry can support the work of the CAC. A key element is the need to be cognisant of the impact on price of achieving certain levels of security and reliability, something that impacts consumers differently and with potential to create significant disparity in people's lives.

Energy, of which electricity is an increasingly critical element, is a lifeline utility for New Zealanders. One way the industry can provide support is to raise awareness and incentives for non-network solutions, particularly among distribution businesses where the historical approach has largely been to focus on just in time investment and building more to ensure security and reliability.

A role for the Authority is to consider what information it, and the broader sector, can make available to the CAC and other community agencies in plain language, to increase consumer understanding of the complex sector, so consumers are better able to respond to signals and make informed decisions that both supports security and reliability and benefits them.

The CAC discussion noted concerns from consumers they were feeling pressured to support security and reliability through recent advertising around saving power and lowering bills. When combined with the recent Transpower statement 'winter might be tight', this is having a detrimental effect on consumer confidence in the power system. The Authority may want to consider its role in ensuring consistent communications across the sector to minimise misunderstanding.

System operator's annual security of supply assessment (SOSA)

The SRC considers this year's SOSA again provides a serious warning to the industry and regulators there are likely capacity issues in the short to medium term that need to be addressed.

Key insights from the system operator's presentation include:

Inputs – Demand and supply are growing

1. Expectations of demand growth are increasing
2. The supply pipeline is being developed and is largely renewable and intermittent

Energy – Development of the pipeline needed

1. The current supply pipeline, if developed in time, is sufficient to maintain margins
2. Development of the current pipeline is needed under nearly all demand sensitivities

Capacity – Development of flexible energy provision and demand response needed with more urgency than energy

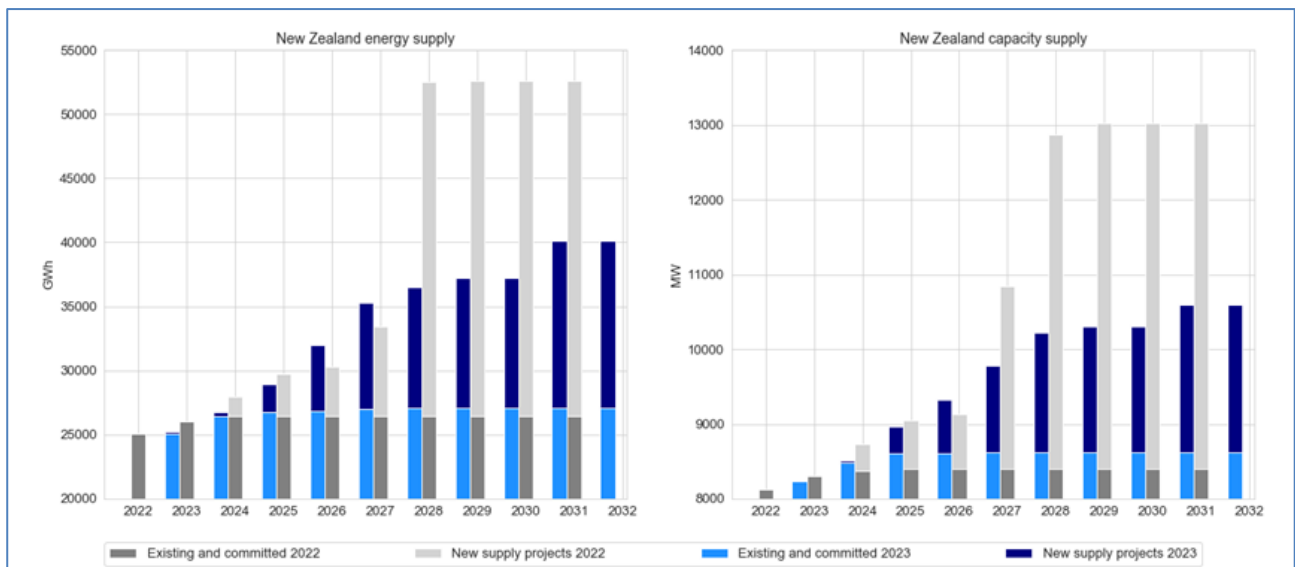
1. Margins drop below the standards by 2026; projects need to be developed beyond those with consent. The SRC noted the reference case and many of the sensitivities includes consented fast-start thermal generation that is unlikely to be built due to uncertainty about return on investment. There are contradictory messages that promote this uncertainty – on one hand the 100% renewable aspiration and gas reduction by 2030 target, and on the other hand the clear indication that fast start peaking will be needed until 2035 until sufficient renewable overbuild to cover the capacity peaks is delivered
2. High levels of intermittent generation on the system will drive more periods with low margins
3. Non-generation resources can contribute to the supply pipeline (e.g. batteries or demand response) and can come online quickly but are not included in the assessments as there is little currently available or announced, likely due to the commercial sensitivity of innovative products coming to market.

The strong indication from this is an ongoing reliance on retaining thermal generation, including by providing accurate and timely market signals to ensure demand is met (until new renewable projects are consented and developed). Gas flexibility becomes increasingly critical as thermal generation required by the market becomes less predictable and current gas supply declines. Other flexible resources, such as batteries and demand response are also needed in the short term, ie before 2025.

This year's SOSA includes a sensitivity around reduced thermal availability, given indications some proposed peaking generation (such as Nova's proposed Otorohanga gas turbine plant) will not be built. This sensitivity has potential to breach the capacity standard by as early as next year.

Another sensitivity looks at a scenario where there is less operational flexibility, essentially where the market does not coordinate resources optimally. The system operator notes addressing this requires more investment in gas peakers, batteries or demand response.

Given these concerns, it is positive to hear of the significant interest in new projects. However, the SRC is concerned these will not deliver in the timeframes necessary, as noted in Transpower's modelling below:



Source: Transpower

With 98% of unconsented projects being for intermittent generation (wind and solar) the capacity/firming challenge remains. It should therefore be of concern there is an insufficient pipeline of renewable supply projects to provide the additional firming capacity required to maintain the North Island Winter Capacity Margin (NI-WCM) at the security standard for any of the five thermal scenarios in the system operator's modelling.

Recent enhancements, for example through implementation of RTP and information provision on residual margins and wind forecasting, have given the industry clearer signals and we are seeing innovation starting to come to market. It is important to ensure this momentum is maintained while looking at these other issues.

The SRC encourages the Authority to consider what further mitigation is needed to address forecast breaches of the security standard. This could include, for example, investigation into whether further enhancement to payment mechanisms for dispatchable demand/difference bids would provide greater certainty to providers of those products to bring them to market.

The Authority should also be robust in its advice to government on these points, as the energy strategy is being developed and finalised.

Electricity (Hazards from Trees) Regulations 2003

The SRC thanks the Authority for acknowledging its advice on the tree regulations review and writing to MBIE in support of this very important work.

The SRC was updated on progress MBIE is making with the tree regulations review. The SRC was disappointed to hear detailed workstreams will only be announced after the election, indicating any meaningful changes are still some way off. The SRC has just

heard, for example, that 40% of outages in the last year were caused by vegetation and of those, 98% involved vegetation outside the regulated zone. These are sobering statistics and indicate there is ongoing risk of vegetation-related outages, as climate change brings more wind and higher windspeeds.

The SRC's next meeting

The theme for the SRC's Q3 (August) meeting for 2023 is *workforce management*. Given the need for a larger workforce as asset maintenance and replacement increases and electrification drives more investment, the SRC chose this theme to enable deeper consideration of issues such as:

- An aging workforce,
- The need for knowledge transfer to reduce knowledge loss and ensure appropriate levels of business continuity and understanding of risk,
- Younger industry talent moving offshore to pursue higher salaries and careers,
- The need to encourage diversity to ensure an appropriate and more representative mix of future industry talent.

The SRC will also hold its annual facilitated risk and strategy session, including a detailed environmental scan, review of its strategic themes and risk radar, and refining its forward work programme to best support its advice to the Authority Board.

SRC members are also looking forward to meeting with the Authority Board in August. This will be the first for new members Rebecca Larking and Allan Miller.

Yours sincerely,



Hon Heather Roy
Chair of the SRC

cc: SRC members, Grant Benvenuti and James Blake-Palmer (Authority)

4 August 2023

Hon Heather Roy
Chair
Security and Reliability Council (SRC)

By email: heatherjroy@gmail.com

Dear Heather,

Response to your letter of 13 June 2023

Thank you for your letter of 13 June 2023 that gives the SRC's advice arising from its 1 June 2023 meeting. While I wasn't at the meeting, I am aware the Electricity Authority Board (Authority Board) considered all the advice at its 20 June 2023 meeting and has asked me to write to you with their response.

As a general comment, and as the incoming chair, I want to say how much I am looking forward to working with you and the SRC and how much your work and input is valued by the Electricity Authority.

Network infrastructure resilience

The Authority Board appreciates the SRC's ongoing engagement with Te Waihanga, the New Zealand Infrastructure Commission. Authority staff meet regularly with the Commission to discuss areas of mutual interest and issues impacting the electricity sector and your comments and inquiry are an important part of those discussions.

The workforce management challenge is of particular concern to the Authority Board. As you will be well aware, the concerns around an aging workforce have combined with supply chain management and immigration issues arising from Covid-19. These have impacted global infrastructure workforce needs, particularly in the electricity sector where personnel are needed to support the transition to a low emissions, high wage economy.

The solutions to this issue is something that I am keen to discuss with the Board more fully and will be keen to get your views.

The Authority Board notes the previous work by both the Electrical Workers and Social Workers Registration Boards on workforce training and programmes to address critical worker shortages. There is a need to also involve Immigration New Zealand in the discussion to ensure there are appropriate settings and policies in place to support immigration at the level and in the areas most needed.

I believe that the Authority Board fully supports initiatives to increase understanding of workforce issues and how to address them. I am keen to discuss this more fully and will be keen to get your views, particularly following the SRC workforce management session at your August meeting.

Industry Associations and Groups

The Authority Board acknowledges the SRC's inclusion of this topic on its work programme. Improving information and understanding across our electricity ecosystem is a real priority and we are grateful for the work that you are doing in this area. It is so helpful to have a greater understanding of the roles these organisations perform, what they see as priority areas for their members, and where they may rely on other forums for support.

It is positive to hear of organisations able and willing to share information, knowledge, and expertise, given the obvious benefits this can yield for New Zealanders. This is something that we should all expect to build on. Senior Authority staff met recently with representatives from the Northern Energy Group, for example, and valued the time they took to engage on issues affecting the sector. Authority staff continue to engage meaningfully with the other groups, for example the Electricity Engineers' Association, in the work reviewing regulatory settings for distributors, particularly on inverter and EV charging standards.

As the SRC has noted, an area that could benefit from greater collaboration between the various associations, groups and their members is cyber security. The Authority Board is grateful to the SRC for the work that you are doing to look at technology and information security for the October meeting and would like to better understand participant concerns and current approaches to cyber security and what support is needed to minimise risk across the sector.

This is an important issue for our sector and for Aotearoa New Zealand and we are looking forward to engaging on your views on how to drive sector-wide initiatives and support those with fewer resources.

Consumer Advocacy Council

The Consumer Advocacy Council (CAC) has an important role as an independent advocate for New Zealand electricity consumers and the Authority has been clear that it is seeking to support a strong consumer voice in its considerations, not only as part of its additional objective (to support consumers and small businesses) - but because it is the right thing to do.

We are continuing an ongoing and constructive engagement between CAC and Authority staff on the consumer care guidelines for retailers, as well as ongoing cooperation around key consumer data/ issues.

The Board is keen to collect and review consumer-centric data. The Board agrees that the survey-generated feedback from the CAC on sector trust is sobering and has taken on board CAC's perspectives on the issues at play.

The Authority was also concerned to hear the CAC's survey feedback suggests consumers are feeling pressured to support security and reliability by saving power. The Authority Board acknowledges inconsistent communications from participants and regulators have potential negatively affect consumer trust and confidence in the sector. The Authority has confidence in the accuracy and tone of its communications but acknowledges that there are always areas that we can improve on and continue to welcome feedback on where we can improve. Our Authority staff will also pass on the SRC's feedback to Transpower, as system operator.

A positive from the survey was the high levels of consumer satisfaction with their level of reliability and we feel this reflects the significant work going into reliability across the sector, particularly by distributors.

We would like to assure you that there is ongoing and constructive engagement between CAC and Authority staff on the consumer care guidelines for retailers, as well as ongoing cooperation around key consumer data/ issues.

Following SRC's notes, Authority staff will approach the CAC through existing channels and discuss what available information would best support its work. This could include, for example, aggregated information on disconnections, information about non-network solutions and information to support greater consumer understanding about how the industry works. There is also potential for collaboration here with the Commerce Commission through its management of information disclosure by distributors.

System operator's annual security of supply assessment (SOSA)

The Authority appreciates the SRC's annual review of the SOSA and the independent lens it offers to this important assessment of generation investment to provide energy and capacity.

The Authority is critically aware of the impact uncertainty in policy can have on investment and the SRC's key insights and previous advice on this point continue to be an important input into our thinking. The Authority notes in its recently released paper on ensuring an orderly thermal transmission that thermal (especially peaking generation) will continue to be needed until the mid-2030s.

The Authority anticipates the government's impending consultation on the cohesive energy strategy will provide much needed clarity about the path forward and will be encouraging all stakeholders to engage meaningfully during the upcoming consultation, so the government has full understanding of views on the proposed course.

The Authority will continue to closely monitor progress on its winter 2023 initiatives and remains open to further appropriate interventions to ensure the risk of outages is minimised and the market continues to send the right investment signals to support innovation and its momentum throughout the transition.

The Authority has three workstreams scheduled for the coming year to investigate and promote demand side and distributed energy resource participation in the wholesale market. Firstly, the Authority will review the initiatives put in place by the winter 2023 workstream. This review will confirm which initiatives already in place will continue as permanent additions to the wholesale market and whether any further enhancements are required. This review is particularly important with respect to the option to 'Clarify the availability and use of discretionary demand control' that went live at the end of May. This implementation not only improves information provision to the system operator and market participants during potential shortfall events, but also demonstrates the potential for demand response in the wholesale market.

The Authority will also investigate the potential design considerations for a peak-firming ancillary service. Design considerations at this early stage are that the ancillary service should be integrated with the wholesale market and should allow for both generation and demand response/energy storage systems to participate. Key questions remain as to how the purchase quantity should be determined, what the market trigger for using the ancillary service is and cost allocation. A fully integrated solution is expected to be a multi-year implementation project, however, the Authority is also considering the possible need for an interim measure that bridges the gap between the current discretionary demand visibility implementation and a future integrated ancillary service.

Alongside the investigation and development work, the Authority is continuing to promote the use of the enhanced dispatchable demand and dispatch notification products that were implemented as a part of the real-time pricing project in April 2023. Engagement with retailers, aggregators and major industrial consumers is ongoing.

Electricity (Hazards from Trees) Regulations 2003

The Authority acknowledges both the SRC's and the broader sector's concerns over the current regulations and time elapsed since the review was noted in the government's 2015

infrastructure plan and formally announced in 2019. The Authority notes this review is now well under way and shares the SRC perspective as it looks forward to the improved security and resilience from the long-awaited revised regulations.

The SRC's next meeting

The Authority looks forward to hearing outcomes from the SRC's annual risk and strategy session. The SRC's forward work programme is a vital part of providing quality advice to the Authority on relevant security and reliability issues impacting the sector. We are grateful to you as chair and all the SRC members for their work.

The Authority supports the SRC's decision to focus on workforce management at its next meeting and is keen to hear the outcome. This issue has been talked about by the sector often over the years and is a strategic priority for Transpower. However, while there have been series of programmes, training and workshops, there are still concerns in this area, so the SRCs update of the outlook is welcomed.

The Authority considers Immigration New Zealand is a key stakeholder in this work, as it is not just an engineering issue. The focus needs to include the range of critical support roles, such as trades and labourers and agencies supporting diversity and inclusion.

The Authority Board is looking forward to its annual meeting with the SRC and meeting the new SRC members. As incoming chair, I would also welcome the opportunity to sit in on part of all of any upcoming SRC meeting that you believe would be valuable? The SRC is a vital part of our ecosystem and are doing important work for our sector.

Yours sincerely,



Anna Kominik
Chair
Electricity Authority