

Meeting Date: 24 October 2019

# REVIEW INTO THE POTENTIAL IMPACT OF TECHNOLOGICAL ADVANCES AND OTHER CHANGES ON THE LONG-TERM SECURITY AND RESILIENCE OF THE NEW ZEALAND POWER SYSTEM

SECURITY  
AND  
RELIABILITY  
COUNCIL

This paper describes the Government's response to the Electricity Price Review recommendation that a review be carried out into the potential impact of technological advances and other changes on the long-term security and resilience of the NZ power system ("security and resilience issues"). This paper invites SRC views on how the Electricity Authority should undertake the review.

**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.

## Contents

1. Purpose	2
2. A chronology of recommendations and responses	2
EPR Panel recommendations to Government	2
Government response to EPR Panel recommendations	4
3. Planning for a review	5
Review scope	5
Review process	6
4. Questions for the SRC to consider	6
Appendix A: Potential scope of review	8

## 1. Purpose

- 1.1 On 3 October 2019 the Minister of Energy and Resources released the Government's response to the Electricity Price Review (EPR) Expert Advisory Panel's (Panel) final report and recommendations.<sup>1</sup> The Government accepted the Panel's recommendation that a review of security and resilience should be undertaken, and tasks the Authority with undertaking this review, with assistance from the SRC.
- 1.2 This paper invites initial views from the SRC on how the Authority should undertake the proposed review into security and resilience issues. The Authority Board will discuss the topic at its 14 November meeting, so would appreciate any preliminary advice from the SRC.

## 2. A chronology of recommendations and responses

### EPR Panel recommendations to Government

- 2.1 The 30 August 2018 discussion paper discusses reliability in various places but summarises the findings as follows:
- “Is our power reliable? The short answer is yes. Apart from rare outages, the sector offers a consistent, high-quality supply of electricity. Investment is sufficient to meet demand, so reliability is assured – for now.”<sup>2</sup>
- “Reliable, affordable electricity is crucial to New Zealand's economy and way of life. If for no other reason than this, the electricity sector warrants periodic examination.”<sup>3</sup>
- 2.2 The 18 February 2019 options paper included the following:
- “The Minister of Energy and Resources would ask the Electricity Authority to conduct a thorough review of the security, reliability and resilience of the electricity supply, in response to the range of technological and other developments that, as noted in our first report, have the potential to profoundly alter the way the electricity sector works. A review would examine whether the electricity supply was positioned to meet those challenges in the decades ahead.
- The Electricity Authority would assign the task to the Security and Reliability Council to complete within 12 months. The review should include the Council's own terms of reference and work programme; Transpower's policies and procedures for risk monitoring (as system operator responsible for managing the power system and operating the wholesale electricity market); the Electricity Authority's market development work programme and market performance monitoring functions; and other relevant matters, including matters overseen by agencies such as the Commerce Commission and Gas Industry Company.

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<sup>1</sup> Cabinet Paper, Electricity Price Review: Government Response to Final Report, 3 October 2019, paragraphs 136-138.

<sup>2</sup> Page 4 of discussion paper - <https://www.mbie.govt.nz/assets/5ba1054036/first-report-electricity-price-review.pdf>

<sup>3</sup> Page 7, ibid

Some submitters said security of supply should not be taken for granted, particularly in light of the many uncertainties facing the sector. Others emphasised the need to focus less on security and more on resilience. We think both are important.”<sup>4</sup>

## Electricity Authority and SRC submissions to EPR Panel

2.3 The Electricity Authority provided a submission on the EPR Panel’s options paper. That submission included:

“The electricity industry is likely to see some significant shifts over the coming decades as a result of changes arising from technical innovation and environmental drivers. Continually reviewing market arrangements to ensure that security and reliability outcomes are maintained remains a top priority for the Authority, as required by our statutory objective.

The Authority is continually monitoring security and reliability as part of its day-to-day activities. We conduct investigations into, and report on, specific security and market events (the Winter 2017 review for example) in order to highlight any potential improvements to market and operational arrangements. The Authority also acknowledges the important role the Security and Reliability Council plays in this area.

A number of substantive reviews have been conducted by various agencies over recent years. Before undertaking further reviews it may be useful for the panel to familiarise itself with the insights from published material and identify potential gaps. This would help sharpen the focus of any subsequent review and avoid duplicating effort.

The Security and Reliability Council (SRC) has written to the Authority outlining its response to the review proposed by the panel. A copy of the letter is attached as an Appendix to this submission. The SRC is supportive of the review, but noted that the scope of the review will need to be clearly set, and appropriate resources made available for its conduct. The Authority agrees with this response.”<sup>5</sup>

2.4 As referred in the above Authority submission, the SRC prepared advice on the options paper:

“The SRC’s advice to the Electricity Authority on this topic is that:

- The SRC is supportive of option G2 and willing to assist.
- For a high-quality outcome to be achieved, the scope, timeframe and resourcing of this project would need to be aligned.
  - At the moment, the scope is not well defined. For the 12 month timeframe to be achieved it is vital that the scope is set clearly and commensurately.

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<sup>4</sup> Page 35 of the options paper, available from <https://www.mbie.govt.nz/assets/42ac93a510/electricity-price-review-options-paper.pdf>

<sup>5</sup> Pages 13-14 of the Authority’s submission available from <https://www.mbie.govt.nz/dmsdocument/4839-electricity-authority-submission-electricity-price-review-options-paper-pdf>

- If the scope is to be broad it is vital that the project has sizable resources allocated to it. We consider it is likely that expert analysis and secondary research of relevant foreign electricity markets will be an important part of the resourcing for this project. Currently this resource is not available to the SRC.
- There may be some merit in considering greater flexibility with scope and timing. Aside from smoothing resource requirements, it could also give time for Government climate targets to be set as a result of Interim Climate Change Commission reporting.”<sup>6</sup>

2.5 The EPR Panel provided its final report to the Government in mid-2019, but only recently published with the release of the Government’s response.<sup>7</sup> One of the Panel’s recommendations was that:

“The Electricity Authority should commission the Security and Reliability Council to examine the potential impact of technological advances and other changes on the long-term security and resilience of the country’s electricity supply.

The Council should interpret resilience and reliability broadly, taking into account developments throughout the electricity supply chain. It should draw on relevant reports written here and overseas to avoid duplication of effort, and should take special note of policy settings relevant to the sector that arise from the Government’s response to the Interim Climate Change Committee report.

The Council should complete its work within 12 months, having been given sufficient resources, including access to specialist advice and analysis, to carry out the task. The Authority should report back to the Minister on actions it is taking in response to the review and any recommendations for the Government and other agencies.”<sup>8</sup>

## Government response to EPR Panel recommendations

2.6 On 3 October 2019 the Minister of Energy and Resources released the Government’s response to the EPR Panel’s final report and recommendations.<sup>9</sup>

2.7 In response to the EPR Panel’s recommendation, the Government agreed that an examination of security and resilience issues would be useful. This review would consider the potential impact of technological advances and other changes on the long-term security and resilience of the country’s electricity supply. The review would also seek to identify any risks posed by technological advances towards security of supply and other adverse outcomes and allow for greater preparedness and planning.

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<sup>6</sup> Page 17 of the Electricity Authority’s submission available from <https://www.mbie.govt.nz/dmsdocument/4839-electricity-authority-submission-electricity-price-review-options-paper-pdf>

<sup>7</sup> Available from <https://www.mbie.govt.nz/assets/electricity-price-review-final-report.pdf>

<sup>8</sup> Electricity Price Review, Final Report, May 2019, pp 65-66.

<sup>9</sup> Cabinet Paper, Electricity Price Review: Government Response to Final Report, 3 October 2019, paragraphs 136-138.

- 2.8 In relation to accountability, the Government decided the Electricity Authority itself should undertake the review and determine the review process, including how the SRC and the wider industry are to be included.
- 2.9 The Government invited the Minister to write to the Electricity Authority requesting it examine the security and resilience of the electricity sector, with input from the SRC, and report back its findings and recommendations within 18 months.

### 3. Planning for a review

- 3.1 The Authority anticipates receiving a letter from the Minister shortly, and will likely then formally trigger the review process.
- 3.2 In the meantime, the Authority is planning and considering options for the review process. The planning is still in its formative phase, and the Authority welcomes the SRC's input.
- 3.3 The following sections outline some key topics on which the SRC may wish to provide guidance.

#### Review scope

- 3.4 While the Minister's letter may make this clear, the SRC could start to form a view on what the fundamental, high-level objectives of the security/resilience review should be.

*What does the SRC think the review should achieve?*

*What will be most useful for the Authority Board?*

*What will be most useful for the SRC?*

*What will be most useful for the Minister of Energy and Resources?*

- 3.5 The Cabinet paper makes it clear that the review should focus on longer term security and resilience issues – rather than any near term matters. This suggests the review should focus on how to strengthen the framework for identifying, mitigating and managing risks, rather than addressing specific events or risks.

*Does the SRC agree the timeframe to be examined by the review is longer-term?*

- 3.6 The Cabinet paper identifies the particular issues to consider – “the potential impact of technological advances” on the long-term security and resilience of the country's electricity supply. The Cabinet paper does not list specific technologies, but some are canvassed in the EPR's draft and final reports including storage batteries, electric vehicles and new fuels such as hydrogen.

*Does the SRC have any views on what particular technological advances affecting security and resilience the review should consider?*

- 3.7 The Cabinet paper also states the review should consider “other changes” that could affect security and resilience. In its final report, the EPR Panel noted a range of other factors that could potentially affect security and resilience, including the potential for much faster electricity demand growth with

decarbonisation<sup>10</sup> and large increases in intermittent and/or distributed generation.

*Does the SRC have any views on what “other changes” affecting security and resilience the review should consider?*

## Review process

3.8 The Cabinet paper states the Electricity Authority should undertake the review, with input from the SRC and the wider industry.

*Does the SRC have any advice on how best to obtain input from wider industry – e.g. written submissions, workshops etc?*

*Does the SRC have any advice on stakeholders to specifically engage with – e.g., consumer bodies, the system operator, distributors etc?*

*Does the SRC have any view on how it wishes to be engaged in the review process – e.g. commenting on work completed by the Authority? Being requested to contribute content/material? By providing a sounding board? Making a formal submission?*

*Does the SRC have any view on the terms of reference of the review and what administrative arrangements or governance principles should be included?*

3.9 The Cabinet paper states the Electricity Authority will determine how the review will be undertaken.

*Does the SRC have any advice on preferred processes to follow – such as development of an issues paper followed by stakeholder engagement?*

*Does the SRC have any preferences about how it will engage with the process – such as whether to form a sub-committee to draft advice for consideration by the entire SRC?*

*Does the SRC have any views about how the Electricity Authority and the SRC should be maintaining independence from one another and from other stakeholders?*

3.10 To meet the timetable (recommendations within 18 months of commencement) the review will need to prioritise attention onto key issues.

*Does the SRC have any initial views on key areas to focus on in the review?*

## 4. Questions for the SRC to consider

4.1 The SRC may wish to consider the following questions.

**Q1. What further information, if any, does the SRC wish to have provided to it by the secretariat?**

**Q2. What advice, if any, does the SRC wish to provide to the Authority?**

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<sup>10</sup>

The EPR Panel reports referenced conversations with, and reports from, the Productivity Commission (<https://www.productivity.govt.nz/inquiries/lowemissions/>) and the Interim Climate Change Commission (<https://www.iccc.mfe.govt.nz/what-we-do/energy/electricity-inquiry-final-report/>).



## Appendix A: Potential scope of review

The SRC Chair would like the SRC to discuss the potential scope of the review. To facilitate this and provoke discussion, the secretariat has prepared the following table.

**Table 1: Potential scope of security/resilience review**

Aspect of reliability		MW or GWh?		Source of change				
		MW	GWh	Climate change	Battery storage	Electric vehicles	Dist. generation	Internet of things
Asset adequacy	Transmission	✓	✗	!	!	!	!	!
	Generation	✓	✓	!	!	!	!	!
	Distribution	✓	✗	!	!	!	!	!
Asset availability	Transmission	✓	✗	!	!	!	!	!
	Generation	✓	✓	!	!	!	!	!
	Distribution	✓	✗	!	!	!	!	!
System operations	Ancillary services (excl black start)	✓	✗	!	!	!	!	!
	Extended reserve	✓	✗	!	!	!	!	!
	Rolling outages	✓	✓	!	!	!	!	!
	System restoration (incl black start)	✓	✗	!	!	!	!	!

Notes: The ticks and crosses in the 'MW or GWh' column give an indication of what the scope of the review *could* cover. There are many ways that a 'MW-based issue' could manifest and this includes voltage issues and resilience of supply.

The coloured exclamation marks provide an indication of how adversely significant/severe a source of change could be with respect to any aspect of reliability.