



**To:** He Pou a Rangi Climate Change Commission

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20 June 2023

Transpower welcomes the opportunity to submit on He Pou a Rangi Climate Change Commission's *2023 Draft advice to inform the strategic direction of the Government's second emissions reduction plan*.

We are broadly supportive of the proposed recommendations and underlying analysis included in the consultation document. We have chosen to focus our submission on the four points that, in our view, are the most important to enable Aotearoa New Zealand to meet its second emissions budget and, be on track to achieve the third budget.

In this document, we provide evidence to the Commission that highlights the:

- Criticality of transmission infrastructure and system operations to support the transition well beyond the second emissions budget
- Importance of having a well-coordinated approach to electrification, considering a whole-of-energy-system approach to enable emissions reduction
- Role, and importance, of the Emissions Reduction Plan (ERP) in the Resource Management framework Transpower operates under
- Need for aligned government policies to ensure sufficient workforce capacity and capability

Ultimately, this evidence underpins the premise that a lack of explicit support in the ERP for electricity transmission, and the electricity sector as a whole, will increase the risk of not meeting our second emissions budget, nor be on track for the third.

We believe the points we are making in our submission are important considerations to ensure a joined-up and consistent approach to policy design.

## **The decarbonisation effort required by the electricity sector extends beyond the second emissions budget**

The Commission's sub-targets for the *energy and industry* sector clearly put decarbonisation of electricity supply, and electrification of process heat at the centre



of the second emissions budget<sup>1</sup>. As noted in the consultation document, *Electrification is key for decarbonisation, and the system must be able to deliver secure, affordable, and low emissions electricity*<sup>2</sup>, enabling decarbonisation in other sectors, like Transport, which will be single largest sector to decarbonise in the third emissions budget.

As currently drafted, Recommendation 13 only refers to “electricity distribution networks” and is silent about transmission. We recommend that its scope, as well as the underlying analysis, are expanded to recognise the critical need to expand the electricity transmission network to support New Zealand’s decarbonisation.

### **Emerging technologies with high electricity demand means that our forecasts are likely underestimated – even more electricity infrastructure will be required**

With the focus of decarbonising transport and process heat, in *Whakamana i Te Mauri Hiko* we forecast that we will need about 22GW of electricity generation capacity available by 2050, up from about 10GW today. We estimate that, by 2050, the country’s electricity consumption will reach about 80TWh per annum.

In addition, we are increasingly seeing other sectors of the economy looking at decarbonising their operations that we did not anticipate in our forecasts – including decarbonisation of steel making, aviation and chemicals. To give an idea of scale, to meet MBIE’s hydrogen scenarios which contemplate decarbonising part of those sectors, we estimate that New Zealand will need to generate an additional 88TWh of electricity per year by 2050.<sup>3</sup> This is a significant increase above our forecasts from 2020.

### **To support this increased forecast, an expansion of electricity transmission infrastructure is required to start now**

In its recommendations, the Commission has noted the importance of the electricity distribution and generation sectors. However, electricity transmission infrastructure, and the continuous safe, and secure operations of the power system as nationally significant infrastructure, are as important to continue supporting decarbonisation efforts.

The nature of transmission infrastructure means that investments are often lumpy, with a long lifetime, and long lead time: decisions made today will last for more than

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<sup>1</sup> Figure 9.1, [2023 Draft advice to inform the strategic direction of the Government’s second emissions reduction plan](#), p.109

<sup>2</sup> [2023 Draft advice to inform the strategic direction of the Government’s second emissions reduction plan](#), p.111

<sup>3</sup> [March 2023 Whakamana i Te Mauri Hiko Monitoring Report](#), p.4



50 years and can take up to ten years to be delivered. As noted by the Commission, renewable generation build delays will increase emissions<sup>4</sup>. Equally, if the capacity of existing transmission infrastructure is insufficient or new transmission infrastructure build is delayed, renewable generation will not be able to contribute to emissions reductions to its full extent.

This is why, although the draft advice focuses on the second budget period, it needs to consider the implications for the electricity sector, including transmission, well beyond the second budget period.

## **With a highly electrified economy, electricity infrastructure resilience will be even more important**

As we have seen in recent events, the loss of critical lifeline utility infrastructure in the Hawkes Bay following cyclone Gabrielle has deep effects on the economy. For electricity infrastructure, it means we need to continue maintaining and upgrading the grid to fuel the economy every day as infrastructure ages. We will also need to increase its resilience so we can be well placed to withstand challenging events like Cyclone Gabrielle.

On this second point, a number of factors need to be aligned, including the standard to which these assets are built, and the methodology to evaluate the consequence of a prolonged loss of electricity supply.

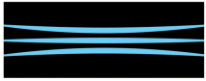
Upgrading assets to withstand a one-in-500-year event is unlikely to be justified solely on an economic basis under current regulatory settings. This is for several reasons, including:

- We have not modelled the financial value of ensuring lifeline utility asset resilience during a catastrophic event
- We do not yet have a full understanding of the return periods and probabilities of such events occurring (noting climate change-related effects are changing existing understanding).
- Value of Lost Load (VOLL) currently used to justify asset reliability investment is not fit for purpose for resilience investments<sup>5</sup>
- Resilience investments might require early replacement (i.e., before an asset have reached its economic end of life)

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<sup>4</sup> [\*2023 Draft advice to inform the strategic direction of the Government's second emissions reduction plan\*](#), p.112

<sup>5</sup> VOLL estimates do not include risk aversion or societal cost in relation to a catastrophic event. In addition, the VOLL estimate is not based on long duration outages.



We recommend that the advice contains a specific recommendation on resilience:

The ERP must recommend, or contain an action on relevant bodies, that guidance is developed on how resilience investments should be treated under the economic regulatory framework for regulated monopolies. This will be critical to ensure electricity transmission, distribution, and supply resilience.

## **Taking a whole-of-energy-system approach will help Aotearoa New Zealand to decarbonise**

The different fuels available to decarbonise Aotearoa New Zealand are intrinsically linked. Only a whole-of-energy-system approach will enable an efficient decarbonisation of the economy.

We agree with the Commission's view that coordination of electricity and bioenergy is critical in enabling the decarbonisation of process heat (p.120). Our view is that the development of a biomass strategic use assessment and strategy should be accelerated and evaluated in the context of a whole-of-energy-system view as opposed to a single fuel view.

The development of a secured biomass supply chain will take several years and there are already signs that supply is going to be short. The Forestry Industry Transformation Plan (ITP)<sup>6</sup> shows that they could supply up to 0.7 million tonnes of wood pellets per year representing about 12PJ of energy. For scale, this energy quantity is just shy of the total coal consumption used for dairy manufacturing<sup>7</sup> in the country in 2022 (12.6PJ).

Furthermore, through the work Transpower and EECA have done with the Regional Energy Transition Accelerator (RETA) programme in Southland, we uncovered that by 2024, *meeting the [...] demand from fuel switching projects will require diversion of export chip and export low-grade logs to domestic bioenergy*<sup>8</sup>.

This means that biomass costs are likely to increase, and if used as a fuel for electricity generation, this increase is likely to be reflected in the costs of electricity.

## **The need for environmental approvals for routine work on our aging assets must be streamlined**

The National Policy Statement on Electricity Transmission (**NPS-ET**) and the Resource Management (National Environmental Standards for Electricity Transmission Activities) Regulations 2009 (**NESETA**), as well as the National Policy

<sup>6</sup> [Te Ara Whakahou – Ahumahi Ngahere Forestry and Wood Processing Industry Transformation Plan](#)

<sup>7</sup> [Coal statistics | Ministry of Business, Innovation & Employment \(mbie.govt.nz\)](#)

<sup>8</sup> [Regional Energy Transition Accelerator \(RETA\) Southland - Phase One Report](#), p.18



Statement on Renewable Energy (**NPS-REG**) are currently being reviewed by MBIE and MfE, to make them fit for purpose to meet our electrification needs<sup>9</sup>. To do this, these documents should remove onerous and unnecessary consenting hurdles, and reconcile tensions with other national direction. These strengthened documents should be included in the National Planning Framework (**NPF**) under the Natural and Built Environment Bill, in a manner that aligns with that legislative framework. This review should be complete, and the documents strengthened in the near term, well before the 2<sup>nd</sup> ERP is in place.

However, these documents will need to remain fit for purpose and keep pace with our climate change and electrification drivers (one review will not be enough). Given the importance of a resilient national transmission network, with capacity to connect new renewable energy developments, we consider that the Commission's draft advice should include a recommendation to:

Review the NPS-ET, NPS-REG, NES-ETA, and any NES-REG (as strengthened in 2023), and their equivalent content in the National Planning Framework, to ensure that renewable electricity generation, transmission and distribution networks are prioritised, and build is accelerated to support growth and variability of electricity demand and supply.

We would be happy to meet with Commission staff on the development of such guidance to ensure these electricity transmission concerns adequately consider and take into account the associated regulatory requirements.

## **The ERP has a key role to play in the Resource Management system to enable Transmission infrastructure**

There is no direct linkage to the Climate Change Response Act 2002 in the Resource Management Act 1991 (**RMA**), nor the Natural and Built Environment and Strategic Planning Bills. Instead, the ERP provides these crucial linkages.

The ERP has a key role to play in the RMA - it is a matter that must be "had regard to" when councils are preparing or changing a regional policy statement, regional plan or district plan (sections 61, 66 and 74 of the RMA). The ERP is elevated further through the Resource Management system reform – the National Planning Framework (**NPF**) must be "not inconsistent with" the ERP. The ERP then indirectly influences the content of Regional Spatial Strategies (**RSSs**). Ultimately the NPF and RSSs govern the extent that there are barriers to, or a consenting pathway for, electricity system infrastructure, as shown on the figure below.

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<sup>9</sup> <https://www.mbie.govt.nz/have-your-say/renewable-electricity/>

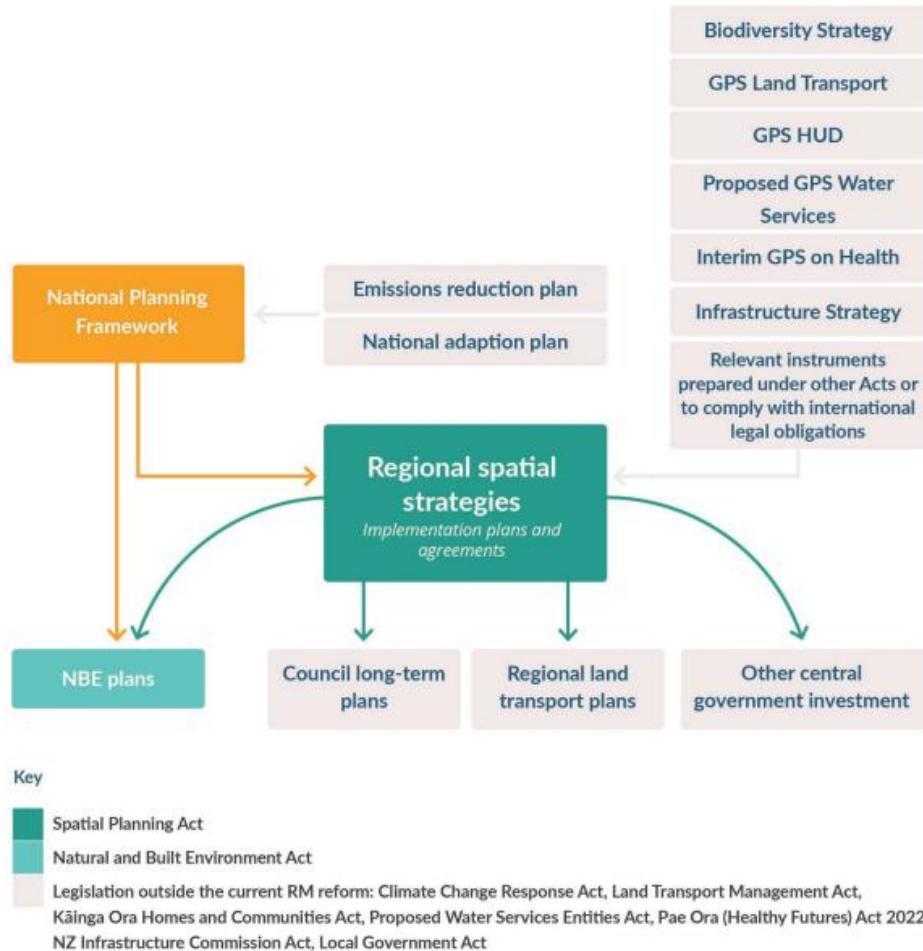


Image 1: Extract from MfE report on the Resource Management Act reform<sup>10</sup>

Unlike other infrastructure and public services, there is no Government Policy Statement for electricity that can input into the system. Further, given our market-based system, we do not have an overarching national document or roadmap for what is required for our existing and future assets in the short, medium, or long-term. Instead, the content of the ERP needs to be meaningful to fulfil this function.

The draft advice recognises the impact of uncertainty and barriers in the consenting system, and that if these are not addressed it may be difficult to meet our emissions budgets (p.100). These barriers have been increasing with:

- Policy development favouring protection of the environment in a way that does not reconcile tensions with necessary electricity industry infrastructure

<sup>10</sup> [Te Pūnaha Whakahaere Rauemi o Anamata: Tirowhānui, Our Future Resource Management System: Overview](#), p.26





that due to technical, functional, and operational constraints often needs to locate in sensitive environments

- A lack of recognition of the role that electricity infrastructure has in contributing to protection of the environment (including biodiversity) through climate change mitigation. Instead, the focus is on localised adverse effects of the infrastructure, not the broader benefits of it

The ERP has a role in overcoming these issues. We consider the ERP needs to clearly and strongly:

- Recognise the necessary role of existing and future electricity generation, transmission, and distribution infrastructure in meeting our emissions budgets
- Map out what is required at a national level – in this regard, any reduction in existing capacity will require additional new build. This national level direction is necessary, to avoid a piecemeal, and potentially inadequate approach in RSSs, Natural and Built Environment Plans, and as regional or district consents are granted. (This national level direction would need to be developed in a manner appropriate for a market-based system)
- Set out what must occur in both policy and in practise to “prioritise and accelerate” electricity system infrastructure – not merely state that the prioritisation and acceleration must occur

We accept that, to fulfil this role, the second ERP will need to be much more detailed than the current ERP. However, without this level of detail, policy and consenting barriers to necessary electricity transmission infrastructure are likely to remain and our electrification needs not likely to be met in the relevant budget periods. Transpower is happy to meet with the Commission to discuss the necessary content of the second ERP, and to assist in framing of detailed recommendations for the Commission’s final advice.

## **To deliver on the emissions budget, we need to both develop and import a skilled workforce**

The Commission notes throughout the draft advice that labour shortage is an impediment to meeting our carbon budgets. We agree. Te Waihangā Aha Rau (Workforce Development Council for twelve infrastructure and construction sectors), the New Zealand Infrastructure Commission has identified in its Infrastructure Strategy that the on-going international competition for talent has amplified labour shortages across the infrastructure sector. In the construction sector alone, it estimates a lack of approximately 118,500 construction workers in 2024<sup>11</sup>.

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<sup>11</sup> [Rautaki Hanganga o Aotearoa, New Zealand Infrastructure Strategy](#), p.152



The electricity supply industry's workforce plan *Re-Energise – Ngā mihi a Māui* estimates that 700 engineers, technicians, and trade workers<sup>12</sup> would be required per year to sustain the forward work programme (NB: this number is now likely to be underestimated.<sup>13</sup>) The workforce plan provides a good base on how to build the skills required to support the industry locally. In the global competition for talent however, all levers available need be pulled, including immigration settings that make New Zealand an attractive place to live.

Transpower has undertaken an assessment of the workforce required to support the maintenance and development of the grid (both capital projects and customer projects) and estimate that the current service provider workforce of ~800 core electrical workers would need to increase by 60-100% by 2030. This reflects the uplift in investment to decarbonise the economy through electrification.

We note that one of the objectives of the Equitable Transitions Strategy refers to “*supporting a nimble and responsive education system [...] that sets New Zealanders up with skills needed for a low-emissions future*”<sup>14</sup>. While the strategy is still in drafting at the time of writing, we recommend that the Commission's reinforces the importance of having a clear, aligned, and nationwide government policy to ensure we have access to the skills, either grown or imported to meet New Zealand's emissions budget.

## Conclusion

A lack of explicit reference to electricity transmission (as opposed to generation and distribution) in the draft recommendations could increase the risk of the ERP being equally narrow in focus, and New Zealand not meeting our emissions budgets.

We are also concerned that the draft advice does not acknowledge, and make recommendations in relation to, the critical role the ERP has in reducing and removing consenting barriers.

We commend the Commission for its detailed analysis and engagement with industry to date, and we are looking forward to continuing contributing to the important work the Commission is leading.

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<sup>12</sup> [Re-Energise – Ngā mihi a Māui](#), p.18

<sup>13</sup> This figure extracted from the [Environmental Scan for the Electricity Supply Industry summary report](#) is based on CAPEX spending commitments. In 2022, BCG in its report [The future is electric](#) suggested that investment in the sector should increase. In addition, this number does not reflect the increase in OPEX maintenance work that will be required to maintain an increase in infrastructure.

<sup>14</sup> [Terms of Reference – Equitable Transitions Strategy for Aotearoa New Zealand](#)





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We would be happy to meet with Commission staff to discuss this submission in more detail. If you would like to discuss our submission, please contact Nicolas Vessiot ([Nicolas.vessiot@transpower.co.nz](mailto:Nicolas.vessiot@transpower.co.nz)) in the first instance.