



# TARANAKI

OFFSHORE PARTNERSHIP

BY

NZ SUPER FUND & COPENHAGEN INFRASTRUCTURE PARTNERS



**Veja Mate Offshore Wind Farm**  
Germany

Developed, constructed and operated by  
Copenhagen Infrastructure Partners

Sheila Matthews

Manager – Future Security & Resilience, Electricity Authority

Dear Sheila,

### **TOP submission on future operation of New Zealand’s power system**

Taranaki Offshore Partnership (TOP) welcomes the opportunity to provide a submission on the Electricity Authority’s February 2024 consultation paper *The future operation of New Zealand’s power system*.

#### **About TOP**

Taranaki Offshore Partnership (TOP) is a joint venture between New Zealand Super Fund and Copenhagen Infrastructure Partners, a leading offshore wind specialist with more than 50 GW of offshore wind projects in development. We are working on the early feasibility stage of a project to develop an offshore wind project in Taranaki with a potential size of 1 GW, scalable to 2 GW.

We would like to compliment the Authority on its consultation paper, which provides a timely and useful primer for us as we work on building our familiarity with the New Zealand electricity market.

Below we provide our views on the following issues relevant to the Authority’s consultation paper:

- our perspective on distributed energy resources (DER) – as an offshore wind developer we see benefits in well-functioning DER
- the importance of large-scale renewables – we encourage the Authority not to lose focus on issues around enabling future operation of large-scale renewables
- the value of economic grid investments – the Authority has a role in ensuring New Zealand builds grid capacity to make best use of low-cost energy
- our perspective on network regulation – we support regulatory oversight to help coordinate, harmonise, and transition with pace.

We have provided responses to the Authority’s consultation questions in an appendix.

#### **Benefits of well-managed DER**

The consultation paper provides a good survey of issues relating to DER. From an offshore wind developer perspective, we see upsides in a well-managed DER:

- absorbing energy when offshore wind output is high. New Zealand’s nodal pricing provides an excellent foundation for encouraging efficient use of low-cost energy in this way, with room for improvement in ensuring signals propagate to small end consumers (or their agents) and that they can respond without being unduly hampered by network constraints
- turning down demand when wind output is low. Again, nodal pricing provides an excellent foundation on which to build. It is important that nodal pricing signals (which capture energy and transmission costs) are not undermined by arrangements for accessing the distribution network benefits of flexible resources

- providing distributed resilience. Proliferation of distributed storage may enable a degree of distributed resilience. This would reduce the economic cost of interruptions, potentially allowing for relaxation of some grid and power system security requirements. This would in turn reduce costs of grid infrastructure and some ancillary services (such as instantaneous reserves).

We note that the consultation paper focusses on the complexities of the future power system. We think it is important not to lose sight of the ways in which DER may also reduce complexity in some ways – providing more predictable and coherent load profiles at grid exit points and adding buffers and distributed resilience into the system.

### **Importance of large-scale generation**

In contrast to DER, the paper has little to say about large-scale resources. The energy transition will introduce large new electric loads (some of which will have significant flexibility) and large new generation sources.

For context, the TOP project:

- depending on how it is configured, could have a grid connection that is significantly larger than any existing connection to Transpower's grid
- at 1 GW, would produce more energy than 750,000 household-scale rooftop solar installations (or more than 13 times as much energy as all existing rooftop solar in New Zealand). At 2 GW, it would produce a similar amount of energy to placing solar systems on every domestic rooftop in New Zealand.

Offshore wind will have a significant impact on the operation of the relatively small New Zealand power system. We expect our engagement with Transpower on our asset owner obligations will be a significant undertaking with important implications for project economics. In addition, a project of our size may have wider implications for power system operations.

We would take comfort from knowing there is oversight from a capable and adequately resourced regulator focussed on helping to achieve the best outcome for New Zealand. Ultimately, our project stands to enhance the resilience of the New Zealand power system by delivering energy directly into the North Island power system, downstream of the inter-island link. Moreover, with a predicted capacity factor of 50-55%, offshore wind in South Taranaki will have more of a baseload component than typical onshore wind farms.

### **Value of economic grid investments**

We understand that the Electricity Authority oversees much of the framework governing when Transpower will pursue investments aimed at enhancing the grid. This includes the grid reliability standards and core grid definition, and Transpower's obligations around identifying and pursuing economic grid investments.

The consultation paper has a reliability focus, but economic investments will also be important to the future operation of the New Zealand power system. There are two important aspects to economic grid investments:

- building capacity to unlock generation development opportunities in resource-rich areas. The areas that Transpower chooses to unlock will impact where generation is developed, with a significant impact on competition between developers and on overall market dynamics
- maximising the ability for output from the generation that is developed to reach demand centres, including by addressing the impact of later developments on the output from earlier developments.

We commend Transpower for its work to date to start planning for economic grid investments. However, there remains a high risk that bottlenecks and contention around grid development will delay or stymie worthwhile generation investments over coming decades.

As such, we urge the Authority to ensure it does not lose sight of the aspects of economic grid investment governance that fall within its jurisdiction. For example, our understanding is that obligations on Transpower to invest against the grid reliability standards are much stronger than its obligations to pursue economic investments. There is a risk that this imbalance, combined with increasingly dated grid reliability standards and core grid definition, could result in poor prioritisation across the areas where Transpower could be making grid investments.

### **Role of network regulation**

We observe that regulatory oversight of electricity networks in New Zealand appears light-handed and lightly resourced compared to other developed economies. This seems especially true for the distribution sector, which is also notable for having many operators, most of which are very small.

This combination of many small operators and light oversight may be a key weakness for issues where consistency and urgency are important. It is important that:

- traditional basics are not neglected – for example, that low voltage network design capacities are prudently sized to meet future needs, that hot water control capabilities are not lost in transition, and that electric vehicle control capabilities are built in early
- new basics are embedded early – for example, data collection and management, control protocols and congestion management policies
- transitions are executed well – particularly as network planning shifts from traditional capacity expansion approaches to greater reliance on congestion management.

We encourage the Authority to take an active and constructive role in driving consistency and progress across networks.

Please feel free to contact me to discuss any points raised in this submission.

Kind regards,



Giacomo Caleffi

Senior Business Development Manager

## Appendix – Consultation questions

<b>Submitter</b>	Taranaki Offshore Partnership
<b>Questions</b>	<b>Comments</b>
<p>Q1. Do you consider section 3 to be an accurate summary of the existing arrangements for power system operation in New Zealand? Please give reasons if you do not agree.</p>	<p>Yes.</p> <p>However, for clarification we understand:</p> <ul style="list-style-type: none"> <li>• the Electricity Industry Act requires (at s8) that Transpower is the system operator – in other words, the role is not contestable or severable from Transpower without a change in legislation</li> <li>• the same Act defines the system operator as “the person who ensures the real-time co-ordination of the electricity system”. This seems a high-level description that, on the face of it, could be read as granting Transpower extensive responsibilities, including at distribution network level</li> <li>• the Commerce Commission does not regulate Transpower or the distributors, rather it regulates specific services provided by those businesses. Each business may provide multiple regulated and unregulated services</li> <li>• while the Commission does regulate Transpower’s system operation, in practice it relies on negotiation between the Electricity Authority and Transpower to determine the scope and level of service provided and the revenue that Transpower can recover</li> <li>• similarly, the Commerce Commission does not regulate what Transpower charges for new connections where that work is contestable. Instead, the Electricity Authority is responsible for regulating grid access terms (through the benchmark agreement).</li> </ul>
<p>Q2. Do you agree that we have captured the key drivers of change in New Zealand’s power system operation? Please give reasons if you do not agree.</p>	<p>Yes, however we would add that:</p> <ul style="list-style-type: none"> <li>• offshore wind could add new points of connection to the power system that are larger than any current load or generation connections</li> <li>• the system will also have large new load connections, some of which have significant flexibility or tolerance for short interruptions</li> <li>• proliferation of batteries (and flexible loads) may increase the amount of distributed resilience, which could relax some grid and power system security requirements</li> <li>• the balance of grid investment may shift to include a greater emphasis on economic investments (to shift low-cost energy to demand</li> </ul>

	<p>centres) vs. reliability investments (which preserve grid security standards)</p> <ul style="list-style-type: none"> <li>• increasing load factors on networks can make outage coordination (including for network build) more challenging as it reduces 'slack' in the network.</li> </ul>
<p>Q3. Do you have any feedback on our description of each key driver?</p>	<p>See response to Q2.</p>
<p>Q4. What do you consider will be most helpful to increase coordination in system operation? Please provide reasons for your answer.</p>	<p>New Zealand has many small distributors and light regulatory oversight. This can result in inconsistency – in how well or quickly they progress, in their overall approaches and in low-level details of how they operate.</p> <p>To the extent future system operation must deal with more coordination within (and with) distribution networks, the downsides of this traditional lack of consistency may be greater than before. Given the complexity, urgency, and value of better coordination, we think more hands-on and well resourced regulatory oversight may be a more fit for purpose response.</p>
<p>Q5. Looking at overseas jurisdictions, what developments in future system operation are relevant and useful for New Zealand? Please provide reasons for your answer.</p>	<p>n/a</p>
<p>Q6. Do you consider existing power system obligations are compatible with the uptake of DER and IBR-based generation? Please provide reasons for your answer.</p>	<p>We are not at the stage of our project where we have engaged in detail with the power system obligations we will face as an asset owner.</p> <p>We expect this engagement process will be non-trivial and there may well be value in updating aspects of those obligations to ensure cost effective solutions that appropriately manage any operating risks associated with very large connections.</p> <p>We would take comfort from knowing there is appropriately resourced regulatory oversight available as a check on the reasonableness (in terms of consumer benefit) of obligations that Transpower may impose on us as asset owners.</p> <p>We also anticipate that developments in the distribution sector should impact the cost and need for ancillary services, some of which we will become a major purchaser.</p>
<p>Q7. Do you consider we need an increased level of coordination of network planning, investment and operations across the New Zealand power system? Please provide reasons for your answer.</p>	<p>Yes.</p> <p>As above, we think key reasons include:</p> <ul style="list-style-type: none"> <li>• the downsides of traditionally inconsistent approaches across the distribution sector will increase as system operation extends into distribution network-connected equipment</li> <li>• the scale of network investment (transmission and distribution) in coming decades will be much larger than historical investment levels, so</li> </ul>

	<p>the benefit of any improvements in planning (including prioritisation and timing) is greater</p> <ul style="list-style-type: none"> <li>• there is a risk of over-prioritising reliability investments where distributed resources and distributed resilience could reduce need and provide partial substitutes, respectively</li> <li>• economic investments in the transmission system will become more prevalent. The Authority's rules provide weaker incentives on Transpower to prioritise these investments, or to consider the competitive impacts (in the market for new generation).</li> </ul>
<p>Q8. Do you think there are significant conflicts of interests for industry participants with concurrent roles in network ownership, network operation and network planning? Please provide reasons for your answer.</p>	<p>We do not have a clear view on how acute any conflicts may be in practice; however, we note that regulatory oversight can help deter and detect bias in cases where the downsides (including cost, disruption, and loss of synergies) of structural solutions may be too great. In other words, having a good umpire is sometimes the best solution.</p>
<p>Q9. Do you have any further views on whether this is a good time for the Authority to assess future system operation in New Zealand, and whether there are other challenges or opportunities that we have not covered adequately in this paper? Please provide reasons for your answer.</p>	<p>This is a good time for a stocktake, however the Authority should have an ongoing focus and stewardship role in this area.</p>