

## REGISTER OF TOP SECURITY AND RELIABILITY RISKS

## SECURITY AND RELIABILITY COUNCIL

This paper is to help the SRC brainstorm about electricity industry risks with the objective of ensuring that they spend their time dealing with the most consequential matters that could manifest over a mix of timeframes.

**Note:** This paper has been prepared for the purpose of the Security and Reliability Council (SRC). Content should not be interpreted as representing the views or policy of the Electricity Authority.

# Register of top security and reliability risks

## 1. Purpose and background

- 1.1. This paper presents the latest version of the SRC's register of top security and reliability risks (Table 1). The register supports the SRC to triage their time and attention in a risk-based way.
- 1.2. Risks are sorted into four categories:
  - a) risks that could manifest within one year.
  - b) risks that could manifest within five years.
  - c) risks that could manifest in more than five years.
  - d) persistent risks that could manifest at any time.
- 1.3. Within each category, risks are ordered by the SRC secretariat's rough estimation of consequence and likelihood.

## 2. Changes since the previous version

- 2.1 There have been a few changes from the 21 October 2022 meeting, as tracked.
- 2.2 For the March 2022 meeting:
  - a) extend S1 to include the transition from elimination to "living with COVID" and the potential impact on critical industry plant such as generating stations and control rooms; and the ability to get enough critical expertise into the country with the aggregate impacts of COVID, a growing economy and big investments.
  - b) add a new L1: the risk of a growing disconnect between energy and capacity issues causing regular disruption and becoming critical.
  - c) change L4 to read "the increasing dependence on AI and automation reduces the industry's ability to deal with unusual and unexpected critical issues (in real time or to quickly recover)"
  - d) add a new L – "the risk of stranded assets increasing the cost for those left using them (the "death spiral") becoming increasingly apparent
  - e) extend L8 to include the transition to 100% renewables
- 2.3 Additions to the register are marked in red and removals with ~~strikethrough~~.

## 3. Questions for the SRC to consider

- 3.1 The SRC may wish to consider the following questions.

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| Q1. | What content changes would the SRC like made to this risk register for the next meeting?       |
| Q2. | What further information, if any, does the SRC wish to have provided to it by the secretariat? |
| Q3. | What advice, if any, does the SRC wish to provide to the Authority?                            |

**Table 1: Top security and reliability risks**

| <b>Short term</b><br>Within 1 year   | <b>Medium term</b><br>Within 5 years  | <b>Long term</b><br>More than 5 years   | <b>Persistent</b><br>Could arise at any time  |
|--|---|---|---|
| <p>S1: COVID-19 coronavirus harms industry's:</p> <ul style="list-style-type: none"> <li>a) personnel capability/travel.</li> <li>b) availability and increased prices of imported goods/services.</li> <li>c) general level of preparedness and responsiveness for managing incidents, <b>with the transition from elimination to "living with COVID" and the potential impact on critical industry plant such as generating stations and control rooms; and the ability to get enough critical expertise into the country with the aggregate impacts of COVID, a growing economy and big investments.</b></li> </ul> | <p>M1: Market response to significant industrial demand reductions.</p>           | <p><b>L1: the risk of a growing disconnect between energy and capacity issues causing regular disruption and becoming critical.</b></p> | <p>P1: Cyber-attack damages power system assets and/or cuts supply, for example Waikato DHB and Colonial Pipeline (both 2021).</p>                        |
| <p>S2: Risk of lack of preparedness for a second wave of COVID-19 causing further economic hardship (with consequent impact on potential reduction in maintenance).</p>  | <p>M2: Review of 'Tree Regs' fails to capture potential to boost reliability.</p> |   | <p>P2: Gas supply running down (in part due to exploration uncertainty) reduces generation adequacy and availability</p> <p>P2: Physical attack (war,</p> |

| Short term<br>Within 1 year   | Medium term<br>Within 5 years   | Long term<br>More than 5 years   | Persistent<br>Could arise at any time   |
|---|---|--|---|
|   |   |  | terrorism, sabotage)<br>damages power system assets and/or cuts supply.   |
| S3: Generator investor incentives weakened due to uncertainty, for example, arising from Tiwai closure and central government investigation into solutions to dry-year risk such as pumped hydro storage. | M3: Government setting of carbon goals.   | L3: Ageing and/or under-invested generation, dist. and transmission assets lead to increased failures.   | P3: Natural disaster damages power system assets and/or cuts supply.  |
| S4: Black out risk rises if four-block extended reserve scheme delayed/poorly implemented.  | M4: Thermal generation (Huntly, Taranaki) existence and availability adversely affecting back-up supply.  | <del>L4: Reduced resilience through greater dependence on automation/AI.</del><br>L4: The increasing dependence on AI and automation reduces the industry's ability to deal with unusual and unexpected critical issues (in real time or to quickly recover) | P4: National or international pandemic harms access to:<br>a) the availability of imported goods/services<br>b) international specialists<br>and reduces ability for work crews to travel domestically. |
| S5: Reduced output from hydro due to National Policy Statement on freshwater management.  | M5: Poor standards governance permits inadequate standards and/or significant non-compliance of equipment | L5: Undersized generation fleet due to demand growth from greater electrification.   | P5: Insufficient information sharing and planning amongst industry participants in relation to reliability of supply risks.   |

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|---|---|--|---|
|   | against standards.  |  |   |
| S6: Uncertainty about how Electricity Price Review conclusions will be implemented.   | M6: Increased peak demand on some LV networks from electric vehicles.                           |  | P6: Changes in industry live line and supply restoration operating guidelines, for example continued reluctance to use live line techniques for suitable work lead to reduced supply reliability performance through increased planned outages. |
| S7: Changing strategic priorities of the regulator increases investment uncertainty for industry participants.  | M7: Commerce Commission's regulatory control period #3 impacts on reliability and asset health. | L6: Loss of industry knowledge and capability through an aging workforce.  | P7: AUFLS is not set per the current Code requirements.   |
| S8: Unreliable social media commentary impacting on assets or personnel in the industry (e.g. critical comments inciting physical attacks on repair personnel, equipment or thermal fuel deliveries). |   | L7: Reliability treated less like a public good as new technology makes it more customisable.  | P8: LV network congestion due to rapid increase in small scale distributed generation.  |
| S9: Dry winter / official conservation campaign.  |   | L8: Generation market structure not reacting to physical structural change, reducing investment incentives, e.g. pumped hydro, thermal | P9: Availability of obtaining sufficient gas supply may limit gas fired thermals.   |

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|--|--|---|--|
|  |  | decommissioning,<br>and the transition<br>to 100%<br>renewables   |  |
| S10: <i>market confidence could be affected by the pain from high prices and security of supply (dry year) impacting on investor's willingness to invest long in term assets for de-carbonisation.</i> | M9: Impact of increased climate and weather-related outages. | L9: the risk of stranded assets increasing the cost for those left using them (the "death spiral") becoming increasingly apparent |  |