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NZGP1 CONSULTATION AND UPPER NORTH ISLAND VOLTAGE SUPPORT RFI – CONSULTATION NZGP1 LONG-LIST

Opening Comment

Unison and Centralines welcome the opportunity to provide feedback on Transpower's Net Zero Grid Pathways 1 Long-list consultation. The feedback provided represents the response of both Unison Networks Limited and Centralines Limited.

Transpower has proactively identified the need for long term planning for Transmission and non-Transmission solutions necessary to enable an energy future that responds to the need to decarbonise through electrification of transport and heat, increased renewable generation and distributed energy resources (DER). Realising this future requires selecting options that address constraints economically, maintain security, while facilitating increased renewable generation and enhancing system resilience.

We support the approach by Transpower to also seek non-transmission solution through the RFI. Our feedback at this stage of the process focuses on the long-list of options however, we look forward to providing feedback in the next stage on any non-transmission solution options that emerge.

Timely and coordinated implementation of solutions whether transmission or non-transmission will be important to efficiently facilitate the transformation in transport, heat, and renewables and DER required to achieve net zero emissions by 2050.

Key points of feedback

1. The criteria for evaluating options should be expanded to include; enablement of renewables, enhancement of system resilience, and future option value created.
    a. While many options provide system security, options that add resilience particularly in the face of natural hazards for example through increased diversity of transmission routes should be given greater weighting.
    b. Transmission investments that address not only constraints but also provide enhanced grid access for renewables should be favoured.

c. Transmission and non-transmission solutions that fit with and promote a system architecture designed for the enablement of and support from DER should be prioritised. As DER is distributed by nature it is important that solutions promote option value for continued uptake of DER which by nature is difficult to predict in terms of location or timing.

2. Notwithstanding the potential for non-transmission solutions, DC solutions should focus on addressing constraints to inter-island transfer. AC solutions should be favoured for addressing all other constraints as these also support access for renewables and enablement of DER.

3. Longlist option 'New Line within the Hawke's Bay transmission corridor' (D3) should be favoured among the 'Transmission options - new assets or replacing existing assets' proposed in Table 3.3 as it not only addresses Lower North Island south-north transmission constraint, but also provides the following benefits;

    a. Access for renewables development including significant known wind resources in Central and Southern Hawke's Bay and significant emerging grid solar resources on the east coast of the North Island.

    b. Provides diversity in transmission routes including reduced exposure of transmission circuits to Central North Island volcanic hazards.

    c. Provides a robust solution to known issues with security of supply to Hawke's Bay.

    d. This option could be expanded to provide a new 220kV route from Haywards through Wairarapa further alleviating constraints, enhancing resilience and opening up access to known wind resources in Wairarapa. This option could leverage existing and planned 220kV circuits being established by Mercury to connect its Turitea windfarm and planned Puketoi Windfarm at Linton.

    To realise these benefits in a timeframe consistent with decarbonisation targets the delivery timeframe for this solution should be reduced to 7-8 years.

4. Current and likely growth in renewables in the area of the Wairakei ring as well as Hawke's Bay mean that addressing the Wairakei ring constraints with robust 220kV solutions is key to facilitate this growth in renewables. This is also needed to realise the full benefits of the New Line within the Hawke's Bay transmission corridor. Options from those provided in Table 3.4 that together appear to provide the most robust solution are;

    a. C3 Reconfigure the Wairakei 220kV bus and split the network to potentially increase load sharing on the Wairakei 220kV circuits.

    b. D5 New line from Ohaaki to Atiamuri and new Atiamuri-Whakamaru double circuit to replace current section of the A line.

    c. D6 Third line in the Wairakei Ring transmission corridor.

    The value of these options would be further enhanced by the New Line within the Hawke's Bay transmission corridor which would further alleviate constraints on generation in the Wairakei Ring and on the Wairakei-Redclyffe circuit.

Other Feedback

Further feedback is provided in our responses to the questions raised by Transpower included in Appendix A.

Conclusion

Long term planning to facilitate the transformation of transport, heat, growth in renewables and DER needed for decarbonisation is appropriate. The long list of options as well as potential for non-transmission solutions provide options for achieving this energy future. Criteria for selection of options

should include enhancement of system resilience, enhanced access to renewables and promotion of option value for continued uptake of DER. Options that best satisfy criteria including these dimensions are new 220kV transmission lines in the Hawke's Bay Corridor, Ohaaki to Atiamuri, and Wairakei to Whakamaru, along with reconfiguration of the Wairakei 220kV bus. However, any non-transmission proposals made in response to the RFI should also be considered in the second stage of consultation; NZGP2.

Kind regards,

Nathan Strong
GENERAL MANAGER COMMERCIAL

Appendix A

No.	Question	Relevant Section	Support Y/N	Supporting Comments
1	Is our need description for this investigation reasonable?	1.1	Y	
2	Should Transpower be looking to enable investment in new generation and demand ahead of when that generation or demand is confirmed?	1.1	Y	It is important that solutions are selected that provide access to potential renewables and promote option value for DER uptake. Solution implementation should be coordinated and timed to efficiently enable this.
3	Are our long-list options (B1 and B2 in Table 3.1) to meet the overall need for this investigation reasonable?	3.1	N	HVDC alleviates existing and projected south-north constraints but does little to enhance access for new renewable or promote DER which are better facilitated by AC solutions. HVDC options should focus on addressing constraints to inter-island transfer only.
4	Are our long-list options for enhancing capacity of the HVDC reasonable?	3.2	Y	See previous comment in response to Question 3.
5	Are our long-list options for enhancing capacity of the CNI 220kV corridor reasonable?	3.3	Y	Options that concentrate Transmission in a narrow corridor should be avoided. In particular routes that diversify 220kV transmission away from the Central North Island volcanic hazard zone should be favoured. With the shift to renewables the Hawke's Bay corridor offers the best solution that also enhances access for renewable generation. The delivery timeframe for his option should be reduced to 7-8 years to align benefit realisation with decarbonisation targets. Removal of Wairakei Ring constraints will be required to realise the full benefits of this option.
6	Are our long-list options for enhancing capacity of the Wairakei Ring reasonable?	3.4	Y	The following options that address constraints on the Wairakei Ring, and enhance Grid access for renewable generation should be prioritised: C3 Reconfiguration of the Wairakei 220kV bus D5 New Line Ohaaki to Atiamuri D6 New Line Wairakei to Whakamaru Addressing the Wairakei Ring constraints is also needed to realise the full benefits of the New Line within the Hawke's Bay transmission corridor.
7	Are there other criteria we should consider when evaluating our long-list of options and reducing it to a short-list?	4.1	Y	Evaluation criteria should incorporate the following: 1. options that add resilience particularly in the face of natural hazards for example through increased diversity of transmission

No.	Question	Relevant Section	Support Y/N	Supporting Comments
				routes should be given greater weighting. 2. Transmission investments that address not only constraints but also provide enhanced grid access for renewables should be favoured. 3. Transmission and non-transmission solutions that fit with and promote a system architecture designed for the enablement of and support from DER should be prioritised.
8	Is our process for developing relevant scenarios reasonable?	5.2	Y	However, scenarios should also consider a future with high EV uptake and charging behaviour with low demand response where consumers value availability of mobility over reduced costs from flexibility in charging.
9	Are our proposed NZGP1 demand forecasts reasonable?		Y	See previous comment in response to Question 8.
10	Is our proposal to identify base scenarios and sensitivity scenarios reasonable?	5.5	Y	
11	Is our process for identifying potential generation scenarios reasonable?	5.5	Y	However, Generation development will be influenced by access to the Grid, including enhanced access arising from the implementation of transmission solutions resulting in accelerated development.
12	Is our approach to determining an appropriate number of scenarios reasonable?	5.5	Y	
13	Is our choice of scenarios to include in our analysis reasonable?	5.6	Y	
14	Is our set of sensitivity scenarios reasonable?	5.7	Y	However, a high degree of uncertainty should be attributed to Lake Onslow given, technical, cost and political risks.
15	Is our approach to determining the weighting for each scenario appropriate?	5.8	Y	However, we agree weightings should be further evaluated in NZGP2.
16	Would interested parties support the use of a discount rate for Investment Test analysis, closer to Transpower's current WACC?	5.9	Y	
17	Are there any other costs or benefits we should consider in our investment Test analysis?	5.9	Y	Methodologies for valuing the following should be developed for inclusion in the CBA; - the benefits associated from options that accelerate renewables uptake through enhanced access - the option value associated with solutions that promote DER uptake.